

3.2

*IBM Db2 Recovery Expert for z/OS  
User's Guide*



**Note:**

Before using this information and the product it supports, read the "Notices" topic at the end of this information.

Subsequent editions of this PDF will not be delivered in IBM Publications Center. Always download the latest edition from the [Db2 Tools Product Documentation page](#).

**June, 2024 edition**

This edition applies to Version 3 Release 2 of IBM Db2 Recovery Expert for z/OS (product number 5697-H74) and to all subsequent releases and modifications until otherwise indicated in new editions.

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## About this information

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Db2 Recovery Expert for z/OS® is a feature-rich product that assists you with system-level as well as object level backups, and system-level, application, and object-level recoveries.

The topics in this user's guide are designed to help database administrators, system programmers, application programmers, and system operators perform the following tasks:

- Plan for the installation of Db2 Recovery Expert.
- Install Db2 Recovery Expert.
- Configure your Db2 Recovery Expert environment.
- Operate Db2 Recovery Expert.
- Diagnose and recover from Db2 Recovery Expert problems.

Always check the Knowledge Center for the most current version of this information:

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# Chapter 1. Db2 Recovery Expert overview

IBM® Db2 Recovery Expert for z/OS (also referred to as Db2 Recovery Expert) is a storage-aware backup and recovery solution that integrates storage processor fast-replication facilities with Db2® backup and recovery operations. This allows instantaneous backups with reduce recovery time, and it simplifies disaster recovery procedures while using less CPU, I/O, and storage resources.

## What's new in Db2 Recovery Expert

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### May, 2024

- Recovery Expert adds records into SYSIBM.SYSUTILITIES and SYSIBM.SYSOBJEVENTS catalog tables for utilities which are used in recovery plans. The records for utilities that are already covered by the Db2 are not added. Recovery monitoring is improved with better statistic for the time spent, and CPU usage utilizing information from SYSIBM.SYSUTILITIES and SYSIBM.SYSOBJEVENTS catalog tables. For more information, see [Monitoring recovery jobs and recovered objects](#). These features are not supported for redirected recovery plans.
  - **Related APAR:** PH59033
  - **Related PTF:** UI95232 + UI95233
- Now you can utilize RECOVER events as a starting recovery point for recoveries. For more information, see the Constraints section in the [No usable recovery plans generated](#) topic.
  - **Related APAR:** PH57373
  - **Related PTF:** UI94179

### April, 2024

Updated plan generation for mass application recovery using application groups. When objects of higher priority are recovered, they immediately become available for work. Added new ISPF panels to support the change. See [Generating application group recovery plans](#) for details.

**Note:** The **Validate** option was removed for mass application recovery.

**Related APAR:** PH60533

**Related PTF:** UI96340

### February, 2024

The support for TLS protocol version 1.3 is provided. For information about how to enable TLS v1.3, see [Server security](#).

**Related APAR:** PH58393

**Related PTF:** UI95128

### January, 2024

- The support for selecting archive tables in both the ISPF interface and the Web interface is provided. When user selects an archive table for recovery, by default, the corresponding archive-enabled table is selected.
  - **Related APAR:** PH57358
  - **Related PTF:** UI94179

- New ISPF options are introduced to utilize the 'REUSE' keyword in both RECOVER and REBUILD INDEX utilities. The REUSE keyword enables logical reset and reuse of the Db2-managed data sets, and increases the utility performance.

**Related APAR:** PH57376

**Related PTF:** UI94179

- Consistent naming conventions is provided for the batch and ISPF generated jobs, when the option **Use member prefix** is enabled. For more information, see [Selecting a recovery plan](#).

**Related APAR:** PH57372

**Related PTF:** UI94179

- The [Creating image copies using Change Accumulation](#) section is updated to include the index spaces support. The list of available keywords is updated.

## October, 2023

The support for recovery of a single table has been enhanced. An appropriate CHECK DATA statement will now be generated for every related table placed in the CHKP restrictive status. In addition to this, the direct call to DSNUTILB is upgraded to an indirect call through Recovery Expert. A new module is added which parses the output of DSNUTILB and stores the important information into DD ARYOUT for easy detection of the constraint violations. This module also raises the return code to an error if it identifies any constraint violations. This reduces the need for manual intervention, streamlining the process, and enabling the restart feature. For more information, see [CHECK DATA invoker](#).

**Related APAR:** PH55297

**Related PTF:** UI93785

## September, 2023

- Added support for the redirected recovery of COPY YES indexes using the IBM RECOVER utility. Indexes with COPY YES attribute and a valid image copy can be recovered using IBM RECOVER utility with an improved recovery time.

**Note:** The implicitly created indexes with COPY YES attribute are not affected by this enhancement.

**Related APAR:** PH55567

**Related PTF:** UI92693

- Db2 Recovery Expert for z/OS is updated for improved security. Users will require read access to RACF profiles for certain system-level operations. For more information, see [DFSMSdss requirements](#) section in the [Db2 Recovery Expert server, agent, and ISPF interface requirements](#) topic. Users will now receive pop-up notifications with ARC\* messages when the DFSMSHSM commands will be executed in the code.

**Related APAR:** PH56206

**Related PTF:** UI93337

## August, 2023

The following updates are made to Db2 Recovery Expert for z/OS:

- Recovery Health line command

A new Recovery health line command is added for the application profiles. Recovery health provides all entries of the time when the objects were unrecoverable along with the reason. This helps you to ensure if the recovery policies are met. For more information, see [“Recovery Health” on page 314](#).

**Related APAR:** PH45715

**Related PTF:** UI80691 + UI80692 + UI80693

- Recovery Suggestions line command

A new Recovery Suggestions line command is added for the application profiles. Recovery suggestions show recommendations to improve objects recoverability and recovery run-time. For more information, see [“Recovery Suggestions” on page 318](#).

**Related APAR:** PH45715

**Related PTF:** UI80691 + UI80692 + UI80693

New and changed messages:

- [ARYH001I](#)
- [ARYH002I](#)
- [ARYH003I](#)
- [ARYH004E](#)
- [ARYJ114E](#)
- [ARYJ115E](#)
- [ARYJ116E](#)
- [ARYJ117E](#)
- [ARYJ118E](#)
- [ARYJ119E](#)
- [ARYJ120E](#)
- [ARYJ150W](#)
- [ARYJ151E](#)

## July, 2023

The following updates are made to Db2 Recovery Expert for z/OS:

- The Universal migration script is updated to support automatic migration for the Recovery Expert's Db2 environment. As part of this upgrade, the following TCz options are removed:
  - Alter existing Recovery Expert objects for PH35502
  - Alter existing Recovery Expert objects for PH36620
  - Alter existing Recovery Expert objects for PH36390
  - Alter existing Recovery Expert objects for PH42007
  - Alter existing Recovery Expert objects for PH42694
  - Alter existing Recovery Expert objects for PH45715
  - Alter existing Recovery Expert objects for PH52036

Use the new migration script for all the hold actions which includes the above options. For more information, see [Db2 universal migration](#).

**Related APAR:** PH55356.

**Related PTF:** UI92584

- The limit of objects shown on the panel 'Explode Application Profile Display' is increased from 999 to 9999. A new option is added to show all the objects.

**Related APAR:** PH55355

**Related PTF:** UI92584

- A new message [ARYS923I](#) is added to show the number of tracks to be copied. You can use this to determine the frequency of backups.

**Related APAR:** PH55354

**Related PTF:** UI92584

## **June, 2023**

Db2 Recovery Expert for z/OS now enables you to recover Db2 objects at granular level using the LDRM utility. For more information, see [Recovering Db2 objects using LDRM](#).

New and changed messages:

- [ARYS711E](#)
- [ARYS913I](#)
- [ARYS914I](#)
- [ARYJC050I](#)
- [ARYJ150W](#)
- [ARYR110W](#)
- [ARYX195E](#)

## **February, 2023**

New and changed messages:

- [ARYJ001W](#)
- [ARYJ025E](#)
- [ARYJ088E](#)
- [ARYJ130W](#)
- [ARYJ131E](#)
- [ARYJ136E](#)
- [ARYJ137W](#)
- [ARYJ138E](#)
- [ARYJ139W](#)
- [ARYJ140E](#)
- [ARYJ141E](#)
- [ARYJ142E](#)
- [ARYJ143E](#)
- [ARYJ144E](#)
- [ARYJ145E](#)
- [ARYJ146E](#)
- [ARYJ147E](#)
- [ARYJ148E](#)
- [ARYJ300E](#)
- [ARYJ301E](#)
- [ARYJ302E](#)
- [ARYJ303E](#)
- [ARYJ304E](#)
- [ARYJ400E](#)
- [ARYJ401E](#)
- [ARYJ402E](#)



## December, 2022

The following updates were made to Db2 Recovery Expert for z/OS:

A new field **Check Archive Logs location** has been added to the **Update Disaster Recovery Profile** panel. Using this field you can check the Archive Logs location by invoking IDCAMS LISTCAT command for archive log data set.

New and changed messages:

- [ARYJ087I](#)
- [ARYJ149E](#)
- [ARYR546E](#)
- [ARYR547E](#)
- [ARYR755W](#)
- [ARYR785E](#)
- [ARYR787E](#)
- [ARYR788I](#)
- [ARYS005E](#)
- [ARYS073E](#)
- [ARYS911E](#)
- [ARYS915I](#)
- [ARYT061E](#)

## January, 2022

The following updates were made to Db2 Recovery Expert for z/OS:

- You can perform a redirected recovery by using the IBM RECOVER utility instead of, or in addition to, the Db2 Recovery Expert Change Accumulation feature. For details, see [Specifying redirected recovery options \(ISPF\)](#) or [Specifying redirected recovery options \(Recovery Advisor graphical user interface\)](#).

**Related PTFs:** UI70358 + UI70359

- Db2 Recovery Expert provides recovery monitoring information for recoveries, jobs, and objects. Recovery monitoring shows you which jobs have run, which have completed, and which have failed, during mass recovery of Db2 objects. For details, see [Recovery monitoring](#).

**Related PTFs:** UI73404 + UI73405 + UI73406 + UI73407

- You can now distribute recovered database objects across jobs/steps. See [Specifying recovery options \(ISPF\)](#) and [Specifying recovery plan options \(Recovery Advisor graphical user interface\)](#).

**Related PTFs:** UI70358 + UI70359

- As a DBA, you can now use templates for image copy and other data sets in utilities, so that you can comply with naming conventions and utilize disk and tape storage effectively. See [Registering Db2 subsystems](#) for more information.

**Related PTFs:** UI70358 + UI70359

## May, 2020

The following update is made to Db2 Recovery Expert for z/OS:

Db2 Recovery Expert for z/OS now supports multiple incremental backups, for the Db2 backup type only.

**Related Topic:** [“About incremental system backups \(simple and multiple\)” on page 269.](#)

**Related PTF:** UI69743

## April, 2020

The following updates were made to Db2 Recovery Expert for z/OS:

A new Disaster Recovery option, MODE(QUIESCE), has been added to the **Update Disaster Recovery Profile** panel. As a DBA, you may want the option to create a Quiesce point before active logs are archived, to capture a point of consistency in the current active log before an archive is taken.

**Related topic:** [Creating disaster recovery profiles](#)

**Related APAR:** PH20428

Improved data availability by creating image copies offline with features previously available in Db2 Change Accumulation Tool, now incorporated into Db2 Recovery Expert. This saves recovery time because you have more recent image copies derived from Change Accumulation. You can use offline resources to create image copies, so that the actual database, tablespace, or other database objects are unaffected and can be used online or in batch at the time of the image copy.

You can use the Change Accumulation features in Db2 Recovery Expert to create image copies of a given database, tablespace, or set of tablespaces. Db2 Recovery Expert reads the most recent image copy and adds any incremental image copies and Db2 log data.

**Related APAR:** PH20428

Db2 Recovery Expert now allows you to create a new output DD for Hierarchical Storage Management (HSM) messages. You can see all the HSM messages together, so that I can diagnose system level backup issues more quickly.

Having a separate HSMOUT, collecting them all in one place, instead of having to look for them among all the other messages that go into the ARYOUT DD, makes it easier to identify and solve backup problems.

**Related topic:** [“Reviewing output from a Db2 backup” on page 287.](#)

**Related APAR:** PH20428

## March, 2020

The following updates were made to Db2 Recovery Expert for z/OS:

A new parameter, ALIAS\_PROCESS\_METHOD, lets you use a faster alias processing algorithm, if only single-level aliases are used on the subsystem.

**Related APAR:** PH20778

The REINIT\_SPACE\_EFFICIENT parmlib parameter now causes the reinitialization of space efficient volumes after offload only; before this update, reinitialization would occur after backup.

**Related APAR:** PH20778

The Include RI related objects option, in object recovery plans, has a new value: Relations only. When you choose this option, Db2 Recovery Expert will create the relations but not include the related objects themselves in the recovery.

**Related APAR:** PH20778

New and changed messages:

- [“ARYJ083I” on page 808](#)
- [“ARYJ084I” on page 808](#)
- [“ARYJ085I” on page 809](#)
- [“ARYJ086I” on page 809](#)
- [“ARYJ087I” on page 809](#)
- [“ARYJ088I” on page 809](#)
- [“ARYJ089I” on page 809](#)
- [“ARYJ090I” on page 809](#)

- [“ARYJ091I” on page 809](#)
- [“ARYJ092I” on page 809](#)
- [“ARYJ093I” on page 810](#)
- [“ARYJ094I” on page 810](#)
- [“ARYJ095I” on page 810](#)
- [“ARYJ096I” on page 810](#)
- [“ARYJ135W” on page 813](#)
- [“ARYS884I” on page 939](#)
- [“ARYS885I” on page 939](#)
- [“ARYS886W” on page 939](#)
- [“ARYS887E” on page 940](#)
- [“ARYS888I” on page 940](#)

**Related APAR:** PH20778

## January, 2020

The following updates were made to Db2 Recovery Expert for z/OS:

- New DETAILS keyword for recovery plan JCL. When DETAILS is used, a recovery plan job will provide details on database objects that are recoverable, unrecoverable, and not eligible for recovery.

**Related APAR:** PH19007

New and changed messages:

- [“ARYB205E” on page 792](#)
- [“ARYB213E” on page 793](#)
- [“ARYB215E” on page 793](#)
- [“ARYB216E” on page 793](#)
- [“ARYB235E” on page 793](#)
- [“ARYB243I” on page 793](#)
- [“ARYB244I” on page 793](#)
- [“ARYB245I” on page 793](#)
- [“ARYB254I” on page 794](#)
- [“ARYB255I” on page 794](#)
- [“ARYB282I” on page 795](#)
- [“ARYB283I” on page 795](#)
- [“ARYB284W” on page 795](#)
- [“ARYB285E” on page 795](#)
- [“ARYB286I” on page 795](#)
- [“ARYB287I” on page 795](#)
- [“ARYB288W” on page 795](#)
- [“ARYB289I” on page 795](#)

**Related APAR:** PH19007

## November, 2019

**Update:**

- New standalone utility to showing the incremental status of system level backup profiles. See [Reporting the incremental status of a list of SLB profiles](#) for more information.
- New OFFLOAD-TO-VOLSERS control card. See [Adding keywords to the system backup offload job step](#) for more information.
- New processing option, TOCOPY for SHRLEVEL CHANGE copies. See [Selecting a history event for a recovery point](#) for more information.
- New message [ARYS854E](#)
- New message [ARYS878W](#)

**Related APAR:** [PH16834](#)

## September, 2019

### Update:

- Recovery Plan and JCL Generation in batch now available via ISPF
- LBDR Recovery now available in batch
- SQL grantees for GRANT statements may be specified in Tools Customizer
- Improved informational messages about recoverable and unrecoverable objects, replacing the ARYZ018E message
- Server can register in a system to allow other products to discover it and obtain the connection information
- Infrastructure changes in agent and server components

**Related APAR:** [PH17194](#)

## August, 2019

**Update:** Several fixes related to system operations, and some new error and information messages.

**Related APAR:** [PH14687](#)

## June, 2019

**Update:** Enhancements have been added to system level backup (SLB) and offload.

**Description:** If PARMLIB option WAIT\_FOR\_BACKGROUND\_COPY is set to Y, **FASTREPLICATIONSTATE** is also checked, and error messages are produced if **RECOVERABLE** status is not achieved. Additional monitoring of the offload process may be enabled with a new PARMLIB option WAIT\_FOR\_OFFLOAD: if it is set to Y, DUMPSTATE of the cpool is repeatedly checked, and the offload step finishes successfully only if **ALLCOMPLETE** is achieved.

**Related APAR:** [PH13181](#).

**Update:** The ISPF client is more task-oriented and more consistent with the Web client.

**Description:** All LBDR and transaction recovery operations are available from the new "Ad-hoc Operations" added to the main menu. It is no longer necessary to create a profile to perform LBDR or Transaction recovery.

**Related APAR:** [PH12477](#).

**Update:** The internal format of application profiles is changed, and migration of existing profiles is required.

**Description:** After applying the PTF, users need to enable **Migration option** in TCz and run the generated JCL for each subsystem in which the environment for Recovery Expert exists, in order to migrate the profiles, using template **ARYPRMIG**. To undo migration, users need to manually modify generated jobs and change job parameters: PARM= ' SSID ,MIGRATE ' should become PARM= ' SSID ,REVERT ' . After modification, submit the edited jobs.

**Related APAR:** [PH12477](#).

**Update:** Fast Replication copies are deprecated and removed from the ISPF client.

**Related APAR:** [PH12480](#).

**Update:** Allow Redirected Recovery of Dropped Objects. See [Performing redirected recovery](#).

**Description:** Redirected Recovery is allowed for LBDR profiles. With this enhancement, Redirected Recovery of dropped, or altered objects, is allowed if source and target SSIDs are equal and log apply is not disabled.

**Related APAR:** [PH11064](#)

**Update:** ARY optional indexes are not required and should not be created. See [Preparing to customize Db2 Recovery Expert and Customizing Db2 Recovery Expert](#).

**Description:** ARY provides a template job which creates optional catalog indexes. These indexes are not required anymore as Db2 creates corresponding indexes automatically. See [Worksheets: Gathering parameter values for Db2 Recovery Expert](#).

**Related APAR:** None.

**Update:** New options for copy - scope parameter. See [Specifying recovery options for application profile batch job](#)

**Description:** Available options are now **N** (do not create image copies after recovery), **T** (copy tablespaces only), and **I** (copy tablespaces and indexes).

**Related APAR:** None.

**Update:** User Guide has been updated with additional detail about the syntax for the application profile in the ARYIN DD statement. Procedures and functions have different syntax from the other object types. In addition, the TP object type has been added. See [Building standard application profiles in batch](#).

**Related APAR:** [PH11064](#)

**Update:** Db2 Recovery Expert now uses work files instead of 64-bit memory, so it is not limited to 500 archive logs. See [Specifying recovery options](#).

**Related APAR:** [PI88704](#).

**Update:** Runtime statistics for dropped objects may be restored during the LBDR recovery. See [Specifying recovery options](#).

**Related APAR:** [PI88704](#)

**Update:** User Guide has been updated to explain that **Remember Password** does not work with multifactor authentication. See [Using passwords to authenticate ISPF users](#).

**Related APAR:** None.

## November, 2018

- Accelerated tables will be automatically reloaded into IDAA after a recovery action.
- MQT are now supported for Redirected Recovery.
- Added an option to allow the use of member ids in profile names, configurable from the TCz panels.
- Restriction removed from Redirected Recovery.
- Updated messages.

## October, 2018

- Added recovery utility for reorganizing VSAM repository files (ARYRORG1 and ARYRORG2).
- Added recovery utility for listing available SLB backups at disaster recovery site (ARY#RPTD).
- Added a new option to detect unrecoverable resources during plan generation.

- Added restrictions to Redirected Recovery.
- Updated messages.

## August 24, 2018

- Added ability to monitor recovery jobs and recovered objects.
- Added new requirements for Redirected Recovery and Advanced Recovery.
- Added support for new batch utility plans.
- Clarified a misleading HFS installation path requirement.

## August 3, 2018

- Added topics that describes Db2 migration and product migration through TCz.
- Added administrative commands available on the Db2 Recovery Expert agent.
- Added Override PARMLIB option and a topic discussing the Override PARMLIB Options panel.
- Assorted updates to Redirected Recovery.
- Updated parameters list.
- Updated messages.

## July 2018

The following updates were made to Db2 Recovery Expert for z/OS:

- Added a topic that describes performing redirected recovery at an overview level.
- Updated messages.

## June 2018

- Added a topic that describes how to login to a database from the ISPF interface using either a password (up to 8 characters) or a password phrase (up to 128 characters).
- Added a Multicast options that allows users to disable multicasting on the server.
- Added and updated server and agent messages.

## May 2018

- Added a recovery option that enables users to add SYSAFF to a recovery job card. Including SYSAFF on the job card ensures that the job runs on the same system (LPAR) as the target Db2 system to which the objects will be recovered.
- Added the **Notify if Data Capture Changes enabled** redirected recovery option. This option specifies whether a warning message is issued if Data Capture Changes is enabled on the table that is being recovered.
- Added Trigger objects to the list of object types that can be selected for redirected recovery.
- Added an option to log based recovery that enables users to selected all dropped objects for recovery with one click. When selected, all dropped objects of every type are included in the profile for recovery.
- Added a redirected recovery option that allows users to choose whether the generated job JCL includes detailed comments describing the function of each step.
- Added a recovery option that allows users to choose whether to generate recovery plans for all objects in a profile even if some objects in profile.
- Added support for **Log Read and Log Apply options** and **Redirected Recovery options** that can be used for Advanced Recovery and Redirected Recovery plans.
- Added the **Use Db2 System Catalog only** recovery option specifies that any information about recovered objects stored in RBR repositories should be ignored.

- Added support to allow workfiles to be used for Undo/Redo SQL plans instead of the 64 bit storage. This helps to overcome a restriction on the amount of scanned log activity.
- Added support for single character wildcards and arbitrary string wildcards options that can be used to define redirected recovery source and target names.
- Added support for XML redirected recovery options.

The web browser section of the documentation was updated to include a topic on the benefits of clearing your web browser's cache after applying maintenance and before opening the Db2 Recovery Expert web browser interface.

## Db2 12 function level support

When you activate new Db2 12 function levels in a Db2 subsystem or data sharing group, enhancements might become available that impact Db2 Recovery Expert.

The levels of function level support are defined as follows:

### Tolerated

The product works as it did on a previous release or function level of Db2 for z/OS, but it does not support the new features of this function level.

### Supported

The product supports most, but not necessarily all, of the new function-level features that IBM deems the most significant for this product.

The following function levels are tolerated or supported by Db2 Recovery Expert and are provided with the corresponding PTF, if any. For more information on Db2 features at each function level, select the link in the **Db2 12 function level** column.

Db2 12 function level	Toleration PTF	Support PTF
<a href="#">FL510</a>	UI79233	UI79233
<a href="#">FL509</a>	UI74332	UI75472 + UI75473 + UI75474
<a href="#">FL508</a>	UI72101	UI73404 + UI73405 + UI73406 + UI73407. See <a href="#">Using moved tables</a> for current limitations.
<a href="#">FL507</a>	UI70358 + UI70359	UI72300
<a href="#">FL506</a>	UI67379 + UI67380 + UI67381	UI72300
<a href="#">FL505</a>	UI65469 + UI65470	UI72300
<a href="#">FL504</a>	UI62596 + UI62597 + UI62598	UI72300
<a href="#">FL503</a>	UI38334 + UI38336	UI72300
<a href="#">FL502</a>	UI38334 + UI38336	UI72300
<a href="#">FL501</a>	UI38334 + UI38336	UI72300
<a href="#">FL500</a>	UI38334 + UI38336	UI72300

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The following function levels are tolerated or supported by Db2 Recovery Expert and are provided with the corresponding PTF, if any. For more information on Db2 features at each function level, select the link in the **Db2 13 function level** column.

*Table 2. Db2 Recovery Expert PTFs in support of Db2 13 function levels*

<b>Db2 13 function level</b>	<b>Toleration PTF</b>	<b>Support PTF</b>
<a href="#">FL505</a>	UI97200	UI97200
<a href="#">FL504</a>	UI94436	UI95232 + UI95233
<a href="#">FL503</a>	UI90944	UI90944
<a href="#">FL502</a>	UI83405	UI83405
<a href="#">FL501</a>	UI80691 + UI80692 + UI80693	UI80691 + UI80692 + UI80693
<a href="#">FL500</a>	UI80691 + UI80692 + UI80693	UI80691 + UI80692 + UI80693
<a href="#">FL100</a>	UI92376	UI92376

## What does Db2 Recovery Expert do?

Db2 Recovery Expert helps you avoid accidental data loss or corruption by providing the fastest, least costly method of backup and recovery.

Db2 Recovery Expert provides a fast and easy-to-use implementation of a Db2 system backup and recovery methodology. It reduces backup windows by leveraging storage-based fast-replication such that backups of multi-terabyte databases can be performed in seconds or less. It simplifies backup and recovery methodologies by allowing full-system, application, and object-level recoveries to be performed from a common system backup.

Consistent backups can be created using "full" or "data-only" system level backup options. It provides Db2 system backup and recovery support even for complex applications, where all of the application's data must be backed up, restored, and recovered as a unit. System backups can be taken while the Db2 system remains active. In addition, when creating system level backups, Db2 Recovery Expert invokes storage-based fast-replication facilities through appropriate storage processor APIs, reducing host CPU and I/O resource utilization and enabling legacy data copy methods to be used while the Db2 system is down.

Db2 Recovery Expert has integrated, intelligent recovery and disaster recovery managers that analyze recovery assets and establish optimal recovery procedures to minimize recovery time and recovery point objectives. Recovery jobs are tailored specifically to available backup and hardware resources.

- The Intelligent Recovery Manager supplies the ability to perform local recoveries efficiently using all available recovery resources. Restore operations that invoke fast-replication facilities through appropriate storage processor APIs and parallel recovery can significantly reduce recovery time and complexity.
- The Intelligent Disaster Recovery Manager uses local site procedures to prepare for offsite disaster recovery or disaster restart in advance. The information that is acquired allows Intelligent Disaster Recovery Manager to intelligently perform remote site restoration operations and appropriate recovery or restart procedures.



## Backup and recovery solutions

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IBM solutions help IT organizations maximize their investment in Db2 databases while staying on top of some of today's toughest IT challenges. Backup and recovery solutions can protect your data and lessen the negative impact that data loss can have on your business.

Backup and recovery is one of the most complicated areas of database management. Having the right resources to do a recovery is critical, and unfortunately in many cases, is not addressed until after data is already lost.

Database backup and recovery solutions include recovering from a dropped object to bouncing back from a major disaster, and everything in between. Recoveries that are done manually can be error prone, time consuming, and resource intensive.

Some of the questions you might face as a database administrator who is responsible for backup and recovery tasks include:

- Can a transaction be reversed or does the entire database have to be recovered?
- How can you determine which objects have been impacted?
- Do you have the necessary resources to recover to a point in time?
- Are you prepared for a disaster?
- Can you recover your subsystem?
- How much data are you willing to lose?

Db2 Tools for z/OS products support and exploit the most current versions of Db2, optimizing the performance and management of Db2.

Db2 Recovery Expert for z/OS, one of several important Db2 Tools for z/OS, is a storage-aware backup and recovery solution that integrates storage processor fast-replication facilities with Db2 backup and recovery operations to allow instantaneous backups, reducing recovery time, and simplifying disaster recovery procedures while using less CPU, I/O, and storage resources. This product provides an intelligent analysis of altered, incorrect, or missing database assets, including table spaces, tables, indexes, and data. It automates the process of rebuilding these assets to a specified point in time, often without taking the database or the business operations offline.

Other Db2 Tools for z/OS that can assist with database backup and recovery include:

- Db2 Log Analysis Tool for z/OS
- Db2 Change Accumulation Tool for z/OS
- Db2 Archive Log Accelerator for z/OS
- Db2 Automation Tool
- IBM Application Recovery Tool for IMS and Db2

## Db2 Recovery Expert features and benefits

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Db2 Recovery Expert offers several unique and significant features that you can use to significantly improve your Db2 backup and recovery methodology.

Db2 Recovery Expert features include:

### **Db2 system backup and recovery**

Db2 Recovery Expert provides the ability to backup an entire Db2 system (full image or data only) or a partial Db2 system at the volume level through the use of system backup profiles.

These profiles designate the Db2 system, the user options and the resources that will be used to perform the backup. When executed, Db2 Recovery Expert will validate that all Db2 data is included in the backup by performing dynamic discovery of all the data sets and their associated volumes. This will ensure that the entire Db2 system is backed up.

The system backup can be taken while the Db2 system is active by using fast-replication storage devices, or while the Db2 system is down using DFSMSdss or FDR to copy each Db2 volume. Db2 Recovery Expert also provides the ability to "offload" or copy the system backup to tape.

A system backup can be used at the local site to restore an entire Db2 system, or at the remote site to restore the Db2 system for disaster recovery purposes. In addition, Db2 Recovery Expert can restore individual Db2 objects from a system backup.

### **Db2 system backup configuration and management**

Db2 Recovery Expert includes a System Setup feature that can be used to discover a Db2 system and recommend layout and configuration changes so that the Db2 system can be set up appropriately to accommodate a system backup and recovery methodology.

### **Backup validation**

Db2 Recovery Expert provides extensive backup validation to ensure that the system backup contains all Db2 files and catalog structures required for a successful recovery.

### **Tape offload support**

Db2 Recovery Expert provides tape offload support to automate copying a system backup or partial system backup from disk to tape. Backups created on disk can be copied to tape using DFSMSdss or FDR so the backup disk volume pool can be reused. Db2 Recovery Expert allows you to encrypt the data when offloading to tape or disk. Data encryption can be specified for either DFSMSdss or FDR offloads.

Db2 Recovery Expert provides a report of backups and offloaded tapes for offsite support. A subsequent Db2 system restore operation will restore the backup from disk or tape depending on system backup availability and recovery scope. Db2 Recovery Expert will use the most appropriate backup for application-level recovery and will restore the databases from disk, tape, or a previous image copy depending on which backup provides the most expedient recovery process.

### **Object level recovery**

Db2 Recovery Expert object level recovery enables users to recover individual Db2 objects or groups of related objects from a system backup or from image copies.

Users create application profiles that contain the information that is used to recover a Db2 subsystem's objects to a desired point in time. When recovery is necessary, Db2 Recovery Expert analyzes all the available backup resources to generate the most appropriate recovery JCL to recover all the objects in the profile. Db2 Recovery Expert can also invoke additional recovery utilities after restoring the databases to bring them to a more current point-in-time.

In addition, object-level recovery leverages storage-based data set fast-replication facilities. The use of storage-based data set fast-replication allows object recovery to be performed in parallel to the database restore process, thus significantly reducing the overall recovery time. Object or database recoveries that traditionally have taken many hours can be performed in minutes or seconds using Db2 Recovery Expert.

### **Tape-based disaster restart**

Db2 Recovery Expert provides disaster recovery support by transforming traditional Db2 disaster recovery procedures into a tape-based disaster restart methodology.

System backups can be tagged for offsite transport to a disaster recovery site during the offload process. The tape-based disaster restart methodology loads the system backup tapes and restarts Db2 at the disaster recovery site. The Db2 restart process transforms the system backup into a transactionally consistent Db2 system that is ready to accept work.

Using Db2 Recovery Expert to implement an Db2 tape-based disaster restart methodology simplifies disaster recovery procedures and reduces recovery time objectives.

### **Automation and management of disaster recovery**

Using Db2 Recovery Expert to automate and manage traditional disaster recovery processes simplifies disaster recovery procedures, reduces recovery time, and makes the recovery process less error-prone. Users create disaster recovery profiles which contain the recovery assets that will be sent to the recovery site. These assets can include system backups, archive logs, and image copies. The Db2

Recovery Expert Intelligent Disaster Recovery Manager runs at some set interval at the local site, performing the following functions:

- Analyzes, prepares, and identifies any new assets to be sent to the recovery site.
- Copies and then conditions Db2 recovery data sets (RECONS) with the recovery assets to be used at the remote site.
- Creates JCL that can be executed at the disaster recovery site to recover the Db2 system.
- Produces a detailed report showing all tapes that need to be transported to the disaster recovery site.

The user simply has to submit the predefined jobs that were created at the local site by the Intelligent Disaster Recovery Manager to perform the actual recovery of the Db2 system at the remote site.

### **System restore interface**

Db2 Recovery Expert provides an ISPF interface to display all the system backups that have been performed. Db2 systems can be restored by selecting a system backup and specifying restore and recovery options. Db2 Recovery Expert will then build JCL that can be executed to restore and recover the entire Db2 system from the system backup and other recovery resources created since the system backup.

### **Copy blades**

Db2 Recovery Expert copy blades provide storage processor integration and extensibility to support heterogeneous storage platforms and fast-replication features. Db2 Recovery Expert supports IBM, EMC and HDS storage systems and fast-replication facilities using integrated copy blades. Db2 Recovery Expert copy blades include:

- IBM FlashCopy® copy blade which provides support for IBM native FlashCopy®.
- EMC TimeFinder copy blade which provides support for TimeFinder/Mirror, TimeFinder/Clone, TimeFinder/Snap Virtual Device.
- HDS ShadowImage copy blade which provides HDS ShadowImage support.
- DFSMSdss copy blade which allows backups to be performed using DFSMSdss. DFSMSdss can optionally be used to invoke FlashCopy or SnapShot fast-replication methods.

### **Metadata repository**

Db2 Recovery Expert provides a comprehensive metadata repository to record backup information such as backup time, backup type, log byte addresses, and volumes used for the backup. Reports can be generated to monitor information such as backup methods and operations, storage volume usage, system backup volume usage, and archived backups.

### **Multi-purpose system level backup**

Db2 Recovery Expert generated system level backups can be used for multiple purposes saving storage and processing resources. A system level backup can be used for Db2 system recovery, application recovery, object recovery, and for disaster restart or recovery. With this ability, significant CPU, I/O, and storage resources that would otherwise be required to make multiple backups for different purposes are saved.

### **Db2 recovery performed efficiently**

Db2 Recovery Expert reduces recovery time by running restore and recovery operations in parallel. Storage-based fast-replication facilities are used to restore backups quickly while invoking Db2 recovery processes in parallel to reduce overall recovery time and minimize subsystem and application down time.

Db2 systems are restored using volume-based fast-replication, and Db2 applications and objects are restored using data set-based fast-replication facilities.

### **Reduced recovery time: Change accumulation for creating image copies**

You can use Db2 Recovery Expert to create image copies of a database or tablespace, or a set of tablespaces.

As a DBA, you may want to use offline resources to create image copies, so that the actual database, tablespace, or other database objects are unaffected and can be used online or in batch at the time of the image copy.

Db2 Recovery Expert reads the most recent image copy, then adds any incremental image copies and Db2 log data. This process uses offline resources – so the actual database or tablespace is unaffected and can be allocated to online or batch applications at the time of the image copy.

## Important components of Db2 Recovery Expert

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Db2 Recovery Expert includes several components such as a server, an agent, repositories, an ISPF interface, a web interface, and batch processing.

The key components of Db2 Recovery Expert include:

### **ISPF interface**

Db2 Recovery Expert provides an easy-to-use ISPF interface to manage all of its main functions. Through the ISPF interface users can easily create system backup, object, and disaster recovery profiles that contain all the information necessary to run backup, restore, and disaster recovery jobs.

### **Web interface**

This is a browser based interface that makes it easy to visualize process of creating and running a recovery plan. It lets you choose the objects you want to recover, the point in time and method of recovery, generate recovery plans, compare their processing costs, select a plan, and run it, using an intuitive workflow much like a wizard.

### **Batch interface**

You can save time, when performing a number of features of Db2 Recovery Expert, by using batch processing, instead of using ISPF or the Web interface. You can submit batch JCL generated by the ISPF interface (which you can save and edit yourself), or you can write your own JCL and submit it as you would with any other batch job. There's also a sample JCL recovery batch job you can tailor to your site. Running recovery jobs in batch mode can save your time interacting with the system, and it can improve system performance, when you have a massive recovery or otherwise have a large number of jobs to run. For more information, see [Building recovery plan batch jobs in ISPF](#) and [Building recovery plan batch jobs by editing JCL sample](#).

### **Server**

The Db2 Recovery Expert server centrally manages and controls all Db2 Recovery Expert functions that are performed on behalf of user requests. You must run at least one instance of the server to manage all of your Db2 subsystems and data sharing groups and to support all of your Db2 Recovery Expert user clients. Using TCP/IP connections, the server, clients, and agents communicate with each other to perform the recovery functions. The server supports dropped objects.

### **Agent**

The agent provides access to database and system services, in support of the server and remote clients. You must run one instance of the agent on every system or logical partition (LPAR) that hosts Db2 subsystems or data sharing groups that you want to access with Db2 Recovery Expert. Each agent communicates with the Db2 for z/OS server to provide services.

### **Schema level repository**

Db2 Recovery Expert offers the option of capturing Db2 system catalog information and storing it in a set of Db2 tables referred to as the schema level repository (SLR). The SLR is an archive to hold object definitions and alterations to object definitions. The SLR can be created using the Tools Customizer.

The initial population of the SLR may take several hours to copy the contents of the Db2 system catalog. Run times vary depending on the Db2 system catalog size. You must run the schema level repository update job at least daily. If important application object definition updates are performed, then run the schema level repository update after the object definition updates

This image depicts the Db2 Recovery Expert client/server environment and the way in which the server, agents, and clients interact.

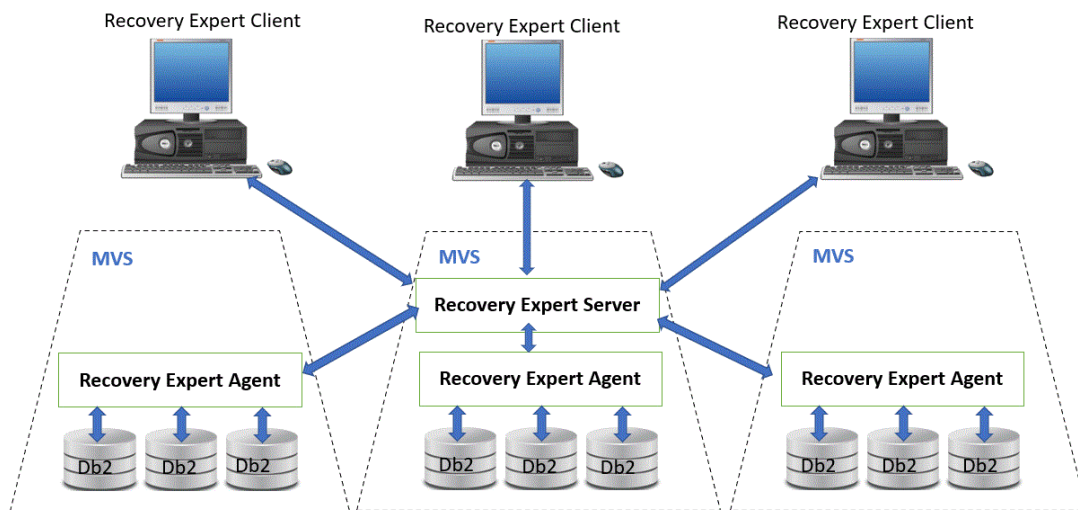


Figure 1. The main components of Db2 Recovery Expert

The Db2 Recovery Expert ISPF interface includes:

### **Db2 Recovery Expert ISPF interface VSAM repository**

The Db2 Recovery Expert ISPF uses a set of VSAM files to store information related to system-level backups and Db2 subsystem definitions. This repository can optionally be automatically backed up any time that a system-level backup is created by Db2 Recovery Expert.

**Note:** This repository is used for the Db2 Recovery Expert ISPF interface only.

## **Db2 Recovery Expert product definitions**

To help you navigate through the Db2 Recovery Expert interfaces, this section provides definitions of the main features. Db2 Recovery Expert includes a web and an ISPF interface. Depending on your installation, you may use one or both of these interfaces.

### **Web interface definitions**

The following features are accessible through the web interface:

#### **Recovery Advisor**

Use the Recovery Advisor to recover data or dropped objects in your operational database system. This feature allows you to select objects or groups of objects to recover and review and edit recovery plans before running the JCL. After running the recovery, you can review the results and restart any failed jobs.

#### **Log Based Recovery Advisor**

Use the Log Based Recovery Advisor to recover dropped objects without an up-to-date schema-level repository (SLR). The Log Based Recovery Advisor uses the Db2 log files.

#### **Transaction Recovery Advisor**

Use the Transaction Recovery Advisor to undo a specific transaction or set of transactions in a transactionally consistent manner and recover any objects that may have been impacted.

#### **Log Analysis Advisor**

Use the Log Analysis Advisor to help you analyze database log files to determine points of consistency (quiet times or periods of inactivity) for objects or sets of objects.

#### **System Restore Advisor**

Use the System Restore Advisor to restore a subsystem that has been backed up by Db2 Recovery Expert. With this feature, you can restore an entire Db2 system to a prior point in time. If both data and logs were backed up, you have the option to restore data and logs or only data. In addition, if the backup was configured for data only, you can only restore the data.

**Note:** The System Restore Advisor can only be used to restore a Db2 system from a system-level backup taken from within the product.

### **Specifications Advisor**

Use the Specifications Advisor to work with previously saved recovery, log analysis, and system restore specifications. You can save your work while in another advisor and return to that configuration using the Specifications Advisor. This feature improves your efficiency and reduces the amount of rework that you must do.

## **Db2 Recovery Expert ISPF definitions**

From the main panel of the Db2 Recovery Expert ISPF interface you can access the following features.

### **System Backup Profiles**

From this panel, you can define backup profiles to specify the type of backup (Db2, BCV, FlashCopy, Snap, or DFSMSdss), the source volumes to be backed up for a subsystem, and their associated target units. Backup profiles contain information that is used to backup a Db2 subsystem. In addition, backup profiles set other options such as the backup type (full or data only), the number of backup generations to keep, options for offloading backups, and enabling object restore. Backup profiles are reusable and editable.

### **System Restore and Offload**

From this panel, you can perform system restores and backup offloads. A system can be restored to a particular recovery point from a backup made by Db2 Recovery Expert. You can run a health check report to determine if objects may be unrecoverable after a system restore is performed, before you actually run the system restore. If object restore was enabled for a backup, you can make image copies of selected objects from a system backup. You can also offload selected backups to tape or disk.

### **Application Profiles**

From this panel, you can build jobs to recover a Db2 system's objects to a desired point in time. You can create application profiles that will recover objects using the schema level repository (SLR) or Db2 logs. You can also create a transaction application profile that can be used to recover objects that were changed by a transaction. You can include in an application profile individual objects or groups of objects that can be recovered singularly or collectively. You can build a recovery job from an application profile, and have Db2 Recovery Expert take into consideration all the recovery resources (each backup that you have created) and choose the best object recovery resource available, based on the desired point in time to which you want to restore the objects, and the options that you have specified.

### **Disaster Recovery Profiles**

In case of a disaster that renders a Db2 subsystem unusable, you can restore the subsystem at a remote site if you have implemented the disaster recovery feature of Db2 Recovery Expert.

### **Db2 Subsystem Analysis and Configuration**

From this panel, you can analyze Db2 subsystems to ensure proper configuration for backups. It provides information about the z/OS user catalogs, aliases, boot strap data sets, and active logs data sets. It also provides detailed information about the volumes and the data sets in use by a subsystem. If your subsystem is not correctly configured, you can use the **Db2 Subsystem Analysis and Configuration** panel to create z/OS user catalogs and aliases, rename or move boot strap data sets, log data sets, and/or Db2 object data sets to the proper locations.

### **Coordinated Application Profiles**

From this panel you can build jobs that can be used to recover the Db2 objects and IMS databases that are used in an application to the same consistent point in time.

## Determining which interface to use

Db2 Recovery Expert provides a browser-based web interface and an ISPF interface. You can perform all Db2 Recovery Expert functions using the ISPF interface. You can perform many of the recovery functions using the web interface.

The following comparison table lists the functions that can be performed using the web interface and the functions that can be performed using the ISPF interface.

*Table 3. Comparison of functions by interface*

Function	Option	WEB	ISPF
Object recovery	To current	Y	Y
	To LRSN/RBA or Quiesce point	Y	Y
	To Copy (last full, last incremental, specific copy)	Y	Y
	To prior version with DDL	Y	Y
Database/table space object recovery	To current	Y	Y
	To LRSN/RBA or Quiesce point	Y	Y
	To Copy (last full, last incremental, specific copy)	Y	Y
	To prior version with DDL	Y	Y
	From Db2 Recovery Expert created system-level backup	Y <sup>a</sup>	Y <sup>a</sup>
Dropped object recovery	To current	Y	Y
	To LRSN/RBA or Quiesce point	Y	Y
	To Copy (last full, last incremental, specific copy)	Y	Y
	To prior version with DDL	Y	Y
	From Db2 Recovery Expert created system-level backup	Y <sup>a</sup>	Y <sup>a</sup>
Recover groups of objects	Based on referential integrity groups	Y	Y
	Based on Db2 Automation Tool profiles	Y	Y
	Based on Db2 Recovery Expert application recovery profiles	N	Y
Transaction Recovery	Undo a transaction and the operations that were performed on the object.	Y	Y
Redirected Recovery	Recover an object to a target Db2 subsystem that is different from the object's original source Db2 subsystem.	Y	Y
Mass Application Recovery	Prioritize the recovery of objects that are included in application profiles.	N	Y
Recover entire Db2 subsystem	From Db2 Recovery Expert created system-level backup	Y <sup>b</sup>	Y <sup>b</sup>
	- From Db2 created system-level backup	Y <sup>c</sup>	N

Table 3. Comparison of functions by interface (continued)

Function	Option	WEB	ISPF
	- Automatically recover/rebuild objects in RECP/RBDP after restore	N	Y
Combined System Level Backup	Create, with a single process, a backup that includes one or more Db2 and IMS subsystems.	N	Y
Db2 Log Analysis	Identify quiet points in the Db2 log which can be used as recovery points	Y	Y
Subsystem Setup Utility	Assist with preparing a Db2 subsystem for using the Db2 BACKUP SYSTEM utility	N	Y
Manage Db2 disaster recovery	Create JCL for jobs necessary to recover a Db2 subsystem at a remote location.	N	Y
Create system-level backups	Generate JCL needed to create Db2 Recovery Expert managed system-level backups	N	Y
System Backup Health Check	Assess the relative health of a system backup based on not logged events occurring after the system backup	N	Y
Create Image Copies from a system-level backup	Create JCL to create image copies for an object or a set of objects and register them in SYSCOPY	N	Y

**Note:**

**a**

Object recovery must be enabled in the system backup profile. Set **Enable Obj Restore** to **Y** in the **Update Backup Profile** ISPF panel.

**b**

Db2 Recovery Expert parameter IPC IPC\_RBR must be set to Y.

## Db2 Recovery Expert scenarios

The Db2 for z/OS environment can experience different kinds of failures such as application errors, Db2 subsystem failures, Internal Resource Lock Manager (IRLM) failures, disk failures, z/OS failures, power failures, site failures, and so on. When these failures occur, appropriate recovery procedures must be executed. This is where Db2 Recovery Expert can help address your day-to-day data management problems.

When your Db2 system or application experiences failures, appropriate recovery procedures must be executed swiftly and precisely to ensure minimal loss of data and minimal loss of system availability. The following scenarios illustrate how you can use Db2 Recovery Expert to quickly recover from unforeseen failures:

### Recovering data to a specific point in time (PIT)

Db2 Recovery Expert makes recovery to a specific point in time (PIT) easy to implement. Recovery options can include rolling changes forward or backward, whichever is the most efficient in a given situation. Not only does the tool provide options for recovery scenarios, it also makes recommendations as to which option is relatively the least expensive in any given situation. This functionality saves you time and money by helping you make better decisions.

### Recovery Scope

Db2 Recovery Expert supplies options to recover a complete Db2 subsystem to some point in time as well as a selected set of objects to a point in time. A DBA can create in advance the jobs that



will be used at recover time. This decreases analysis time, application unavailability time, and time spent fixing errors.

When generating recovery plans, Db2 Recovery Expert will automatically include all Db2 enforced Referential Integrity (RI) objects. Application RI can be supplied to Db2 Recovery Expert via application profiles when creating recovery plans.

### **SQL based recovery**

Db2 Recovery Expert will incorporate Undo/Redo SQL into recovery plans. In some recovery scenarios, such as backing out a single bad transaction that has incorrectly updated an application, a DBA can quickly identify and surgically extract the Undo/Redo SQL that can be used as a recovery option leaving the tables available for others to access during the SQL based recovery.

### **Schema versioning feature**

A DBA performs schema/table changes to support application development in both development and production environments. On occasion these schema/table changes are incorrect or need to be altered or changed. Backing out the schema changes to the pre-change schema version is time consuming, a manual process and prone to error. Each time a change is backed out the DBA needs to develop a strategy, create all the JCL to support the change and execute a manual job flow to back out the schema changes in each of the multiple non-production environments.

Db2 Recovery Expert has a versioning feature that allows a DBA to maintain multiple versions of their Db2 objects. With this feature a DBA can go back to a prior version of the object should the need arise. Db2 Recovery Expert will generate plans and automatically create all steps needed to back out these type of changes. The Db2 Recovery Expert versioning feature drastically reduces the time a DBA spends performing this recovery by decreasing analysis time and by creating accurate and efficient JCL to be used to back out the changes.

### **Recovering accidentally dropped objects**

Db2 Recovery Expert also supports the recovery of accidentally dropped objects in the Db2 for z/OS environment. The Db2 Recovery Expert tool provides an easy-to-use, automated recovery solution that enables database recovery operations with minimal disruption and enables you to maintain high availability for database users.

### **Performing recoveries at a remote location**

Db2 Recovery Expert includes support for recovering objects or entire subsystems at a remote location. You can perform recoveries at a remote site using either traditional Db2 image copies or the equivalent of a system-level backup created by Db2 Recovery Expert.

### **Using IBM Db2 Automation Tool profiles**

Db2 Recovery Expert takes advantage of profiles that are developed with the IBM Db2 Automation Tool to recover a set of objects. You can use Db2 Recovery Expert to generate the Job Control Language (JCL) to execute each backup of the objects in the profile and you can perform the backup on a predetermined schedule without having to re-generate the JCL. Extensive validity checking makes the backup and restore more thorough and less error-prone and is performed before each backup to ensure a complete and accurate backup.

## **Db2 Recovery Expert validation**

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Db2 Recovery Expert has the ability to perform several validation and configuration checks to help ensure a successful recovery before the recovery process is needed.

### **Subsystem analysis & configuration**

In order for Db2 Recovery Expert to provide the fastest and most effective backups that can be used to recover a Db2 subsystem, that subsystem must be configured according to specific guidelines. Db2 Recovery Expert includes a feature that enables a DBA to verify the proper configuration of a Db2 subsystem. This feature will flag non-optimal configurations and supply warning messages, providing a DBA the ability to correct any non-optimal configurations prior to recovery.

## System level backup validation

Db2 Recovery Expert enables a DBA to correct any errors that might occur during recovery at the time a backup is taken. A new or recently modified system level backup (SLB) can be run using the SETUP option. When run in setup mode, Db2 Recovery Expert will not perform the backup but will validate Db2 source and target volumes to be sure the proper mapping has been completed. Any error can be corrected so that when the system level backup is taken and the same validation occurs there will be no problems. In addition, when the system level backup is taken, Db2 Recovery Expert will report any objects that are in a restricted state and might negatively impact the success of the restore. By discovering these errors at backup time, a DBA can make corrections prior to a recovery scenario.

## Health check report

The Db2 Recovery Expert health check feature supplies a DBA with the ability to check the recovery health of a Db2 system using a system level backup as a starting point. After a system level backup is taken, various activities can take place that would cause an object to be in a non-recoverable state. By running a health check report, Db2 Recovery Expert will flag non recoverable objects. If a log no event occurred on an object and an image copy was performed after the log no event, Db2 Recovery Expert will flag the log no event object and show the supporting image copy.

## Recovery plan validation

After a recovery plan(s) is generated by Db2 Recovery Expert a validate function can take place prior to executing the recovery plan. The validation function will check to see if all recovery assets are available for the recovery to be successful.

## User ID authorities required for installation

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This information describes the Db2 Recovery Expert user ID authority required for installation.

Db2 Recovery Expert can only be installed using a TSO user ID that has SYSADM authority. If your site does not have a TSO user ID with that authority and does not allow one to be created, there are other ways for you to install Db2 Recovery Expert:

- If the Db2 installation zparm DBACRVW (DBADM CREATE VIEW) setting is set to YES then Db2 Recovery Expert can be installed with a user ID that has SYSCTRL authority.
- If the DBACRVW (DBADM CREATE VIEW) setting is set to NO, then the installation user ID must have SYSADM authority to install Db2 Recovery Expert.
  - A user ID has SYSADM authority if they are running as the SYSADM user ID.
  - A user ID can use Db2 secondary authorization IDs. For more information about Db2 secondary authorization IDs, see the *Db2 Administration Guide*.

Additional user ID authorities required for installation are:

- Server user ID — Requires SYSCTRL as the primary auth ID.
- Agent user ID — Requires SYSCTRL as the primary auth ID.

## Hardware and software requirements

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These are the hardware and software requirements for the various components of Db2 Recovery Expert.

### Db2 Recovery Expert server, agent, and ISPF interface requirements

These are the requirements for the Db2 Recovery Expert server and agent components and for the ISPF interface.

#### Hardware requirements

- Any hardware environment supported by the required software.

#### Software requirements

- z/OS Version 2 Release 2 or higher
- The Db2 Recovery Expert z/OS components must be executed on an operating system version that is equal to the operating system version the product SMP/E install was performed on.
- Db2 Recovery Expert supports Db2 versions 11, and 12 in either data-sharing or non-data sharing modes of operation.
- Utilities that are used by Db2 Recovery Expert require execution under TSO/E. Refer to the Db2 V11, or Db2 V12 product support information for information regarding TSO/E support levels. The minimum TSO region size required to run Db2 Recovery Expert for z/OS ISPF interface is 35,000 kilobytes.
- The Db2 Recovery Expert client/server component supports profiles created with any version of Db2 Automation Tool.
- Db2 Recovery Expert has no dependencies on Rocket Software, Inc. Common Code groups (FEC, DLC).

#### TSO requirements

The minimum TSO region size required to run Db2 Recovery Expert for z/OS ISPF interface is 35,000 kilobytes.

#### FlashCopy requirements

For FlashCopy backups, Db2 Recovery Expert requires the following:

- To use FlashCopy for a full system backup and restore, the storage subsystem must be FlashCopy V1 capable.
- To perform the object-level restore function, the storage subsystem must be FlashCopy V2 capable.

Db2 Recovery Expert uses IBM's FlashCopy interface to make a backup of a Db2 subsystem. This interface is designed for replicating data sets or volumes.

The invocation of the FlashCopy interface takes a point-in-time copy of data at the volume level. To use this feature, you must define source and target volumes to emulate identical device and model types. In addition, the source and target volumes must both be located in the same logical storage subsystem, and the storage subsystem must be able to execute the FlashCopy interface.

#### EMC BCV and SNAP requirements

For BCV and SNAP backups, Db2 Recovery Expert requires the following:

- EMC Symmetrix 6 and higher running with Microcode 5x67 or higher
- To use Engenuity Consistency Assist (ECA), Microcode 5x67 with patch 14882 or Microcode 5x68 with patch 18954 or Microcode 5x69 or higher is required. To use ECA with SNAP VOLUME technology, the EMC SNAP library must be level 5.5 or higher.

**Note:** Db2 Recovery Expert performs a “Protected BCV restore” in order to preserve the BCV backup point. This type of restore is not supported prior to Microcode 5x70. If any Symmetrix array is at a microcode level lower than 5x70, then a SNAP type restore will be performed instead.

## Requirements for BCV backups

Db2 Recovery Expert uses EMC's TimeFinder/Mirror for z/OS to make a BCV backup of a Db2 subsystem. A BCV device can be established as a mirror of a standard device; whatever data is sent to the standard device is also sent to the BCV device when it is established. The two devices together are called a BCV pair. When the pair is synchronized and Db2 Recovery Expert is called to make a BCV backup, the BCV device currently mirroring the standard device is split from the standard device.

This BCV device is then available as a point-in-time volume backup. If you configured Db2 Recovery Expert to keep more than one generation of BCV backups, then another BCV is immediately established to the standard device. This next generation continues the standard device mirroring.

Standard devices and BCVs must be the same model type (for example, 3380 or 3390) and have the same number of cylinders (for example, 3390-3 or 3390-9). In addition, the source and target volumes must both be located in the same physical Symmetrix storage subsystem. If you have questions about your Symmetrix configuration, contact your EMC customer service representative.

## Requirements for SNAP backups

Db2 Recovery Expert uses EMC's TimeFinder/Clone Mainframe SNAP Facility (hereafter referred to as the SNAP utility) to make a SNAP backup of a Db2 subsystem. This utility is designed for replicating data sets or volumes. The invocation of the SNAP utility takes a point-in-time copy of data at the volume level.

To use this feature, you must define source and target volumes to emulate identical device and model types. In addition, the source and target volumes must both be located in the same Symmetrix storage subsystem. The target volumes can be either standard volumes or BCV devices. If users have questions about their Symmetrix configuration, they can contact their EMC customer service representative.

## Db2 backup method requirements

For Db2 system-level backups, the BACKUP SYSTEM utility uses copy pools, which are new constructs in z/OS DFSMSHsm V1R5. A copy pool is a defined set of storage groups that contain data that DFSMSHsm can backup and recover collectively. These copy pools must be defined before attempting to back up or restore a subsystem. For more information about copy pools, refer to the *z/OS DFSMSdjp Storage Administration Reference*. In addition, refer to the Db2 utilities guides for other requirements for the BACKUP SYSTEM and RESTORE SYSTEM utilities.

## DFSMSdss requirements

DFSMSdss must be version 1.8 or later to use DFSMSdss backups and to create a Db2 image copy from a system level backup.

To perform encryption during offloads, DFSMSdss requires the following software:

- Encryption Facility DFSMSdss Encryption Feature (FMID HCF773D).
- IBM Cryptographic Services Facility (ICSF) (HCR770B or higher)

Db2 Recovery Expert uses the ADMINISTRATOR keyword in DFSMSdss commands for the following functions:

- Restore objects from system-level backups.
- Create and restore DFSMSdss backups.
- If the backup is stored on the space-efficient volumes, then restore a subsystem using a FlashCopy backup.

You must have the DFSMSdss authorization to use the keyword. For more information about the keyword requirements, see the *z/OS DFSMSdss Storage Administration*.

You must have read-access for the following RACF profiles in the FACILITY class:

- STGADMIN.ADR.DEFRAG.FLASHCPY
- STGADMIN.ADR.PATCH
- STGADMIN.ADR.STGADMIN.COPY
- STGADMIN.ADR.STGADMIN.DUMP
- STGADMIN.ADR.STGADMIN.RESTORE
- STGADMIN.ADR.COPY.FCFREEZE
- STGADMIN.ADR.CGCREATE

## **Db2 subsystem architecture requirements**

Db2 Recovery Expert helps make Db2 subsystem backup and restoration uncomplicated if your subsystem architecture follows best Db2 design practices. To ensure the most complete and accurate subsystem restoration, the Db2 subsystem should follow these recommendations:

- The user catalog(s) for the Db2 log and boot strap data sets should be separate from the user catalog(s) for Db2 object data (table spaces and indexes) and not reside on the same volume(s) as any other Db2 object data or Db2 object data catalog(s).
- The Db2 boot strap, active log, and archive log data sets should reside on separate volumes from the Db2 object data.

These requirements ensure that your Db2 object and log data are contained on separate sets of volumes. When you restore the volumes, the user catalogs will be restored and will reflect the data and log locations as they were at the time of the backup. Db2 Recovery Expert performs extensive validity checking for these requirements. If it detects any condition where log data and object data are not separated, a message is issued containing the volume name(s) that hold both types of data. The backup will still be allowed, but only full system restores will be allowed from the backup (called a “mixed data” backup). You must recover both object and log data from a mixed data backup.

You can use the Db2 Recovery Expert Subsystem Setup facility to get your Db2 subsystem(s) in optimal condition. The Db2 Recovery Expert Subsystem Setup facility analyzes your subsystem and provides information about the volume location and aliases of user catalogs, boot strap data sets, and active logs. It also provides detailed information about the volumes and the data sets in use by a subsystem. If your subsystem is not correctly configured, you can create MVS catalogs and aliases, rename or move boot strap data sets, log data sets, and/or Db2 object data sets to the proper location using the ISPF interface.

## **Db2 32 KB table space requirements**

Beginning with Db2 V8, Db2 data sets can be defined with variable control interval sizes. However, if you are planning to suspend the logs during backups, Db2 Recovery Expert requires that Db2 data sets defined with a page size of 32KB must have their control interval size defined as 32 KB. This ensures that when I/O to a device is stopped for backup, the control intervals of a data set are not spread across more than one track, possibly resulting in a broken page.

If Db2 Recovery Expert is going to suspend the logs, 32 KB data sets with 32 KB page sizes are checked during the backup. If the CI size is not 32 KB, the space is flagged, and it is skipped. If you want to use Db2 Recovery Expert on this space, you must alter the CI size and run an IBM REORG utility on the table space.

## Web interface requirements

These are the requirements for the browser client interface of Db2 Recovery Expert.

### Hardware requirements

There are no specific hardware requirements required to run the Db2 Recovery Expert web interface application. The web interface application runs in a browser and communicates directly with the Db2 Recovery Expert server.

No local disk storage is required for product intermediate or result data since all processing occurs remotely on the Db2 Recovery Expert server or on the Db2 database server systems. A reasonable amount of local disk space should be available if the user wants to export JCL, job results or other information.

### Software requirements

Certain older web browsers are not supported for use with the Db2 Recovery Expert browser client interface. For example, Db2 Recovery Expert will only work correctly in Microsoft Internet Explorer 11 or higher, or in current versions of other browsers.

## Product constraints

This information describes the constraints that must be taken into consideration when using Db2 Recovery Expert.

### Simple table space limitation

A simple table space created in a version of Db2 prior to version 9 cannot be dropped and recreated because of a Db2 limitation. Dropped simple table spaces will be restored as segmented table spaces.

### ROLES and Trusted contexts

Db2 Recovery Expert does not support recovery of dropped roles or dropped trusted contexts.

### Tables with IDENTITY columns

You must be cautious when attempting to use Db2 Recovery Expert to recover a table that contains IDENTITY columns.

- If the data recovery does not require generated SQL then the IDENTITY column attributes require no alteration and the recovery will be generated without any IDENTITY column adjustments.
- If the data recovery does require generated SQL then the IDENTITY column attributes will be checked to determine if a table drop and create recovery is required. The IDENTITY column attributes will be assigned values based on the current SYSIBM.SYSSEQUENCES setting for that column. If a column is a user-defined sequence Db2 Recovery Expert reads the recovered column data and does not reset the starting IDENTITY column value. A recovery of this type can result in data corruption because of a different table definition and sequences.

### Tables with EDITPROCs

Db2 Recovery Expert does not recover the executable module, or program, for module-based functions or procedures. This includes EDITPROCs. Db2 Recovery Expert cannot determine what library holds the program because that information is not stored in the Db2 system catalog. You must add the names of the user program load libraries that are required by the functions and procedures used by a table to the redo or undo SQL execution JCL STEPLIBs.

### Tables without unique keys

When you are selecting objects for recovery, remember that any recovery plan might include undo or redo SQL. You must ensure that there is a primary, or unique, key on the tables for which you are generating SQL; but the key cannot be a GENERATED ALWAYS column. Without a primary key, you might not get the desired results because of the inability to uniquely identify rows that were changed by the original SQL.

### Tables with GENERATED ALWAYS columns

If you plan to recover a table using recovery plans with undo or redo SQL, any table that contains a GENERATED ALWAYS column requires a primary key to be defined. The defined primary key must not be that GENERATED ALWAYS column. Without a primary key, recovery plans with undo or redo SQL might generate unintended duplicates of the table.

## Service updates and support information

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Service updates and support information for this product, including software fix packs, PTFs, frequently asked questions (FAQs), technical notes, troubleshooting information, and downloads, are available from the web.

## Product documentation and updates

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Db2 Tools information is available at multiple places on the web. You can receive updates to Db2 Tools information automatically by registering with the IBM My Notifications service.

### Information on the web

The most current version of this information is available on IBM Knowledge Center:

<http://www.ibm.com/support/knowledgecenter>

A PDF version of this information is available on the Db2 Tools Product Documentation web page; however, IBM Knowledge Center is updated more frequently than PDF books. The Db2 Tools Product Documentation web page is located at:

<http://www.ibm.com/support/docview.wss?uid=swg27020910>

IBM Redbooks® publications that cover Db2 Tools are available from the following web page:

<http://www.redbooks.ibm.com>

The IBM Information Management System website shows how IT organizations can maximize their investment in Db2 databases while staying ahead of today's top data management challenges:

<https://www.ibm.com/analytics/us/en/db2/db2-for-zos/>

### Receiving documentation updates automatically

To automatically receive emails that notify you when new technote documents are released, when existing product documentation is updated, and when new product documentation is available, you can register with the IBM My Notifications service. You can customize the service so that you receive information about only those IBM products that you specify.

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2. Enter your IBM ID and password, or create one by clicking **register now**.
3. When the My Notifications page is displayed, click **Subscribe** to select those products that you want to receive information updates about. The Db2 Tools option is located under **Software > Information Management**.
4. Click **Continue** to specify the types of updates that you want to receive.
5. Click **Submit** to save your profile.

### How to send your comments

Your feedback helps IBM to provide quality information. Send any comments that you have about this book or other Db2 Tools documentation to [comments@us.ibm.com](mailto:comments@us.ibm.com). Include the name and version number of the product and the title and number of the book. If you are commenting on specific text, provide the location of the text (for example, a chapter, topic, or section title).

## Accessibility features

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Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use a software product successfully.

The major accessibility features in this product enable users to perform the following activities:

- Use assistive technologies such as screen readers and screen magnifier software. Consult the assistive technology documentation for specific information when using it to access z/OS interfaces.
- Customize display attributes such as color, contrast, and font size.
- Operate specific or equivalent features by using only the keyboard. Refer to the following publications for information about accessing ISPF interfaces:
  - *z/OS ISPF User's Guide, Volume 1*
  - *z/OS TSO/E Primer*
  - *z/OS TSO/E User's Guide*

These guides describe how to use the ISPF interface, including the use of keyboard shortcuts or function keys (PF keys), include the default settings for the PF keys, and explain how to modify their functions.



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## Chapter 2. Using the Db2 Recovery Expert ISPF and web user interfaces

The following topics provide an overview of the Db2 Recovery Expert for z/OS ISPF and web interface functionality.

### ISPF interface overview

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You can use the Db2 Recovery Expert ISPF interface to perform many of the backup and restore functions that are offered by Db2 Recovery Expert.

The backup and restore functions include:

- Creating backup profiles
- Building and submitting backup jobs
- Creating application profiles
- Building and submitting object recovery jobs
- Restoring subsystems
- Creating image copies from system level backups
- Setting up disaster recovery jobs
- Setting up subsystems to work with backup and restore utilities
- Setting up the RBA Capture Utility

### Logging in to a database using the ISPF interface

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You can use the **Database Login** window to log in to a Db2 subsystem. The Database Login window opens automatically when you first access a Db2 subsystem when creating an application profile.

1. Specify the user ID that you want to use to connect to the Db2 location in the **User ID** field.
2. Specify the password or password phrase for the user ID in the **Password** field. A password is a traditional one to eight character alphanumeric value. A password phrase is a character string that consists of mixed-case letters, numbers, and special characters including blanks. It can be up to 128 characters. Password phrases have security advantages over passwords based on their length and complexity.
3. You can optionally specify your SQL authorization ID (SQLID) if necessary in the **Current SQLID (optional)** field.
4. Check the **Remember this password (encrypted)** check box to store the password used to connect to this location for future use by Db2 Recovery Expert. The user ID and current SQLID that you specified are always remembered. In future sessions, the display of the **Database Login** window for a location is suppressed if the password for that location is stored.
5. Check the **Use this information for all database locations** check box to specify that the specified user ID, password, and current SQLID should be used (without prompting) at all other database locations accessed during the current Db2 Recovery Expert session.
6. Click **Login** to access the database.
7. Click the **Cancel** button to cancel the request and return to the previous screen.

# Restriction for products running POSIX clients with TCP/IP connections

Db2 Recovery Expert uses a Portable Operating System Interface (POSIX) client with TCP/IP connections. Users should be aware that there is an IBM restriction when running POSIX clients with TCP/IP connections. For more information about this restriction, refer to:

[http://www-01.ibm.com/support/knowledgecenter/SSLTBW\\_2.1.0/com.ibm.zos.v2r1.halu001/tso.htm](http://www-01.ibm.com/support/knowledgecenter/SSLTBW_2.1.0/com.ibm.zos.v2r1.halu001/tso.htm)

One symptom of this restriction is that if you are using Db2 Recovery Expert and IBM Db2 Query Monitor for z/OS simultaneously and you are connected to the Db2 Recovery Expert server, attempting to split the screen and go into Db2 Query Monitor to connect to a data sharing group produces an EDC8123I error.

## Header fields

Every Db2 Recovery Expert ISPF panel has a set of header fields at the top of the panel.

These fields are highlighted in this panel:

```
RCVYXPRT V3R2      ----- Backup Profile Display ----- 2021/01/06 20:32:53
Option ==>          Scroll ==> CSR

Line Commands: B - Build  U - Update  C - Create  V - View  D - Delete
                R - Rename

-----
Profile Like *          SSID Like *
Creator Like TUSER*    Row 1 of 1  >
-----

Cmd  Name          Creator  SSID  Updt
   XK72A SNAP      TUSER   K72A  U
***** Bottom of Data *****
```

The fields are:

### RCVYXPRT

This area of the panel displays a shortened product name.

### VnRn

The product version and release.

### Panel title

The title of the panel. In this figure, the panel title is “Backup Profile Display”.

### Date and time

Displays the current date and time.

### Option

This line is used to enter an option or a command. The **Option** line may appear at the bottom if your ISPF session is configured for “Command line at the bottom”.

### Scroll

The **Scroll** field contains the current scroll amount; you can change it by typing over the scroll amount.

## Getting help

---

On any Db2 Recovery Expert product panel or window, you can press PF1 to access help for the function you are using. Also, when a message appears at the bottom of a panel, you can press PF1 to access additional information about the message.

### Primary command help

Some Db2 Recovery Expert panels allow you to access a list of valid primary commands by entering a “?” in the **Option** line. For example, if you enter a ? in the **Option** line on the Update Backup Profile panel, the following window appears:

```
Primary Command Display

CLEAR      - Deletes all volume mappings.
VOLUME     - Retrieve list of source volumes used by
             the specified Db2 subsystem.
AUTOTGT    - Automatically fills in target BCVs that have
             a relationship with the source volume.
SOURCE     - Enter a range of source units to add.
TARGET     - Enter a range of target units to use.
TGTCLR     - Clears out all the target units.
TGTSEL     - Select target units from a list.
SRTUNIT    - Sort the Source volumes by MVS unit.
SRTVOL     - Sort the Source volumes by volume name.
HEADER     - Toggle the Header Information on/off.
SAVE       - Save the current profile.
```

## Column display functionality

---

Db2 Recovery Expert's CSETUP functionality enables you to manipulate the column display.

You can:

- Rearrange report columns horizontally using the CFIX and CORDER options.
- Change the width of individual columns using the CSIZE option.
- Control the vertical ordering of columns using the CSORT option.
- Scroll horizontally between columns, in both left and right directions.
- Scroll horizontally within a single report column while other report columns remain stationary on the screen.
- Order the columns
- Generate a ruler at the top of the report columns beneath the headings.
- Display an entire row-column data element.
- The customizations, or “views”, you configure using CFIX, CORDER, CSIZE, and CSORT can be saved across sessions.

Please note the following regarding syntax presented in this section:

- Underlines indicate the minimum acceptable abbreviation for each keyword.
- Variables are shown in italicized lowercase type.
- Keyword options are separated by vertical lines ( | ).

### Accessing the CSETUP primary option menu

The CSETUP primary option menu enables you to access the various CSETUP options and configure column display functions according to your display needs.

1. On any dynamic display, type CSETUP (or CSET) in the option line and press Enter.

The Setup Primary Option Menu displays:

```

SETUP ----- Setup Primary Option Menu ----- 2021/01/05 11:39:06
Command ==>
Permanent View

1  CFIX      Select columns to be fixed on the left side of the report
2  CORDER   Modify the horizontal placement of columns
3  CSIZE    Customize the size of columns
4  CSORT    Select columns to sort
5  CRESET   Reset column values
6  CREMOVE  Remove all customization, including original defaults
7  PVIEW    Permanent View (toggle between temporary and permanent)

HELP      Setup Tutorial

```

2. Type the number corresponding to the option you want to access in the Command line and press Enter. The following options are available on the Setup Primary Option Menu:

#### **CFIX**

Option 1, CFIX, enables you to fix and unfix columns. For more information, see "Fixing a column".

#### **CORDER**

Option 2, CORDER, enables you to reposition columns. For more information, see "Repositioning columns".

#### **CSIZE**

Option 3, CSIZE, enables you to change the displayed width of columns. For more information, see "Resizing columns".

#### **CSORT**

Option 4, CSORT, enables you to select one or more columns for sorting and thus modify the order of the rows displayed. For more information, see "Sorting".

#### **CRESET**

Option 5, CRESET, enables you to reset all customization. For more information, see "Resetting CSET customization".

#### **CREMOVE**

Option 6, CREMOVE, enables you to remove all customization. For more information, see "Removing CSET customization".

#### **PVIEW**

Option 7, PVIEW, enables you to toggle between permanent view and temporary view.

**Note:** You can also directly invoke each CSETUP option by typing the corresponding command (for example, CFIX, CORDER, CSIZE, CSORT, CRESET, CREMOVE, or PVIEW) in the option line on any dynamic display and pressing Enter.

## **Fixing a column**

The CFIX option enables you to fix and unfix columns.

A fixed column is always located at the far left side of the display. It does not shift horizontally (as unfixed columns do) when scrolling to the left or right. INNER COLUMN SCROLLING and CEXPAND may be used on a fixed column if the column is narrower than its maximum width. Certain columns may be permanently fixed in the report and cannot be unfixed. Such a column has a fix status of P (permanently fixed). A column cannot be fixed if it is larger than the available display area. There are also restrictions for fixing columns related to the size requirements of other columns. For more information, see "Restrictions".

1. Type CFIX in the option line on any display panel and press Enter.

The Define Fixed Columns panel displays.

```

CFIX ----- Define Fixed Columns ----- 2021/07/05 11:40:38
Option ==> Scroll ==> CSR
-----
ROW 1 OF 6

Column Function ==> 1 (1-Fix/Unfix, 2-Order, 3-Size, 4-Sort)
Permanent View ==> Y (Y-Perm, N-Temp) Reset View ==> N (Y,N)

Device_Width : 80
Old_Fixed_Width: 5      Old_Unfixed_Width: 75
New_Fixed_Width:      New_Unfixed_Width:
-----

Cmd New Old Len Column_Name
P   P   P   5  CMD
-           9  SOURCE_VOLUMES
-           8  SOURCE_DEVTYPE
-           6  SOURCE_UNIT
-           8  TARGET_VOLUMES
-          44  MESSAGE_AREA

Enter: Process selections; PF3: Exit and save; CAN: Exit without save
Line Cmds: F Fix U Unfix

```

The following fields appear on the Define Fixed Columns panel:

### Column Function

Enables you to jump to any of the CSET functions by typing in the appropriate number. The number corresponding to the current option displays in this field.

### Permanent View

Indicates whether or not the view you define is permanent or temporary. Valid values are:

**Y**

View customizations are permanent.

**N**

View customizations are temporary.

### Reset View

Resets all customizations.

### Device\_Width

Shows the current display device size (screen width).

### Old\_Fixed\_Width

Shows the sum of the FIXED column widths prior to any changes in the current CFIX panel.

### Old\_Unfixed\_Width

Shows the UNFIXED area prior to any changes in the current CFIX panel.  $Old\_Unfixed\_Width = Device\_Width - Old\_Fixed\_Width$ .

### New\_Fixed\_Width

Shows the sum of the FIXED column widths that will result if the FIX/UNIFIX changes are saved.

### New\_Unfixed\_Width

Shows the UNFIXED area that will result if the FIX/UNIFIX changes are saved.  $New\_Unfixed\_Width = Device\_Width - New\_Fixed\_Width$ .

### Cmd

Field where you specify line commands. Valid line commands are F (fix) and U (unfix).

### New

Displays the new CFIX view settings.

### Old

Displays the previous CFIX view settings.

### Len

Shows the length of the column.

### Column\_Name

Shows the name of the column.

2. Type F in the Cmd field next to column(s) you want to fix.
3. Type U in the Cmd field next to column(s) you want to unfix.
4. Press Enter.

The changed values display in the New column next to the corresponding column(s).

5. Press PF3 to save changes and return to the display panel.

## Repositioning columns

The CORDER option enables you to reposition report columns.

If any columns are fixed, they are grouped together as the leftmost report columns. The unfixed columns are grouped together to the right of any fixed columns. CORDER does not move a column out of its group. A fixed column cannot be relocated to the right of an unfixed column. Likewise, an unfixed column cannot be relocated to the left of a fixed column.

1. Type CORDER in the option line on any display panel and press Enter.

The Define Column Display Order panel displays.

```
CORDER ----- Define Column Display Order ----- 2021/07/05 11:41:31
Option  ==>                                     Scroll ==> CSR
-----
                                           ROW 1 OF 6

Column Function ==> 2 (1-Fix/Unfix, 2-Order, 3-Size, 4-Sort)
Permanent View  ==> Y (Y-Perm, N-Temp)  Reset View ==> N (Y,N)

Cmd  Fix  New  Old  Column_Name
---  P          1  CMD
---          2  SOURCE_VOLUMES
---          3  SOURCE_DEVTYPE
---          4  SOURCE_UNIT
---          5  TARGET_VOLUMES
---          6  MESSAGE_AREA
***** Bottom of Data *****

Enter: Process selections; PF3: Exit and save; CAN: Exit without save
Line Cmds: Specify number for column position
```

The following fields appear on the Define Column Display Order panel:

### Column Function

Enables you to jump to any of the CSET functions by typing in the appropriate number. The number corresponding to the current option displays in this field.

### Permanent View

Indicates whether or not the CSETUP customization you define is permanent or temporary. CSETUP customization refers to the change made in the CSETUP functions CFIX, CORDER, CSIZE, and CSORT. These customizations are called views. Valid values are: Y - CSETUP customization is permanent or N - CSETUP customization is temporary.

### Reset View

Resets all customizations.

### Cmd

Field where you specify the number for column position.

### Fix

Displays fixed columns. Valid values are: F - Indicates the column is fixed or P- Indicates the column is permanently fixed.

**New**

Displays the new CORDER view settings.

**Old**

Displays the previous CORDER view settings.

**Column\_Name**

Shows the name of the column.

2. Type a number next to a column to specify its order.
3. Press Enter.

The new column order numbers display in the New column next to each column.

4. Press PF3 to return to the display panel.

## Resizing columns

The CSIZE option enables you to change the displayed width of columns. This function is primarily intended for non-numeric data where there are large blank areas in all (or most) rows in a given column. Although the displayed width may change, the underlying data does not change.

If a column's size is less than the column maximum, it is possible that some data is not displayed. INNER COLUMN SCROLLING and CEXPAND can be used to see data outside the display range of the resized column.

**Note:** If the minimum and maximum column widths are equal, the column cannot be resized.

1. Type CSIZE in the option line on any display panel and press Enter.

The Define Column Size panel displays:

```

CSIZE ----- Define Column Size ----- 2021/07/05 11:42:37
Option ==>                               Scroll ==> CSR
-----
                                           ROW 1 OF 6

Column Function ==> 3 (1-Fix/Unfix, 2-Order, 3-Size, 4-Sort)
Permanent View ==> Y (Y-Perm, N-Temp) Reset View ==> N (Y,N)

Device_Width : 80
Old_Fixed_Width: 5      Old_Unfixed_Width: 75
New_Fixed_Width:      New_Unfixed_Width:
-----

Cmd New Old Min Max Fix Column_Name
---- 5 5 5 5 P  CMD
---- 9 2 9  SOURCE_VOLUMES
---- 8 2 8  SOURCE_DEVTTYPE
---- 6 2 6  SOURCE_UNIT
---- 8 2 8  TARGET_VOLUMES
---- 44 2 44  MESSAGE_AREA

Enter: Process selections; PF3: Exit and save; CAN: Exit without save
Line Cmds: Column size, between MIN and MAX

```

The following fields appear on the Define Column Size panel:

**Column Function**

Enables you to jump to any of the CSET functions by typing in the appropriate number. The number corresponding to the current option displays in this field.

**Permanent View**

Indicate whether or not the view you define is permanent or temporary. Valid values are: Y - View customizations are permanent or N - View customizations are temporary.

**Reset View**

Resets all customizations.

**Device\_Width**

Shows the current display device size (screen width).

**Old\_Fixed\_Width**

Shows the sum of the FIXED column widths.

**Old\_Unfixed\_Width**

Shows the UNFIXED area.

**New\_Fixed\_Width**

Shows the sum of the FIXED column widths.

**New\_Unfixed\_Width**

Shows the UNFIXED area.

**Cmd**

Field where you specify the number for column position.

**New**

Displays the new CSIZE view settings.

**Old**

Displays the previous CSIZE view settings.

**Min**

Displays the minimum column length.

**Note:** If the minimum and maximum column widths are equal, the column cannot be resized.

**Max**

Displays the maximum column length.

**Note:** If the minimum and maximum column widths are equal, the column cannot be resized.

**Fix**

Displays fixed columns. Valid values are: F - Indicates the column is fixed or P- Indicates the column is permanently fixed.

**Column\_Name**

Shows the name of the column.

2. Type the desired column size in the Cmd field next to the column you want to resize.

**Note:** The column size you specify must be between the Min and Max values shown for that column.

3. Press Enter.

The new view criteria display in the New column.

4. Press PF3 to return to the display panel.

## Sorting

CSORT functionality enables you to select one or more columns for sorting and thus modify the order of the rows displayed on many of Db2 Recovery Expert's product panels.

Columns are selected by sort priority and direction. Direction is either ascending (default) or descending. When more than one column is selected for sorting, the second column only differentiates when rows have matching data in the first column. Similarly, a third column only impacts the sort when data in both the first two columns are identical.

A maximum of nine columns can be selected for sorting at one time. Internal requirements may create a smaller maximum. A message is issued if the maximum number of columns selected for sorting is exceeded.

**Note:** CSORT and SORT are synonymous.

1. Type CSORT (or SORT) in the option line on any display panel and press Enter.

The Define Sort Columns panel displays:



```

SORT ----- Define Sort Columns ----- 2021/07/05 11:44:07
Option ==>                               Scroll ==> CSR
-----+-----
                                           ROW 1 OF 10

Column Function ==> 4 (1-Fix/Unfix, 2-Order, 3-Size, 4-Sort)
Permanent View ==> Y (Y-Perm, N-Temp)  Reset View ==> N (Y,N)
Stop Sorting    ==> N (Y,N)

Cmd Dir New Old Column_Name
- - - - -
- - - - - CMD
- - - - - NAME
- - - - - CREATOR
- - - - - SSID
- - - - - UPDT
- - - - - DESCRIPTION
- - - - - LAST_UPDATED_USERID
- - - - - LAST_UPDATED_TIMESTAMP
- - - - - CREATED_USERID

Enter: Process selections; PF3: Exit and save; CAN: Exit without save
Cmd: 1-9 Dir: A Asc D Desc

```

The following fields appear on the Define Sort Columns panel:

**Column Function**

Enables you to jump to any of the CSET functions by typing in the appropriate number. The number corresponding to the current option displays in this field.

**Permanent View**

Indicate whether or not the view you define is permanent or temporary. Valid values are: Y- View customizations are permanent or N - View customizations are temporary.

**Stop Sorting**

Indicates whether or not to stop sorting as specified. Valid values are: Y - Stop sorting or N - Continue sorting.

**Cmd**

Field where you specify the sort order.

**Dir**

Specifies the lexicographic order for the column. Valid values are: A - (Default) Values are listed in ascending order, smallest to largest or D - Values are listed in descending order, largest to smallest.

**New**

Displays the new CSORT view settings.

**Old**

Displays the previous CSORT view settings.

**Column\_Name**

Shows the name of the column.

2. Type A or D in the Cmd field next to the columns on which you want to base your sort.
3. Press Enter.  
The new sort preferences are displayed in the New column.
4. Press PF3 to return to the display panel.

## Fastpath SORT command

The SORT command can be used as a primary (fastpath) command by typing the appropriate SORT syntax in the Option line of any report panel and pressing Enter. The functionality supports both single and

multi-column sorting and enables users to specify sort order (ascending or descending) for each column in the sort.

## Syntax for single-column sorting

The syntax for single-column sorting is as follows:

```
SORT column_identifier dir
```

Where `column_identifier` is either the column name or the relative column number and `dir` is the direction in which to sort the column data. Valid values for `dir` are:

### Asc

(Default) Sorts data in ascending order.

### Desc

Sorts data in descending order.

### Important:

- There must be a space between the `column_identifier` and its `dir` (if used).
- The relative column number for a column is determined based on the column's placement when visible on the screen. Thus, relative column numbers are only available for columns currently visible on the screen. Relative column numbers are determined by counting the displayed columns from left to right, with the leftmost visible column being assigned the number '1' and each successive column (reading left to right) being assigned a relative column number that is increased by 1. Hint: To quickly determine the column number, use the CNUM command to toggle on the column numbers that are assigned to each display column.
- You can sort on a column that is not displayed if you use the column name (instead of the relative column number) as the `column_identifier` in the SORT syntax.

## Multi-column sorting

The syntax for multi-column sorting is as follows:

```
SORT column_identifier dir column_identifier dir
```

Where `column_identifier` is either the column name or the relative column number and `dir` is an optional indication of the direction in which to sort the column data. Valid values for `dir` are:

### asc

(Default) Sorts data in ascending order.

### desc

Sorts data in descending order. Please note that `column_identifier` and `dir` values must all be separated by spaces. The maximum number of columns that can be sorted at once is 9.

### Usage examples

For a report display that has three columns, all of which display on the screen:

- Column 1: Name
- Column 2: Creator
- Column 3: Status

The following examples show how you can sort these columns:

### **SORT NAME**

Sorts display data in ascending order based on the value in the Name column (when no `dir` value is specified, the default sort order is ascending, thus `SORT NAME` and `SORT NAME A` are synonymous).

### **SORT NAME D**

Sorts display data in descending order based on the value in the Name column.

**SORT NAME DESC**

Sorts display data in descending order based on the value in the Name column.

**SORT NAME A CREATOR D**

Sorts display data first in ascending order based on the value in the Name column and then sorts data in descending order based on the value in the Creator column.

**SORT NAME ASC CREATOR DESC**

Sorts display data first in ascending order based on the value in the Name column and then sorts data in descending order based on the value in the Creator column.

**SORT 1 A**

Sorts display data in ascending order based on the value in the Name column.

**SORT 1 A CREATOR D**

Sorts display data first in ascending order based on the value in the Name column and then sorts data in descending order based on the value in the Creator column.

**SORT 3 2 1**

Sorts the display data first in ascending order based on the value in the Status column, then in ascending order based on the value in the Creator column, and finally in ascending order based on the value in the Name column.

## Resetting CSET customizations

The CRESET option enables you to reset all customizations.

After CRESET is issued, all fixed columns are unfixed (except for any permanently fixed columns), all selected sort columns are deselected and sorting is disabled, all column sizes are set to the initial values or maximum values if no suggested value previously existed, and original column locations are restored.

The CRESET option can be issued as a primary command:

**CRESET**

Resets all customizations (unfixes fixed columns, deselects selected sort columns, sorting disabled, column sizes set to initial values, original column locations restored).

**Note:** CRESET differs from CREMOVE in that CREMOVE sets all column sizes to their maximum values ignoring any initial, suggested sizes.

## Removing CSET customizations

The CREMOVE option enables you to remove all customizations.

After you issue the CREMOVE command, all fixed columns are unfixed (except for those that are permanently fixed), all selected sort columns are deselected and sorting is disabled, all column sizes are set to their maximum values, and original column locations are restored.

The CREMOVE option can be issued as a primary command:

**CREMOVE**

Removes all customizations (unfixes fixed columns, deselects selected sort columns, sorting disabled, column sizes set to maximum values, original column locations restored).

**Note:** CREMOVE differs from CRESET in that CREMOVE sets all column sizes to their maximum values and ignoring any initial, suggested sizes.

## Column scrolling

Column scrolling enables you to scroll horizontally between columns, in both left and right directions.

Use the following commands when viewing any dynamic display panel to scroll horizontally between columns:

**CRIGHT n**

Enables you to scroll the left side of the display window n report columns to the right.

**CLEFT n**

Enables you to scroll the left side of the display window n report columns to the left.

**Inner column scrolling**

Inner column scrolling enables you to scroll horizontally within a single report column while other report columns remain stationary on the screen. Inner column scrolling may be useful for columns that have been shortened using the CSIZE functionality. Use the following commands when viewing any dynamic display panel to scroll horizontally within a single report column:

**ICRIGHT**

Enables you to scroll to the right within one report column while the other report columns remain stationary.

**ICLEFT**

Enables you to scroll to the left within one report column while the other report columns remain stationary.

**Column numbering**

Column numbering assign a column number to each display column. The inserted column numbers are relative to the leftmost display column.

Use the following command to invoke column numbering:

**CNUM**

Enables you to toggle on/off the column numbers assigned to each display column.

**Note:**

- The leftmost displayed column is always numbered one (1) regardless of how far to the right you scroll.
- You can use column numbers when issuing the SORT fastpath command. For more information, see "Fastpath SORT command".
- Column numbers are not removed by CRESET nor CREMOVE. To remove column numbers, reissue the CNUM command.

**Ruler display**

The COLS command enables you to generate a ruler at the top of the report columns beneath the headings. This ruler tracks the current position within the column.

The < > symbols indicate whether there is additional column data to the left or right of the displayed data. For example:

```
<-5----2----5->
```

In this example, positions 13 through 28 are displayed. There is data both to the left and right of the currently displayed area. The COLS command can be issued by itself, as a toggle switch, or with one parameter (ON|OFF). The syntax is as follows:

**COLS (ON|OFF)**

Enables you to generate a ruler at the top of the report columns to track the current position within the column.

**Expanding columns**

The CEXPAND command enables you to display an entire row-column data element. This command can be useful in instances when the CSIZE command has reduced a column to a width that is too narrow to

display all data. Expanding columns using the CEXPAND command provides you with an alternative to inner column scrolling.

To invoke CEXPAND, place the cursor on a row-column element and issue the CEXPAND command. The cursor position determines the row-column that expands. The CEXPAND command can be issued by itself or with two parameters (row and column). The syntax is as follows:

#### **CEXPAND (row column)**

Enables you to display an entire row-column data element where row is the number of the row and column is the number of the column (non-heading lines only) that you want to expand.

## **CSET restrictions**

These are the restrictions that apply to CSET options.

- Total fixed column sizes cannot exceed screen width.
- Total fixed column sizes must leave enough unfixed space for the minimum allowed size for all unfixed columns. If a column is not eligible for resizing, the column's minimum size requirement is the same as its maximum size. Minimum and maximum sizes for all columns are shown in the CSIZE display.
- If a column has been resized, then its current width is treated as its smallest allowable size. When a column is resized its current size must fit on the screen completely. For example, on an 80-byte screen with no fixed columns, a 128-byte column can only be resized to 80 bytes or less (assuming no conflicting minimum size associated with the column). If there were two 10-byte fixed columns, for a total fixed area size of 20 bytes, the 128-byte column would be limited to 60 bytes or its minimum allowed size, whichever was smaller.

## **Using the Db2 Recovery Expert web interface**

---

From the main window of the Db2 Recovery Expert web interface you can recover an object using the schema level repository; recover data and dropped objects using Db2 logs; recover one or more transactions; perform log analysis; perform a system restore; and view previously saved recovery, system restore, and log analysis actions.

## **Opening the web interface, setting preferences, and starting advisors**

---

From the main page of the web interface you can access all the recovery functionality including setting up your environment preferences, and accessing each of the advisors.

1. Open a web browser. Access the Db2 Recovery Expert web interface using the web address (URL) that was distributed by the administrator who installed Db2 Recovery Expert.
2. You can access the online help system by clicking the **Help** button in the top bar of the window. A side bar will open displaying information describing the general use of the web interface.
3. You can control how Db2 Recovery Expert handles specific situations using the **Preferences** notebook. Click the **Preferences** button in the top bar of the window. The **Preferences** notebook opens. Select one or more of the following tabs:
  - Select the **General** page to specify the options that control whether the messages are displayed, whether the database location or local time will be used, and whether recovery method information is displayed.
  - Select the **Warnings** page to specify whether certain types of warnings will be displayed.
  - Select the **Limits** page to specify size limits when downloading lists of objects or excessively large output files.
  - Select the **Job Cards** page to specify the default values that will be used for generated job cards and any JES control statements.

- Select the **Quiet Time Tables** page to explicitly specify which tables are used to store the quiet time data for an object.
  - Select the **Logging** page to specify where logging information should be routed and what components will produce log output.
4. Click the **Logs** button to open the **Logs** window where you can view the logging information that has been generated. Each log entry includes a start time and the content of the log entry.
  5. The **Messages** pane displays the status of running or completed tasks that you have initiated using any of the advisors. Click the **Messages** button to open the **Messages** window. You can delete messages that display in the pane using the **Delete** icon that appears in the top right corner of the pane.
  6. To recover data objects using information from the schema level repository (SLR), click the **Recovery Advisor** tab to open the **Recovery Advisor**. The **Welcome** page of the **Recovery Advisor** opens. It presents an overview of the recovery process.
  7. To generate DDL for an object or recover a dropped object using the Db2 log, click the **Log Based Recovery** tab to open the **Log Based Recovery Advisor**. The **Welcome** page of the **Log Based Recovery Advisor** opens. It presents an overview of the log based recovery process.
  8. To recover one or more transactions, click the **Transaction Recovery** tab to open the **Transaction Recovery Advisor**. The **Welcome** page of the **Transaction Recovery Advisor** opens. It presents an overview of the transaction recovery process.
  9. To discover periods of inactivity for an object that can be used as recovery points, click the **Log Analysis** tab to open the **Log Analysis Advisor**. The **Welcome** page of the **Log Analysis Advisor** opens. It presents an overview of the log analysis process.
  10. To restore a Db2 subsystem from a Db2 Recovery Expert system level backup, click the **System Restore** tab to open the **System Restore Advisor**. The **Welcome** page of the **System Restore Advisor** opens. It presents an overview of the Db2 subsystem restore process.
  11. While working in each advisor you will use the **Back** and **Next** buttons located in the lower right hand corner of the window to navigate through the steps of the advisor.
  12. You can access online help for each advisor using the **Help** button located in the lower right hand corner of the window.
  13. You can close an advisor using the **Close** button located in the lower right hand corner of the window.
  14. While using any of the advisors you can save your work in progress and return to it later. Saving your work can help you be more efficient as some steps in a recovery process can be time consuming. To save your work click the **Save** button located on the bottom right hand side of the window to create a recovery specification. You can create a recovery specification at any point in each of the advisor steps. To return to your work, click the **Specifications** tab to open the **Specifications** window which displays all the specifications that you can access.

## Managing message information

---

The **Messages** pane displays the status of running or completed tasks initiated by the current user on the server.

You can choose to display the **Messages** pane with every advisor by selecting the **Display the message pane on each advisor page** check box that is included on the **General** page of the **Preferences** notebook. You can also access the **Messages** pane using the **Messages** tab.

1. Messages are displayed with the following information:

### **Status**

Identifies the status of the job.

### **Running**

The task is running.

### **Success**

The task finished successfully.

**Warning**

The task ended with a warning.

**Failed**

The task ended with an error.

**Cancelled**

The task was cancelled.

**Abandoned**

The task was abandoned. This status is used only when you have submitted a job, tried to cancel it, but the job does not end before the expiration of a time out period. In this case, Db2 Recovery Expert abandons the job--it might continue running, but Db2 Recovery Expert no longer tracks it.

**Location**

The location (database and server) of the task. For example, Db2A on MVS1.

**Specification**

The name of the saved specification, if any, that the task was saved to.

**Type**

The type of task.

- Recovery plan generation
- Recovery plan validation
- Recovery plan execution
- Log analysis
- Point in time conversion (This is a job submitted during recovery plan generation on a non-data sharing system, where you specified either a timestamp or log RBA as the point in time for the recovery. This job converts the specification to a point in time; when the job finishes, recovery plan generation continues.)

**Timestamp**

The timestamp of the task when it was initiated.

**Description**

A description of the task.

2. To cancel a message, select the message and click the cancel icon.
3. To delete a message, select the message and click the delete icon.

## Specifying the General preferences

---

Use the **General** page of the **Preferences** notebook to control many product-wide options in Db2 Recovery Expert.

You can choose to specify one or more of the following preferences:

**Display the message pane on each advisor page**

Check this check box to display the message pane at the bottom of each advisor page. The messages pane displays the status of running or completed tasks.

**Timestamp values**

Specify how the timestamp values that you use in the **Recovery Advisor**, **Log Analysis Advisor**, **Transaction Advisor**, or **Log Based Recovery Advisor** are initialized. If your database and client are in different time zones, this feature allows you to select either the database time zone or the client time zone as the default time zone. Select either of the following options:

- **Use database location time**
- **Use local time**

**Use on-demand retrieval of recovery plans**

Select this check box to retrieve generated recovery plans only when needed. If this option is not selected, generated recovery plans are retrieved at the time they are created.

### Reset passwords

Click the **Reset passwords** button to reset all passwords currently remembered by Db2 Recovery Expert to null.

## Specifying the Warnings preferences

---

Use the **Warnings** page of the **Preferences** notebook to control many product-wide warnings in Db2 Recovery Expert.

You can choose to specify one or more of the following preferences:

### Skip the pattern warning

Select this check box to suppress the warning that is issued when you expand a pattern on the **Objects** window of the **Recovery Advisor**, the **Log Based Recovery Advisor**, or the **Log Analysis Advisor**.

### Skip the RECOVER warning

Select this check box to suppress the warning that one or more steps in a recovery plan generated by the **Recovery Advisor** will use the RECOVER utility.

### Skip the Undo/Redo SQL warning

Select this check box to suppress the warning that one or more steps in the recovery plan generated by the **Recovery Advisor** will use Undo or Redo SQL.

## Specifying the Limits preferences

---

Use the **Limits** page of the **Preferences** notebook to specify the maximum limit for the number of items that can be displayed in a list, the maximum number of transactions that can be displayed, and the maximum size of a file that can be downloaded without confirmation.

You can choose to specify one or more of the following preferences:

### Filter trigger

Specify the maximum number of items to display before you are prompted to supply a filter that reduces the number of items to display.

### Number of transactions trigger

Specify the maximum number of transactions to display without issuing a warning message that the number of retrieved transactions exceeds the specified display limit.

### Output file size trigger

Specify the maximum size of a file (in bytes) that can be downloaded without confirmation of the file download because of excessive size.

## Specifying the Job Cards preferences

---

Use the **Job Cards** page of the **Preferences** notebook to specify the default values that are used for all generated job cards and any JES control statements that you want included in the jobs generated by Db2 Recovery Expert.

The job card information specified in the preferences is used by Db2 Recovery Expert as the basis for each job card in a generated job. You should specify any job card information and JES control statements necessary to successfully run jobs at your installation. The following is an example of a job card:

```
//ARYJOB JOB , 'Db2 RECOVERY EXPERT' ,MSGCLASS=H,  
//REGION=0M ,NOTIFY=&SYSUID
```



## Specifying the Quiet Time Tables preferences

---

Use the **Quiet Time Tables** page of the **Preferences** notebook to specify which tables are used to store quiet time data.

By default, the **Use the following tables for quiet time data** check box is not checked. If unchecked, Db2 Recovery Expert uses the default names for the tables. The default quiet time table names are specified in the Product Control File during the customization process for each SSID. The quiet time tables are used when performing quiet time analysis, retrieval, and validation.

You select the **Use the following tables for quiet time data** check box if you want to override the default quiet time tables for all SSIDs. You can enter alternate quiet time table names in one or more of the following text boxes:

- Report table creator
- Report table name
- Quiet time table creator
- Quiet time table name

## Specifying the Logging preferences

---

Use the **Logging** page of the **Preferences** notebook to turn logging on and select the components that will log data.

Select the components that will produce log output. You can select more than one component:

- Messages
- XML requests/responses



---

## Chapter 3. Planning for system backup and recovery

Before configuring Db2 Recovery Expert, it is important to consider and understand how the system backups (SLB) will be used in your environment's recovery situations. This section describes the types of recoveries that can be performed from a system backup and the considerations that should be made when selecting a specific type of backup and recovery methodology.

### System backup usage considerations

---

Before configuring Db2 Recovery Expert, it is important to consider and understand how the system backups (SLB) will be used in recovery situations.

Your first consideration when planning for system backup and recovery is to decide what you want to recover. For example, you can recover an entire Db2 subsystem, you can recover just an application or database objects, or you can recover at a remote site. You may decide you need to do only a partial backup of a Db2 subsystem, or a data only backup. Once you determine what you want to recover, you will create a backup profile that will be tailored to your specific recovery needs.

#### System backup (SLB) used for local system recovery

Local system recovery is the process of restoring an entire Db2 subsystem (Full), including database data, logs, BSDSs, and Db2 system data sets, to the point in time of a system backup. Local system recovery may also include running forward recovery processes to apply any changes that occurred after the system backup was created. It is also possible to restore just the volumes that contain database data from a system backup and then run forward recovery processes to bring the databases to a more current state.

When Db2 Recovery Expert restores an entire Db2 subsystem, it is important to understand that it does the restore at a volume level. When a volume is restored, it will restore all data sets that were on the volume at the time of the system backup and it will overlay changes or new data sets that may have been created on the volumes since the system backup. Because of this, if local system level recovery is a viable recovery scenario, it is important to analyze data set isolation (see [“Analyzing data set isolation”](#) on page 49) prior to creating any backups to ensure that a volume level restore will yield the desired results.

Things to check for are:

- Are there non-Db2 data sets on the volumes being backed up and restored? If so, is it desired that they are restored to the same point in time as the system backup?
- If forward recovery is desired after restoring the database data only, then the volumes where any archive logs, BSDSs, or Db2 system data sets reside will need to be segregated from the volumes that contain database data.
- If forward recovery is desired after restoring an entire Db2 environment to the time of a system backup, then the BSDSs and archive logs should not be on volumes contained in the system backup.
- The z/OS user catalogs where the data sets being backed up are cataloged must reside on the volumes being backed up. If database data and log segregation is required for the desired recovery option, then the segregation also applies to the z/OS user catalogs where the database data and log data sets are cataloged.

#### System backup (SLB) used for application or database level recovery

Once a system backup is created and the option to **Enable OBJ Restore** is enabled in the backup profile, then Db2 Recovery Expert can be used to restore an entire application (group of table spaces and indexes) or individual table spaces or indexes from the system backup. When Db2 Recovery Expert restores at the application or object level, it does so at a data set level. After restoring the database data sets from a system backup, Db2 Recovery Expert can then run any forward recovery processes using the existing BSDSs and archive logs

If application or database level recovery is the only level of recovery that will be needed, then data segregation is not important and Db2 System Analysis and Configuration is not needed.

It is important to make sure **Enable OBJ Restore** is set to **Y** prior to creating the system backup.

## System backup (SLB) used for remote disaster restart or disaster recovery

A system backup can be created and shipped to a remote site for use in a disaster restart operation or disaster recovery operation.

Disaster restart is the process of restoring a system backup at the remote site and then doing an emergency restart of the Db2 subsystem. The Db2 subsystem will be restored to the point in time when the system backup was created. Db2 will backout any uncommitted changes. In essence, this is the same as recovering from a power outage.

Disaster recovery operations start with the process of restoring a system backup at the remote site, but then forward recovery processes may also be run to apply changes that occurred after the system backup was created.

In either scenario, it is not important that Db2 recovery structures (BSDSs and logs) be segregated from the database data sets. However, it is important to verify the following by doing the Db2 System Analysis and Configuration:

- Non-Db2 data sets may reside on the volumes included in the system backup. Since the processes at the remote site will restore these volumes, it is desired that these data sets are also restored to the point in time the system backup was created.
- The z/OS user catalogs where the data sets for the Db2 environment are cataloged must be on the volumes that are included in the system backup.

See [“Analyzing data set isolation”](#) on page 49 for more information.

## Partial system backup (PSLB) for database or application recovery

Db2 Recovery Expert provides the capability to create a partial system backup, or PSLB. A PSLB is a backup that does not include all of the volumes where a Db2 subsystem resides. A PSLB can be used for large databases or applications having unique backup requirements. Using a partial system backup versus a full system backup will also reduce disk utilization and allow for additional backup generations.

A PSLB can be used for application or object recovery only. A PSLB cannot be used for system recovery. Using a PSLB for application or object recovery, the data is restored at the data set level so log and database data isolation is not required. The desired application database data should be grouped on volumes as a best practice.

## Backup frequency and space utilization

---

Once it is determined what the system backup will be used for, there are several other things to consider when configuring Db2 Recovery Expert to create the system backups.

### System backup type

Db2 Recovery Expert allows for the following types of backups:

#### Full

The system backup will contain the database data, the archive logs, and the Db2 system data sets. A **Full** backup can be used for system restore; application or object recovery; and disaster restart or recovery.

#### Data only

The system backup will contain only the database data for the Db2 environment. A **Data only** backup can be used to restore all of the database data and then run forward recovery processes. This is done at the volume level. Or a **Data only** backup can be used for application or object recovery and this is performed at the data set level.

## Partial

The system backup will contain only data for an application or group of objects. A partial backup can only be used for application or object recovery. Restoring the data sets is done at the data set level.

## Determine optimal backup frequency and retention

With the recovery objectives in mind, you will need to consider how frequently the system backups will need to be created. Using fast-replication, the CPU, and I/O costs to create a backup are minimal. The impact to online Db2 availability is also insignificant so the traditional approach of first determining when a backup could be created may not necessarily hold true. Using Db2 Recovery Expert, the best approach may be to consider how long of a recovery time is most ideal for the business and then to set the backup frequency (hourly, daily, weekly, etc.) based on this.

Using fast-replication, Db2 Recovery Expert creates a system backup on disk. Having a system backup on disk can greatly reduce recovery time. Db2 Recovery Expert can maintain up to 8 generations of a system backup on disk. Db2 Recovery Expert can also automate the offloading of a system backup to tape and use a tape based system backup for recovery if needed. Again, the most ideal recovery time for the business should be considered when determining the number of generations to maintain on disk and/or tape.

If disk space is a premium for creating and maintaining system backups, then possibly the system backups could be configured to immediately offload them to tape so that the disk volumes can be used to create system backups for other Db2 subsystems.

The following scenarios show possible implementations of Db2 Recovery Expert:

- To maintain a set of SNAP or FlashCopy backups for the previous week, you could configure a profile with a SNAP or FlashCopy backup type and seven generations of full backups. This job is scheduled to run daily.
- To maintain a set of BCV backups for the previous week, you could configure a profile with a BCV backup type and eight generations of full backups. Eight generations are required to maintain one week of backups, since one target volume is always mirroring the current set of volumes. This leaves seven backups available for system restoration. This job is scheduled to run daily.
- A separate profile can be created to run once a week. This profile would create backups that can be used to restore the system to a point farther back than one week ago. Depending on space considerations, you could set the number of generations as low or high as desired.

## Fast-replication considerations

- Consider incremental fast-replication options to reduce background copy time and resources
- Consider using space efficient fast-replication methods like EMC VDEVs to save space

## Analyzing data set isolation

---

If the desired usage of a system backup requires any type of data set isolation, then the physical location of the data sets and the user catalogs for these data sets will need to be examined. If the use for the system backup does not require any type of data set isolation, such as application or object recovery only, then this section can be skipped.

The requirement to have data isolated for some restore operations is because Db2 Recovery Expert invokes a volume level restore for certain operations. When a volume is restored, all of the data sets will be restored as they existed at the time the SLB was created. Consideration needs to be done for non-Db2 data sets that may reside on the volumes being restored and also the user catalogs must reflect the data sets on the volumes being restored

Db2 Recovery Expert provides a Db2 System Analysis and Configuration function that will help you in analyzing the data set placement for all of the data sets in a Db2 subsystem (see [Chapter 6, “The Subsystem Setup facility,”](#) on page 181). The Db2 System Analysis and Configuration function will also report on what type of restores and recoveries are allowed with the current configuration.

The following table summarizes data set isolation requirements based on a system backup's usage:

<i>Table 4. Data set isolation requirements</i>		
<b>System backup usage</b>	<b>Data set isolation requirements</b>	<b>Considerations</b>
Local site full system restore with forward recovery	<ol style="list-style-type: none"> <li>1. User catalogs for all Db2 data sets need to be included in the system level backup.</li> <li>2. Log and BSDS data sets and their associated user catalogs need to be isolated from database data sets and their associated user catalogs.</li> </ol>	<ol style="list-style-type: none"> <li>1. Non-Db2 data sets may be restored</li> <li>2. User catalogs should not contain non-Db2 data sets if the data sets are not on volumes being backed up.</li> </ol>
Local site full system restore with no forward recovery	User catalogs for all Db2 data sets need to be included in the system level backup.	<ol style="list-style-type: none"> <li>1. Non-Db2 data sets may be restored</li> <li>2. User catalogs should not contain non-Db2 data sets.</li> </ol>
Application or object recovery	User catalogs for the application or database data sets need to be included in the system level backup.	Only SCOPE=Data is needed.
Disaster, or remote site recovery	User catalogs for all Db2 data sets need to be included in the system level backup.	<ol style="list-style-type: none"> <li>1. Non-Db2 data sets may be restored.</li> <li>2. Partial system level backup cannot be used.</li> </ol>

The most stringent data set isolation requirements are required when you are using a system backup to do a local site full system restore with forward recovery. To ensure the most complete and accurate system restoration, the Db2 subsystem setup should follow these recommendations:

- The user catalog(s) for the Db2 log and BSDS data sets should be separate from the user catalog(s) for Db2 objects and indexes and not reside on the same volume(s) as any other Db2 databases or Db2 database catalog(s).
- The Db2 BSDS, active log, and archive log data sets should reside on separate volumes from the Db2 database data.

These requirements ensure that your Db2 database and log data are contained on separate sets of volumes. When you restore the volumes, the user catalogs will be restored and will reflect the data and log locations as they were at the time of the backup as shown in the following figure.

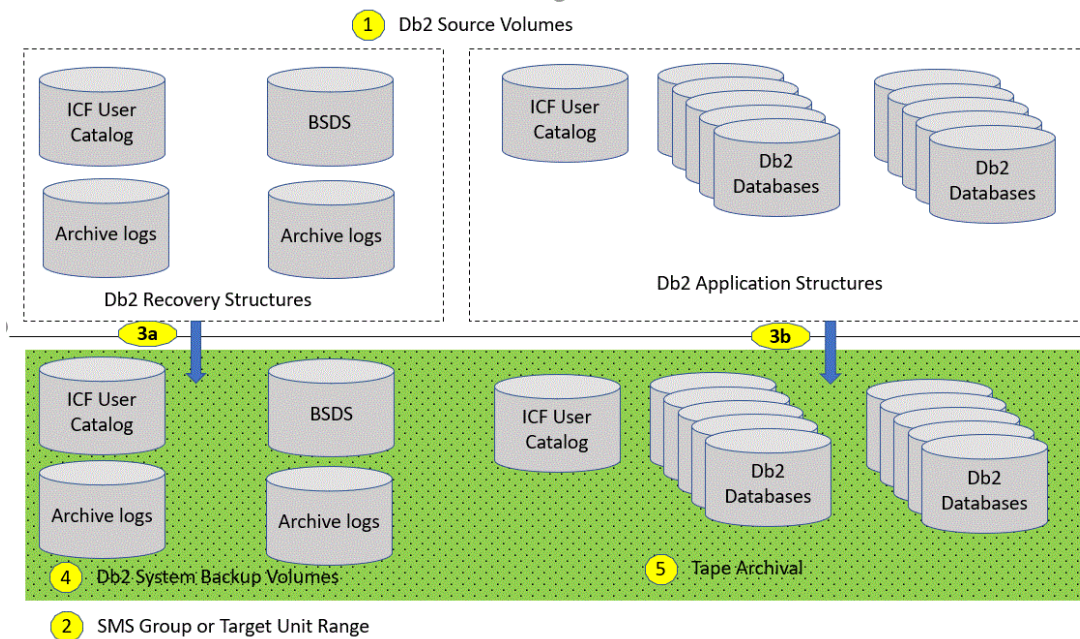


Figure 2. Db2 system configuration for a local site full system backup with forward recovery

The following steps describe implementing a local site full system backup with forward recovery:

1. The Db2 subsystem is discovered and analyzed so that the correct system backup methodology can be chosen for the intended recovery needs.
2. A system backup profile is created. During the profile creation process, DASD volumes used for the system backup are selected. The target backup volumes can be selected from a range of target units or an SMS storage group.
3. A system backup is created using the information provided in the backup profile to drive a storage-based fast replication process. Backups performed using the “full” option backup all volumes of the Db2 system (3a, 3b) while backups performed using the “data only” option backup only the data volumes (3b).
4. The backup is recorded in the Db2 Recovery Expert metadata repository. Recorded information includes: backup type, time, target volumes used, and data set name mappings for use in application-level recoveries.
5. Online disk volumes can be archived to tape automatically after each system backup or on demand using the System Restore and Offload ISPF menus.

## Planning for the creation of a Db2 subsystem backup

This task provides an overview of the steps necessary to create a Db2 subsystem backup.

Db2 Recovery Expert creates a system backup using information specified in system backup profiles and using DASD volume relationships specified in the volume mapping section of the system backup profile.



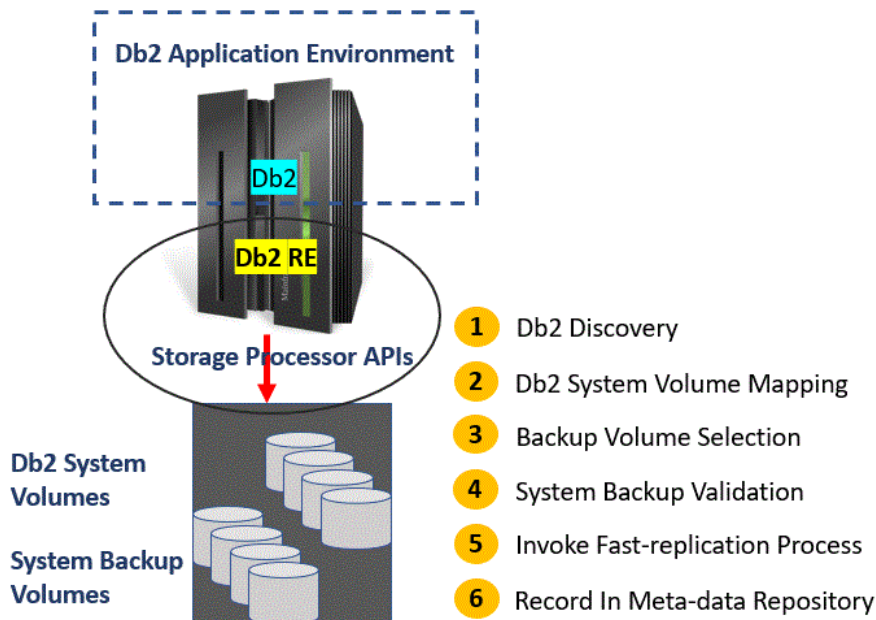


Figure 3. Creating a Db2 full system backup

**Note:** The Db2 Recovery Expert libraries along with the Db2 loadlibs (SDSNLOAD and SDSNEXIT) should not reside on the volumes being backed up. This can cause contention and can cause your ISPF session to hang until the system backup completes.

The following steps describe how to perform a system backup:

1. The Db2 system is discovered and analyzed. Source volumes are identified and data set and catalog placement is analyzed to determine if the Db2 subsystem layout can accommodate the system backup methodology for the intended recovery needs.
2. All source Db2 volumes are identified and analyzed to determine if non-Db2 data resides on the volumes. Warning messages are issued when non-Db2 data is included in a Db2 system backup.
3. Source Db2 volumes are mapped to target volumes that will contain the system backup. The source to target volume mapping is done during the backup profile creation process.
4. Db2 Recovery Expert performs system backup validation checks before each backup to ensure that the backup is complete and can be used for a successful restore operation.
5. Db2 Recovery Expert invokes an appropriate storage-based fast-replication process. The backup is performed in the storage processor without using host CPU and I/O resources. The system backup is completed from a Db2 Recovery Expert system and application perspective when the storage-based fast-replication command is issued. Typically, full Db2 Recovery Expert system backups complete in seconds or less. Data consistency functions are employed to ensure that the backup data state can be used for recovery purposes. Data consistency is ensured by suspending Db2 Recovery Expert logging activity or using the appropriate storage processor consistency functions.
6. When the backup is complete, information about the backup is recorded in the Db2 Recovery Expert metadata repository. The metadata information includes an inventory of where each Db2 Recovery Expert database data set resides on the backup volumes. This information is used to restore individual data sets when performing a Db2 Recovery Expert application or object recovery operation.

## Performing a Db2system, application, or object recovery

Db2 Recovery Expert automates Db2 system, application, or object recovery from a system backup. System recovery is performed using the ISPF interface and application or object recovery is performed using either the ISPF or Web interface.

System recovery can be a full or data only recovery. When a full system recovery is performed, Db2 Recovery Expert will restore all data and log volumes and no Db2 log apply recovery is performed on the



restored volumes. Performing a full system recovery is analogous to performing a “recover to copy” when using image copies for recovery.

Figure 4 on page 53 depicts the use of a system backup for recovery of applications or objects for a Db2 environment.

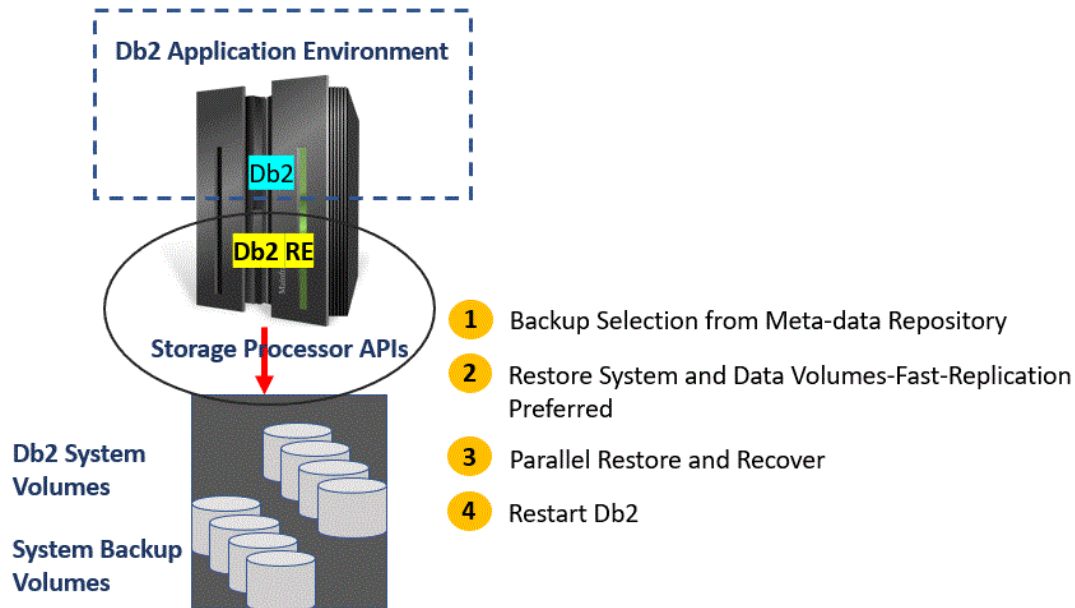


Figure 4. Using Db2 Recovery Expert to recover an application environment

The following processing steps describe a Db2 system recovery process using a Db2 Recovery Expert-generated system backup:

1. The appropriate system backup metadata is selected from the metadata repository using the recovery criteria specified in the Restore System Display from the System Restore and Offload panels.
2. Db2 Recovery Expert invokes an appropriate, storage-based fast-replication process to perform the system restore process. The restore operation is performed in the storage processor without using host CPU and I/O resources.
3. The Db2 recovery processes begin after the volume restore process has started. Thus, the Db2 recovery process is performed in parallel with the volume restore process to minimize overall Db2 recovery time.

Data-only recovery directs Db2 Recovery Expert to restore only the data volumes from the system backup. This leaves the Db2 log data sets unaffected and available to use for Db2's recovery processes. The Intelligent Recovery Manager component of Db2 Recovery Expert then determines and executes the recovery utilities in order to bring the databases up to the point in time specified. The recovery processes include fast data set restores and running one or more of the following utilities:

- Recover Utility
- Rebuild Index Utility
- SQL Undo/Redo Utility
- DSN1COPY Utility
- Unload and Load Utility
- Check Data Utility
- Post Recovery Image Copy Utility

These processes can take place while the storage processor is restoring the data volumes in the background. The recovery process can use a point in time or recover to current to establish the end of the recovery process. Figure 5 on page 54 depicts how the Intelligent Recovery Manager drives the various recovery processes in order to recover an application.

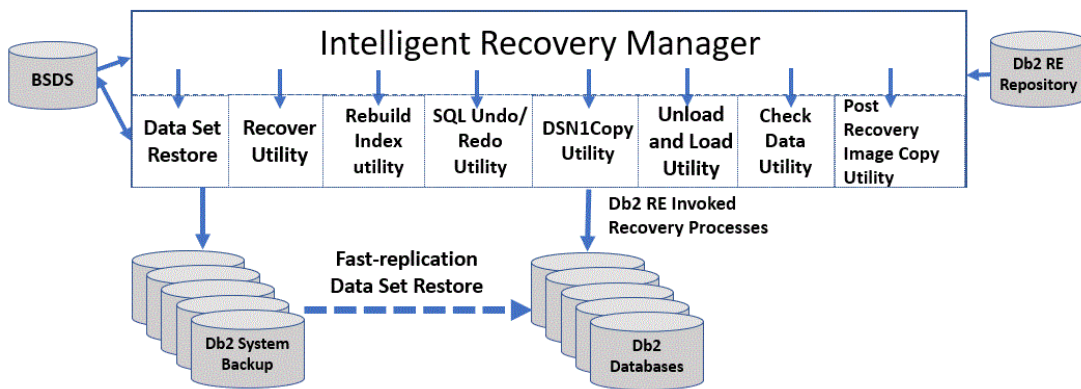


Figure 5. Db2 Recovery Expert controlled application recovery

Db2 application or object-level recovery is done by creating an application profile. You can create application profiles that will recover objects using the schema level repository (SLR) or Db2 logs. You can also create an ad-hoc specification that can be used to recover objects that were changed by a transaction. Application profiles are created and stored in the metadata repository and can be recalled for use when application recovery is required. The application profile specifies a recover to point as either current or a point in time. The application profile also describes which recovery resources to use by specifying whether to recover from disk, an offloaded tape, an image copy, or all available resources.

System and object recoveries can restore data and perform Db2 recovery operations in parallel when recovering from a system backup that resides on disk. Db2 Recovery Expert will invoke an appropriate data set fast-replication process in the storage processor. While the data is flowing from the backup volume to the source Db2 system to restore the data, Db2 recovery processes can run in parallel with the data restoration process.

The Db2 Recovery Expert parallel restore and recovery process significantly reduces overall recovery time and increases application high availability.

## Planning a tape-based Db2 disaster restart methodology

A tape-based disaster restart methodology is one where a restartable Db2 system is captured on disk and transferred to a disaster recovery site using tape as a transport mechanism.

Traditional image copy based Db2 disaster recovery procedures are not used at the disaster recovery site. Instead, tapes containing a restartable Db2 system are loaded onto disk and Db2 is restarted at the disaster recovery site. The disaster recovery exercise is complete when the Db2 restart process completes.

Db2 Recovery Expert creates a restartable Db2 system while creating a system backup. Db2 Recovery Expert coordinates suspending Db2 logging activity or a storage-based consistency function with a storage-based fast-replication procedure to create a system backup that is dependent-write-consistent.

A dependent-write-consistent data state is identical to a Db2 system that has been exposed to a power failure. When a Db2 system is restarted using a system backup, the dependent-write-consistent data state that is inherent in the system backup is transformed to a transactionally-consistent data state by the Db2 restart process. Once the restart process is complete, the Db2 recovery is done.

Db2 Recovery Expert has facilities to pre-process archive logs and image copies as they are copied to tape for disaster recovery purposes. The pre-process will also create a copy of the BSDS data sets conditioned with the information on what archive logs and image copies will be transported to the disaster recovery site. The pre-processing creates a partitioned data set with the information needed to restore the conditioned BSDSs and other files needed for recovery.

The disaster recovery procedures exercised at the disaster site restore the Db2 system using the last offsite system backup, restore the conditioned BSDS data sets, restore archive logs and image copies,

execute Db2 recovery processes, and start Db2. Figure 6 on page 55 shows the steps required to transform traditional Db2 disaster recovery procedures into a tape-based disaster restart solution.

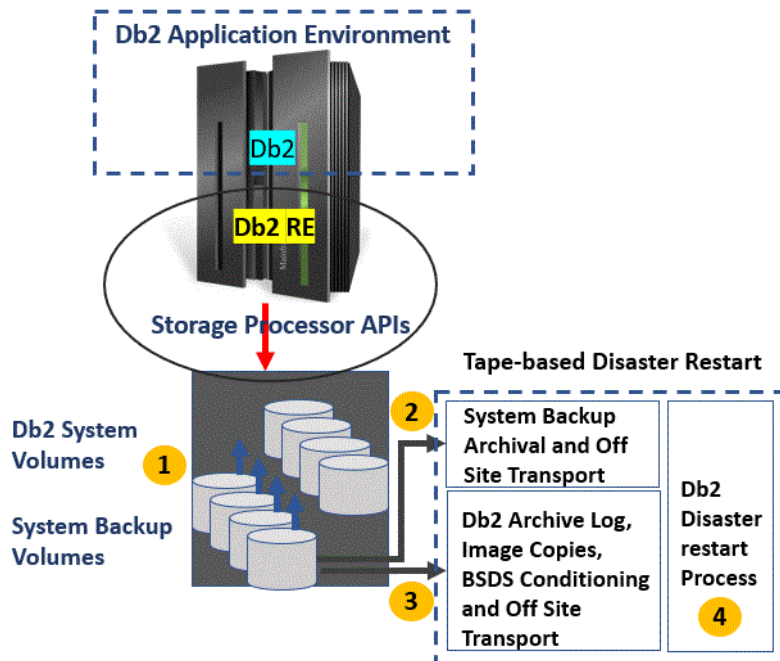


Figure 6. Using Db2 Recovery Expert to implement a tape-based disaster restart methodology

The following processing steps refer to Figure 6 on page 55 and are used to implement a Db2 tape-based disaster restart solution:

1. Db2 Recovery Expert creates a system backup that has a dependent-write-consistent data state.
2. The system backup is archived to tape and one of the archive tape copies is targeted to be transported to the disaster recovery site. Tape archival options and offsite specification are provided in the System Restore and Offload panels available from the main ISPF panel.
3. Db2 archive logs and Image Copies are identified; a copy of the BSDS data sets is created and conditioned with the files to be sent to the disaster recovery site; and information is gathered and sent to the disaster recovery site to restore these files at the disaster recovery site when they are needed.
4. A disaster restart process is exercised where the last offsite system backup is restored, databases are recovered, and Db2 is restarted. The Db2 restart process transforms the dependent-write-consistent data state created in step 1 into a transactionally-consistent data state. Db2 is ready to accept new work after the restart process is complete.

## Db2 Recovery Expert and storage system integration

Db2 Recovery Expert leverages storage system capabilities and fast-replication products to perform backup and restore operations on behalf of the Db2 system. Using storage-based fast-replication to copy data allows Db2 systems to be backed up instantaneously without using host CPU and I/O resources.

Db2 system and database recovery operations are expedited by allowing data to be restored using storage system services while Db2 recovery operations are performed in parallel. Some storage-based fast-replication products used to support a Db2 Recovery Expert system backup approach include: IBM FlashCopy, EMC TimeFinder, and Hitachi Data Systems (HDS) ShadowImage.

Db2 Recovery Expert integrates storage-based fast-replication facilities with Db2 backup and recovery processes through the use of a Data Copy Manager. The Data Copy Manager is a software component used to translate logical database backup and restore requests into physical storage system fast-replication facility requests. It uses the Db2Log Suspend operation or storage-based consistency functions to create a dependent-write consistent copy of the Db2 data.

The Data Copy Manager invokes appropriate volume and data set fast-replication facilities to leverage the underlying storage system capabilities. These requests copy the data on behalf of the Db2 systems using storage system facilities. The Data Copy Manager separates Db2 logical backup and restore operations from the physical backup processes. This allows new data copy methods and features to be integrated into the Db2 Recovery Expert infrastructure easily.

The Db2 Recovery Expert Data Copy Manager integrates with specific storage system services and fast-replication facilities through the use of copy blades. A copy blade is a logical grouping of data copy services that can be invoked to drive specific storage hardware and software facilities using appropriate application programming interfaces. Copy blades invoke specific storage system copy services like storage-based consistency functions and drive fast-replication methods to backup and restore Db2 data on behalf of the Db2 system. Copy blades are used to copy data at a storage volume level and at a data set level. Db2 Recovery Expert supports the following copy blades:

- IBM FlashCopy
- IBM DFSMSdss
- EMC TimeFinder
- HDS ShadowImage

The following figure depicts the Db2 Recovery Expert Data Copy Manager and its use of copy blades.

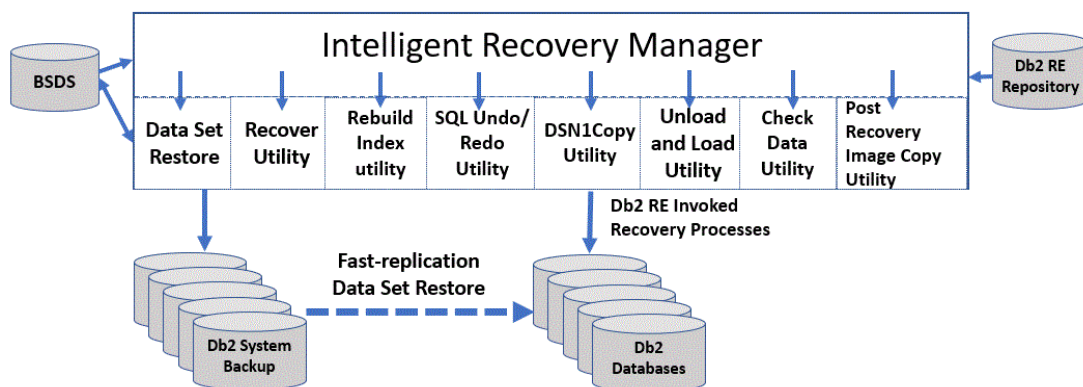


Figure 7. Db2 Recovery Expert Data Copy Manager interaction with copy blades

The copy blade and copy method used to perform Db2 backup and restore operations are specified when you create a system backup profile. System backup defaults should be set in consultation with your storage administrator. Copy blade usage specifications can be overridden to accommodate specific Db2 system backup requirements when creating or updating a system backup profile (see Chapter 8, “Creating system backup profiles and system backups,” on page 213).

Once the copy blade, copy method, and data consistency control mechanisms are specified in the backup profile, then Db2 Recovery Expert will drive appropriate data copy services and fast-replication facilities through its respective copy blade interfaces to perform Db2 backup or restore operations.

## Copy blade selection considerations

Before configuring Db2 Recovery Expert, it is important to consult with your storage administrator to determine the type of storage processors used in your Db2 environment and the preferred fast-replication facilities to use.

Knowing the type of storage processors and available fast-replication facilities will allow you to determine which copy blade, which fast-replication method, and which data consistency mechanism to use for creating a Db2 system level backup in your environment.

## IBM FlashCopy blade

The IBM FlashCopy blade provides Db2 Recovery Expert interface support for IBM FlashCopy. The FlashCopy blade uses the native IBM ANTRQST macro interface to invoke FlashCopy.

This method of invoking FlashCopy is very fast as it takes a very small amount of time to issue FlashCopy commands which create a point-in-time copy of a Db2 system at the volume level. All tracks are copied in the background for each system level backup. The Db2 Recovery Expert Log Suspend operation is used to ensure data consistency while FlashCopy commands are executed.

FlashCopy does not require the use of SMS or HSM. This reduces the complexity of the backup configuration.

FlashCopy V1 can be used to create full Db2 system level backup and restore operations. However, FlashCopy V2 is required to perform application or object-level restore functions. Application and object-level restore operations require data set FlashCopy support that is available in FlashCopy V2.

When using the FlashCopy blade, the Db2 data must reside on FlashCopy capable storage subsystems and the Db2 system backup profile must define identically sized source and target volumes. In addition, the source and target volumes must both be located in the same storage subsystem. Users can specify target volume ranges so there is no need to update a backup profile when the Db2 subsystem expands to new volumes.

FlashCopy commands issued through the FlashCopy blade interface make a backup of all the Db2 system volumes. The FlashCopy blade uses volume based copy services to create the Db2 system level backup and it uses volume or data set copy services to restore Db2 systems, application, or objects respectively. Application or object recovery will be performed through DFSMSdss. DFSMSdss will use fast-replication if possible and will use host based I/O (slow copy) if the FlashCopy background copy process is not complete.

When using the FlashCopy blade, the backup target volumes are kept offline. Db2 Recovery Expert will perform all the necessary commands to bring the volumes online when they are needed to copy the volumes to tape or to perform application recovery through DFSMSdss or FDR.

When Db2 Recovery Expert needs to bring a backup volume online temporarily, it will relabel the backup volume, vary it online, and then read the data from the backup volume. Once the backup volume is no longer needed, Db2 Recovery Expert will vary the volume offline and then relabel it to the original volume serial.

The IBM FlashCopy blade can support IBM, EMC and HDS storage processors when FlashCopy or FlashCopy emulation products are available for use. The FlashCopy blade can create system level backups for Db2 systems that are spread across heterogeneous storage systems when all storage systems are using FlashCopy compatible fast-replication products.

## EMC TimeFinder copy blade

The EMC TimeFinder copy blade is used to invoke EMC TimeFinder copy services.

The EMC TimeFinder copy blade supports the following EMC copy methods:

- TimeFinder/Mirror
- TimeFinder/Clone Mainframe Volume Snap
- TimeFinder/Snap Mainframe Data Set Snap
- TimeFinder/Snap Virtual Devices
- EMC Engenuity Consistency Assist

Db2 Recovery Expert users should consult with their storage administrator to determine which EMC TimeFinder copy blade method is best for their environment. Storage administrators should be consulted on the use of EMC Consistency Assist technology in their environment.

## EMC TimeFinder/Mirror copy method

Db2 Recovery Expert uses EMC TimeFinder/Mirror to make a Business Continuity Volume (BCV) backup of a Db2 subsystem. A BCV can be established as a mirror of a standard volume and synchronized with the standard volume. Once synchronization is established, then all data written to the standard volume is also written to the BCV.

When the standard and BCV pairs representing the Db2 subsystems are synchronized and Db2 Recovery Expert requests a system level backup to be created, then the currently established BCV pairs are split from their standard volumes. The data on the BCVs becomes the point-in-time system level backup. The Db2 subsystem must be on EMC capable TimeFinder/Mirror storage processors.

TimeFinder/Mirror does not require SMS or HSM usage. This reduces the complexity of the backup configuration.

Standard volumes and BCVs must be the same model type (for example, 3380 or 3390) and have the same number of cylinders (for example, 3390-3 or 3390-9). In addition, the source and target volumes must be located in the same physical Symmetrix storage subsystem. When Db2 expands to new volumes, the backup profile must be updated to add new Db2 source and BCV target units. If you have questions about your Symmetrix configuration or TimeFinder/Mirror usage, contact your EMC customer service representative.

When a backup profile is created that keeps more than one generation of BCV backups, then Db2 Recovery Expert immediately establishes the next set of BCVs to the standard volumes representing the Db2 subsystem when each backup is taken. The second set of BCVs will become the next generation system level backup. BCV copies are incremental, so only the changed tracks are copied since the last time the BCVs were used to create a backup.

TimeFinder/Mirror can use EMC Consistency Assist Technology so a Db2 log suspend operation is not required during the backup process. A Db2 system level backup is complete and usable at the time the BCVs are split. If the BCVs have not fully synchronized when the backup is requested, Db2 Recovery Expert can optionally wait for the copy process to complete before continuing.

Db2 system level restore operations can be performed immediately after the backup is made. The TimeFinder/Mirror copy blade invokes a TimeFinder BCV Restore operation to restore Db2 data. The restore operation copies only the changed tracks made to the source Db2 volumes since the backup was made.

Db2 application and object recovery use EMC Snap Dataset to restore Db2 data instantaneously. Db2 data can be restored using EMC Snap Dataset without clipping and bringing the volumes online.

BCV volumes containing a Db2 system level backup must be re-labeled and brought online before they can be offloaded to tape. Db2 Recovery Expert will perform this process automatically.

Usage Requirements:

- EMC Symmetrix 6 and higher running with Microcode 5x67 or higher
- To use Engenuity Consistency Assist (ECA), Microcode 5x67 with patch 14882 or Microcode 5x68 with patch 18954 or Microcode 5x69 or higher is required. To use ECA with SNAP VOLUME technology, the EMC SNAP library must be level 5.5 or higher.

**Note:** Db2 Recovery Expert performs a “Protected BCV restore” in order to preserve the BCV backup point when a BCV Restore operation is performed. The Protected Restore operation is not supported prior to Microcode 5x70. If any Symmetrix array is at a microcode level lower than 5x70, then a SNAP type restore will be performed to restore Db2 data.

## EMC TimeFinder/Clone copy method

Db2 Recovery Expert uses EMC's TimeFinder/Clone Mainframe Volume Snap Facility (hereafter referred to as the SNAP utility) to create a Db2 system level backup. The SNAP utility can be used to perform fast-replication for full volumes or for data sets. The Db2 subsystem must be on EMC capable TimeFinder/Clone storage processors.

TimeFinder/Clone does not require SMS or HSM usage. This reduces the complexity of the backup configuration.

To use Db2 Recovery Expert, you must define source and target volumes to have identical volume size and model types. In addition, the source and target volumes must both be located in the same Symmetrix storage subsystem. The target volumes can be either standard volumes or BCVs. Users can specify target ranges so there is no need to update a backup profile when Db2 expands to new volumes.

TimeFinder/Clone Mainframe Volume Snap Facility can use EMC Consistency Assist Technology so a Db2 log suspend operation is not required. EMC TimeFinder/Clone Mainframe Volume Snap can be performed in phases using a phased snap so performance implications to source volumes can be timed and mitigated. TimeFinder/Clone full volume snap operations are differential so only changed tracks are copied since the last backup was created.

Db2 system restore operations need to wait until background copy processing is complete. Application and object restore operations use TimeFinder/Clone Mainframe Data Set Snap for instantaneous restore of Db2 data sets. Db2 restore operations using Data Set Snap need to wait until the system level backup background copy process is complete. Fast data set restore operations can be performed through Data Set Snap without re-labeling and bringing the backup volumes online.

### **EMC TimeFinder/Snap virtual device usage**

EMC virtual devices provide for space efficient snap operations. Db2 backup target volumes do not need a full backup volume for each source Db2 volume. EMC virtual devices use a "SAVE POOL" to store the original version of source data before it is changed and after the backup has been taken. This type of backup can significantly reduce the amount of backup space that is required.

Users can specify target ranges so there is no need to update a backup profile when Db2 expands to new volumes. EMC Consistency Technology can be used so a Db2 log suspend operation is not required. The Db2 system must be on EMC capable TimeFinder/Snap storage processors with virtual device support.

TimeFinder/Snap does not require SMS or HSM usage. This reduces the complexity of the backup configuration.

The use of EMC virtual devices allows many Db2 system backup points to be created and saved on fast replication disk. However, a true disk backup never exists; only the changed tracks since the last backup are stored in the save pool. Save pools must be monitored to ensure the save pool does not fill up. The virtual device backup can be copied to tape, at which time a full backup of the Db2 system is written to tape and can be used for any recovery purpose.

Db2 system level restore operations are performed by snapping the virtual volumes back to their source volumes. Only the changed tracks since the backup was created are copied to restore the Db2 data. Application and object restore operations copy data sets from the virtual device backup to their respective source volumes with DFSMSdss using host copy services.

### **HDS ShadowImage copy blade**

The HDS ShadowImage copy blade supports HDS native ShadowImage volume copy processes. The copy process is very fast so Db2 Log Suspend time is minimized.

ShadowImage fast-replication copies are incremental copies so only the changed tracks are copied since the last system level backup was created. The incremental process reduces the storage processor overhead associated with copying all the source tracks to the target device for each backup operation. The Db2 Recovery Expert Log Suspend operation is used to ensure data consistency while ShadowImage commands are executed.

The HDS ShadowImage copy blade does not require the use of SMS or HSM. This reduces the complexity of the backup configuration.

The ShadowImage copy process requires that the source and target volumes be on the same storage processor. The ShadowImage copy blade supports three backup generations. The ShadowImage copy blade allows coordinated FlashCopy and ShadowImage copy methods to be used. That is, source Db2



volumes located on HDS storage processors can use ShadowImage while other source volumes can use FlashCopy fast-replication facilities to perform a Db2 system level backup operation.

Db2 system recovery operations use ShadowImage to restore backup volumes. Application and object recovery operations are performed using DFSMSdss. DFSMSdss will use data set fast replication if it is available or it will use host based I/O (slow copy) if it is not available or if the backup background copy process is not complete.

When using the ShadowImage copy blade, the target volumes are kept offline. Db2 Recovery Expert will perform all the necessary commands to bring the volumes online when needed to copy the volumes to tape or to perform application recovery through DFSMSdss.

**Note:** Db2 Recovery Expert does not support waiting on background copy to complete.

## IBM DFSMSdss copy blade

The Db2 Recovery Expert DFSMSdss copy blade can be used to create a Db2 system level backup.

The DFSMSdss copy blade uses the ADRDSSU interface specifying fast-replication (preferred). The copy blade will drive fast-replication services if they are available and will use host based I/O copy methods if it is not. This copy blade interface can be used to drive data sets or volume based fast-replication facilities.

The Db2 system backup profile must define identical source and target volumes and model types. The source and target volumes may or may not be FlashCopy capable. If the source and target volumes are all FlashCopy capable, then the Db2 Recovery Expert Log Suspend operation is used to ensure data consistency while DFSMSdss commands are executed.

The use of DFSMSdss requires Db2 logs to be suspended for a longer period of time due to the overhead of executing the fast replication commands through the DFSMSdss interface. If any source or target volume is not FlashCopy capable, then Db2 Recovery Expert requires the Db2 system to be down to create the backup.

The DFSMSdss copy blade does not require SMS or HSM usage. This reduces the complexity of the backup configuration.

The DFSMSdss copy blade supports IBM FlashCopy on IBM storage processors and compatible FlashCopy products on EMC and HDS storage processors. It also supports SnapShot on STK or IBM Ramac storage processors. Invoking FlashCopy facilities using the ADRDSSU interface is slower than using the IBM FlashCopy blade which uses the ANTRQST interface.

When using the DFSMSdss blade, the target volumes are kept online and therefore must all have unique volume labels. The z/OS data set placement rules must be set up such that the target units will not be used for new data sets or altered by other processes since they are kept online at all times.

## Db2 32KB tablespace requirements

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Db2 data sets can be defined with variable control interval sizes.

If you do not plan to suspend the logs during backups and are not using the Db2 Backup utility, Db2 Recovery Expert requires that Db2 data sets defined with a page size of 32KB have their control interval size defined as 32KB. This ensures that when I/O to a device is stopped for backup, the control intervals of a data set are not spread across more than one track, possibly resulting in a broken page.

If the logs are not suspended, 32KB data sets with 32KB page sizes are checked during the backup. If the CI size is not 32KB, the space is flagged, it is skipped, and a warning message is generated. If you want to use Db2 Recovery Expert on this space, you must alter the CI size and run an IBM REORG utility on the tablespace.

If instead you run an SLB backup of type **Db2** using the Db2 Backup System utility, or if the Db2 **Log Suspend** function is enabled (as it is by default), there are no specific 32 KB tablespace requirements.



# Chapter 4. Customizing Db2 Recovery Expert

## Preparing to customize Db2 Recovery Expert

Before you start to customize Db2 Recovery Expert for the first time, determine all of the customization values that you need to specify during the customization process, and familiarize yourself with all of the customization tasks.

The following checklist describes each significant customization step. Use this checklist to guide you through the entire customization process.

**Tip:** Print the following checklist and the data set names and parameter values worksheets. Use the worksheets to record your values, and refer to them during the customization process.

Task	Link to detailed instructions	Status
<b>Tools Customizer basics</b>		
Prior to beginning the customization process, familiarize yourself with Tools Customizer terminology and data sets, and other basic information about Tools Customizer.	<a href="#">“Tools Customizer terminology and data sets” on page 164</a>	
<b>Software requirements</b>		
Verify that your environment meets the minimum software requirements. To install and use Db2 Recovery Expert, your environment must be running a supported version of the z/OS operating system and of Db2 for z/OS. Additionally, certain levels of maintenance must be applied.	<a href="#">“Set up your environment prior to customization” on page 63</a>	
<b>SMP/E installation</b>		
Verify that Db2 Recovery Expert has been installed correctly. Db2 Recovery Expert is installed by using standard SMP/E processing.	<a href="#">“Set up your environment prior to customization” on page 63</a>	
Verify that Tools Customizer for z/OS has been installed correctly. Tools Customizer for z/OS is installed by using standard SMP/E processing.	<a href="#">“Set up your environment prior to customization” on page 63</a>	
<b>Security requirements</b>		
Make sure that you have the required authorizations to use Db2 Recovery Expert.	<a href="#">“Set up your environment prior to customization” on page 63</a>	
<b>Adding ARY\$TSOC to SYS1.PARMLIB</b>		
Add ARY\$TSOC to the IKJTSO00 member in SYS1.PARMLIB.	<a href="#">“Adding ARY\$TSOC to SYS1.PARMLIB” on page 64</a>	
<b>Create RBA Capture Utility PDS library</b>		
Perform several set up tasks if you want to use the RBAs and clock times that Db2 Recovery Expert RBA Capture utility records.	<a href="#">“Create RBA Capture utility PDS library” on page 64</a>	
<b>Undiscovered Db2 parameters</b>		

Task	Link to detailed instructions	Status
Specify several Db2 parameters that are not discovered using the Discover Exec.	<a href="#">“Undiscovered Db2 parameters” on page 65</a>	
<b>Specifying Db2 load libraries in the correct order</b>		
Verify that the Db2 load libraries that Db2 Recovery Expert will use are specified in the correct order when they are defined in the <b>Product Parameters</b> panel.	<a href="#">“Specifying Db2 load libraries in the correct order” on page 65</a>	
<b>Installing the web interface</b>		
Perform the set up tasks required to install the Db2 Recovery Expert web interface.	<a href="#">“Installing the web interface ” on page 65</a>	
<b>Configuring the PARMLIB member</b>		
The default settings in the ARY#PARM member are suitable for most installations. If you do require a parameter change, refer to the tables in this section for information on the parameters, their settings, and the potential ramifications of changing the defaults.	<a href="#">“Configuring the PARMLIB member” on page 66</a>	
<b>Configuring RACF profiles for Db2 Recovery Expert</b>		
To regulate user access to Db2 Recovery Expert functions, you can create RACF or ACF2 security profiles.	<a href="#">“Configuring access profiles for Db2 Recovery Expert” on page 82</a>	
<b>Gather data set names</b>		
During the customization process, you must specify data set names for the following: <ul style="list-style-type: none"> <li>• Tools Customizer</li> <li>• Db2 Recovery Expert</li> </ul>	<a href="#">“Worksheets: Gathering required data set names” on page 83</a>	
<b>APF authorization</b>		
The following data set must be APF authorized: <ul style="list-style-type: none"> <li>• SARYLOAD</li> </ul>	<a href="#">“APF authorizing load libraries” on page 85</a>	
<b>Gather parameter values</b>		
During the customization process, you must specify parameter values for Db2 Recovery Expert, for Db2, and for your LPAR.	<a href="#">“Worksheets: Gathering parameter values for Db2 Recovery Expert” on page 86</a>	
<b>Customize Db2 Recovery Expert</b>		
Start Tools Customizer by running a REXX EXEC from the ISPF Command Shell panel.	<a href="#">“Starting Tools Customizer” on page 150</a>	
Set up Tools Customizer user settings. If you are running Tools Customizer for the first time, you must modify several user settings to suit your environment. Otherwise, if the user settings that you have already established are still appropriate, skip this step.	<a href="#">“Modifying Tools Customizer user settings” on page 151</a>	

Task	Link to detailed instructions	Status
Complete the steps in the appropriate customization roadmap based on the type of customization that you are performing.		
<b>Customizing Db2 Recovery Expert for the first time</b> Follow this roadmap if you do not have a customized version of Db2 Recovery Expert, and you need to customize it for the first time.	<a href="#">“Roadmap: Customizing Db2 Recovery Expert for the first time” on page 133</a>	
<b>Customizing a different version of Db2 Recovery Expert</b> Follow this roadmap if you have already customized a version of Db2 Recovery Expert and you want to use the same parameter values to customize a different version.	<a href="#">“Roadmap: Customizing a new version of Db2 Recovery Expert from a previous customization” on page 134</a>	
<b>Recustomizing Db2 Recovery Expert</b> Follow this roadmap if you have a customized version of Db2 Recovery Expert but you want to change one or more parameter values.	<a href="#">“Roadmap: Recustomizing Db2 Recovery Expert” on page 135</a>	

## Set up your environment prior to customization

Prior to beginning the customization process, ensure that your environment meets all requirements, that you have installed all prerequisite software, and that you have considered how you want to customize optional features.

### Verify that your environment meets software requirements

Ensure that you are using z/OS V1.12 (5694-A01) or later.

Ensure that you are using one of the following supported versions of Db2 for z/OS:

- Db2 V11 (5615-Db2)
- Db2 Value Unit Edition V11.1 (*PID-TBD*)
- Db2 V12 (5650-Db2)
- Db2 Value Unit Edition V12 (*PID-TBD*)

### Verify that Db2 Recovery Expert has been installed successfully

See the Program Directory for IBM Db2 Recovery Expert for z/OS, GI10-8927 for installation instructions.

### Verify that Tools Customizer has been installed successfully

Tools Customizer is a component of IBM Tools Base for z/OS (5655-V93), which is available free of charge. Tools Customizer provides a standard approach to customizing IBM Db2 for z/OS Tools.

See the Program Directory for IBM Tools Base for z/OS, GI10-8819 for installation instructions.

### Verify that your environment meets security requirements

Db2 Recovery Expert requires no extra security measures outside of standard Db2 security.

If a user does not have authority to view a table within a Db2 subsystem, Db2 Recovery Expert will not allow the user to see data changes made to that table. Similarly, undo and redo SQL that is generated from the product can be run through products such as SPUFI or QMF, and therefore also adheres to normal Db2 security for the user who runs this SQL.

You must have authorization to run the SELECT statement on the following tables:

- SYSIBM.SYSAUXRELS
- SYSIBM.SYSCOLUMNNS
- SYSIBM.SYSCOPY
- SYSIBM.SYSFIELDS
- SYSIBM.SYSINDEXES
- SYSIBM.SYSKEYS
- SYSIBM.SYSKEYTARGETS
- SYSIBM.SYSTABLEPART
- SYSIBM.SYSTABLES
- SYSIBM.SYSTABLESPACE
- SYSIBM.SYSXMLRELS
- SYSIBM.SYSXMLSTRINGS

By default, Db2 Recovery Expert can run the REPORT utility against filtered objects. This activity is transparent to the user and can be disabled by setting the Misc Flags value on the general report panel to a value of X. If you do not disable this feature for any given run, you must have one of the following authorizations to access the REPORT utility through Db2 Recovery Expert:

- RECOVERDB privilege for the database
- DBADM or DBCTRL authority for the database
- SYSCTRL or SYSADM authority

## Adding ARY\$TSOC to SYS1.PARMLIB

Before starting the customization process you must add ARY\$TSOC to the IKJTSO00 member in SYS1.PARMLIB.

You will add the program ARY\$TSOC to the AUTHPGM and AUTHTSF sections of member IKJTSO00 in SYS1.PARMLIB. You can see how this member is setup by issuing the TSO PARMLIB command. This command shows the contents of the IJKTSOxx member that is active. For more information on IKJTSO00, refer to [IKJTSOxx \(TSO/E commands and programs\)](#) in the IBM Knowledge Center for z/OS.

**Note:** If this installation step was missed, an error message stating, *The job steplib is not APF authorized*, may be displayed during certain system-level operations, such as Db2 Subsystem Analysis and Configuration.

## Create RBA Capture utility PDS library

The Db2 Recovery Expert RBA Capture utility records the current RBA of a Db2 subsystem at regular intervals based on the store clock time. This utility is optional. It uses a started task to capture the RBAs and clock times, and stores the data in its own repository that is separate from the backup and restore system repository.

In order to use this feature you must perform the following tasks before customization:

- You must create a product parmlib data set PDS if one does not exist.
- You must create the member ARYSSID in the parmlib data set.
- You must create the contents of ARYSSID.

The member ARYSSID will contain all the SSID's of the Db2 subsystems that will be monitored by the RBA Capture utility. Each new SSID should start as a new row in the first column. ARYSSID must only contain the list of SSID's to be monitored, no other lines such as comments can be entered.

In order to support multiple LPARs, a different data set with member ARYSSID will have to be created for each LPAR.

<i>Table 5. Example of multiple LPAR support</i>		
<b>LPAR</b>	<b>PDS</b>	<b>Member</b>
RS22	<i>anydatasetname</i>	ARYSSID (includes SSIDs for this LPAR)
RS23	<i>anydatasetname</i>	ARYSSID (includes SSIDs for this LPAR)

You will specify the name of the PDS that contains the ARYSSID member using the Tools Customizer in the **Required Parameters** input field **Product parmlib dataset**.

## Undiscovered Db2 parameters

Many of the parameters that you will specify on the Tools Customizer Db2 Parameters panel may be discovered automatically when you use Db2 Recovery Expert Discover EXEC.

There are three Db2 parameters that are not discovered using the Discover EXEC. The three parameters are the Db2 version level number, the run library, and the database name where the Db2 Recovery Expert objects will be stored.

You must manually specify these parameters from the Tools Customizer Db2 Parameters panel as follows:

- Specify your version of Db2 in the **Level Number** field that is found under the **General Db2 Information** heading. You may specify 101, 111, or 112 depending on the version of Db2 that you are using.
- Specify the name of the run library for Db2 Recovery Expert in the **Run Library** field that is found under the **Db2 Libraries** heading.
- Specify the name of the database that will hold the Db2 Recovery Expert objects in the **Database for Recovery Expert objects** field that is found under the **Recovery Expert Db2 vars** heading.

## Specifying Db2 load libraries in the correct order

Db2 Recovery Expert requires its Db2 load libraries to be in a specific order when they are defined in the **Product Parameters** panel.

There are two possible situations where the Db2 load libraries for Db2 Recovery Expert may be specified in the wrong order. The first situation is when you do not use the Db2 Recovery Expert Discover EXEC to discover product information and the second situation is when you are upgrading from Db2 Recovery Expert V2.2.

Db2 Recovery Expert requires Db2 SDSNLOAD to be defined under the load library. You define SDSNLOAD using the **Db2 Libraries Load Library** field from the **Db2 Parameters** panel.

## Installing the web interface

The Db2 Recovery Expert web interface is installed using the Tools Customizer. The web interface files are unpacked using the UNPAXSH JCL job. Tools Customizer will edit and run this job.

Before starting the customization process:

- Obtain write access to the UNPAXSH path. If necessary you can update the UNPAXSH file path to use your own specific file path.
- Identify the HFS directory where the web interface files will be installed. The directory must not already exist and will be created by the UNPAXSH job. The HFS directory will need 2 MB of memory.

During the customization process you will be asked to enter the following information:

- In the HFSHTDOC variable you will specify the name that will be used for the HFS directory.

- In the MVSHTDOCs variable you will specify the name of the paxed data set.

## Clearing web browser cache after upgrading or applying maintenance

It is recommended that after applying maintenance and before opening the Db2 Recovery Expert web browser interface, you clear your web browser's cache.

## Configuring the PARMLIB member

Db2 Recovery Expert uses a parameter library (PARMLIB) that provides settings to control various aspects of the backup and restore utilities. The name of the PARMLIB is ARY#PARM and it is a member of the SAMPLIB data set.

The default settings in the ARY#PARM member are suitable for most installations. If you do require a parameter change, refer to the tables in this section for information on the parameters, their settings, and the potential ramifications of changing the defaults.

To change a parameter value you must edit the ARY#PARM member.

*Table 6. General parameters*

Parameter	Description	Notes®
PARMLIB_VERSION	This value identifies the PARMLIB member version to Db2 Recovery Expert. This value defaults to the current version and should not be changed.	Do not change this parameter.
GENERATED_JOB_REGION	The job card REGION, in megabytes. Default: 6	
ROUTE_ALL_ON_CONSOLE_CMDS	Valid values are Y(es) or N(o). Y prefixes all console commands with RO *ALL. If set to N, the prefix is not added. Default: Y	Only change this to N if your z/OS system is not part of a sysplex.
DASD_ALLOCATION_UNIT	The allocation unit to be used for dynamic allocations. Default: SYSALLDA	
TEMP_DSN_ALIAS	The data set high level alias to be used for creating temporary data sets. The default is the TSO user ID of the job submitter. You can also enter a literal for this parameter. Default: JOBUSER	

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Table 6. General parameters (continued)

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<b>Parameter</b>	<b>Description</b>	<b>Notes®</b>
FCTOPPRCP	<p>If the target specified is a primary device in a PPRC relationship the following options are:</p> <ul style="list-style-type: none"><li>• N - Do not allow the PPRC primary to become a FlashCopy target.</li><li>• Y - The pair can go into a duplex pending state.</li><li>• P - It would be preferable that the pair did not go into a duplex pending state.</li><li>• R - It is required that the pair not go into a duplex pending state.</li></ul>	
BACKUP_WORK_DATASETS	<p>This parameter specifies whether work data sets are considered critical. If the setting is Y, the data sets for the Db2 work database(s) are considered to be critical and an error message will be issued if they are not included in the system backup. If the setting is N, an error message is not issued if the volumes containing the data sets for the work database(s) are not included in the system backup.</p> <p>Default value is Y.</p>	
BYPASS VARY	<p>Valid values are Y(es) or N(o). Specify Y to bypass the vary processing when performing a system backup or restore using Flash Copy or EMC Snap and the target volumes are in SMS storage groups. Specify N to allow the vary processing.</p> <p>Default: Y</p>	
UPDATE_RTS_IC	<p>This parameter specifies whether real time statistics are updated when creating VSAM image copies. Specify Y to update the real time statistics. Specify N to skip updating the real time statistics.</p>	

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Table 6. General parameters (continued)

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<b>Parameter</b>	<b>Description</b>	<b>Notes®</b>
ARCHIVE_WARNINGS	<p>Valid values are Y(es) or N(o).</p> <p>If set to Y, a warning message is issued if archive log data sets are not on the volumes included in the backup. Archive volumes are listed in subsystem setup and analysis.</p> <p>If set to N, the warning message is not issued if archive log data sets are not on the volumes included in the backup. Archive volumes are listed in subsystem setup and analysis.</p> <p>Default: Y</p>	
ADMIN_USERID	<p>The user ID specified in this parameter has permission to change the creator of a system backup, object, coordinated, or disaster recovery profile. The user with this ID can change the creator during a rename of the profile. The profile must be updatable.</p> <p>Default: blank</p>	
USE_DFDSS	<p>Specifies whether the DASD Fast Replication feature (when installed and enabled on the storage device) will be used during object restore operations. Specify Y if you do not want to use DASD Fast Replication during object restore operations. The DFDSS utility (PGM=ADRDSSU) is invoked with a parameter of FASTREPLICATION(NONE) inserted into the object recovery JCL SYSIN data-stream. Specify N to use DASD Fast Replication during object restore operations. The DFDSS utility (PGM=ADRDSSU) is invoked with a parameter of FASTREPLICATION (PREFERRED) inserted into the object recovery JCL SYSIN data-stream.</p> <p>Default: N</p>	

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Table 6. General parameters (continued)

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Parameter	Description	Notes®
JES3_MAIN	This parameter applies to JES3 environments and specifies where Offload and Restore multi-job processing jobs are run. Specify Y to use JES3_MAIN to specify where multijob offload and restore job are run. Specify N to use JOBPARM to specify where offload and restore jobs are run.  Default: N	

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Table 7. Parameters that affect the setup utility

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Parameter	Description	Notes
ABEND_ON_ERRORS	Valid values are Y(es) or N(o). Y indicates the utility will issue a z/OS abend code if errors are encountered. The abend code issued will be the value specified for USER_ABEND_RETURN_CODE.  Default: N	
USER_ABEND_RETURN_CODE	Valid values are 01-99. This parameter allows you to provide a user abend code if the ABEND_ON_ERRORS parameter is set to Y. If the ABEND_ON_ERRORS parameter is set to N, the program error return code is provided.  Default: 08	
RELEASE_HELD_VOLUMES	Valid values are Y(es) or N(o). If set to Y, the next generation of target volumes will be released if they are held. If set to N, the backup utility will end with an error if the next generation of target volumes is held.  Default: Y	
PLACE_BKUP_VOLS_ON_HOLD	Valid values are Y(es) or N(o). If set to Y, the backup utility places the backup volumes on hold.  Default: Y	

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Table 7. Parameters that affect the setup utility (continued)

Parameter	Description	Notes
CLEAN_OLD_CONSIST_ WINDOWS	Valid values are Y(es) or N(o). Y will clear any non-active ECA consistency windows. N will produce an error and end the backup.  Default: N	
CLEAN_OLD_SNAP_SESSIONS	Valid values are Y(es) or N(o). If set to Y, inactive SNAP sessions that reside on this volume that are from other source volumes are cleaned (removed) before the backup. If set to N, inactive SNAP sessions are not removed and the backup will end with an error.  Default: N	
SYNC_ALL_BCV_GENERATIONS	Valid values are Y(es) or N(o). If set to Y, Db2 Recovery Expert establishes all generations of target BCVs to their source volumes on the very first setup run of a profile.  Default: N	This only affects the first time the profile setup process is run on the profile.
VALIDATE_DBR_VOLUME_ SUBTASKS	Valid values are 01-99. The maximum number of subtasks used by the product.  Default: 8	
VALIDATE_Db2_VOLUMES	Valid values are A(lways) or F(irst). If set to A, validates Db2 source volumes on every profile setup run. If set to N, only validates Db2 source volumes on first profile setup run.  Default: A	
MAKE_READY_ NOTREADY_DEVICES	Valid values are Y(es) or N(o). If set to Y, profile setup makes notready devices ready. N causes the utility to produce an error if notready devices are found.  Default: Y	Do not set MAKE_READY_NOTREADY_DEVICES to N and MAKE_BKUP_VOLS_NOTREADY to Y. This will cause Db2 Recovery Expert to produce an error when it encounters volumes made not ready by the profile setup process.

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Table 7. Parameters that affect the setup utility (continued)

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Parameter	Description	Notes
MAKE_BKUP_VOLS_NOTREADY	Valid values are Y(es) or N(o). If set to Y, backup volumes are made not ready during profile setup.  Default: Y	Do not set MAKE_READY_NOTREADY_DEVICES to N and MAKE_BKUP_VOLS_NOTREADY to Y. This will cause Db2 Recovery Expert to produce an error when it encounters volumes made not ready by the profile setup process.

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Table 8. Parameters that affect the backup utility

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Parameter	Description	Notes
ABEND_ON_ERRORS	Valid values are Y(es) or N(o). Y indicates the utility will issue a z/OS abend code if errors are encountered. The abend code issued will be the value specified for USER_ABEND_RETURN_CODE.  Default: N	
USER_ABEND_RETURN_CODE	Valid values are 01-99. This parameter allows you to provide a user abend code if the ABEND_ON_ERRORS parameter is set to Y. If the ABEND_ON_ERRORS parameter is set to N, the program error return code is provided.  Default: 08	
WAIT_FOR_VOLUME_SYNC	Valid values are P(rompt), Y(es) or N(o). This parameter controls what the utility will do if any target BCVs have not synchronized to their source volumes at the time of backup. When set to P, the utility issues a WTOR. When set to Y, the utility automatically waits for the BCVs to synchronize. When set to N, the utility issues an error return code if the previous generation of BCVs has not yet fully synchronized.  Default: Y	
PLACE_BKUP_VOLS_ON_HOLD	Valid values are Y(es) or N(o). If set to Y, the backup utility places the backup volumes on hold.  Default: Y	

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Table 8. Parameters that affect the backup utility (continued)

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Parameter	Description	Notes
RELEASE_HELD_VOLUMES	Valid values are Y(es) or N(o). If set to Y, the next generation of target volumes will be released if they are held. If set to N, the backup utility will end with an error if the next generation of target volumes is held.  Default: Y	
CLEAN_OLD_CONSIST_ WINDOWS	Valid values are Y(es) or N(o). Y will clear any non-active ECA consistency windows. N will produce an error and end the backup.  Default: N	
CLEAN_OLD_SNAP_SESSIONS	Valid values are Y(es) or N(o). If set to Y, inactive SNAP sessions that reside on this volume that are from other source volumes are cleaned (removed) before the backup. If set to N, inactive SNAP sessions are not removed and the backup will end with an error.  Default: N	
CONSIST_TIME_OUT_SECONDS	Valid values are 01-256. This parameter sets the maximum number of seconds to suspend I/O on standard volumes during backup.  Default: 256	
BKUP_VALID_ON_CONSIST_FAIL	Valid values are Y(es) or N(o). If set to Y, the backup will still be registered if a consistency window cannot be obtained, or the window is closed before the split or SNAP completes.  Default: N	
VALIDATE_Db2_VOLUMES	Valid values are P(rofile), A(lways), D(aily), W(eekly). This setting controls when the utility will determine the list of volumes in use by Db2. P will use the profile setting, A for always, D for Daily, W for weekly.  Default: P	

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Table 8. Parameters that affect the backup utility (continued)

Parameter	Description	Notes
VALIDATE_Db2_VOLUMES_TIME	Valid values are B(efore). This setting determines when Db2 volume validation is performed. Only B is currently supported. Default: B	
VALIDATE_Db2_VOLUME_SUBTASKS	Valid values are 1-99. The number of subtasks used to get the volumes in use by Db2. Default: 8	
WAIT_FOR_VOL_OFFLINE_SECONDS	Valid values are 01-99. The number of seconds to wait for a volume to go offline. Default: 05	
WAIT_FOR_VOL_OFFLINE_RETRIES	Valid values are 01-99. The number of retries while waiting for a volume to go offline. Default: 99	
MAKE_READY_NOTREADY_DEVICES	Valid values are Y(es) or N(o). If set to Y, not-ready devices are made ready. If set to N, the utility produces an error if not-ready devices are found. Default: Y	
MAKE_BKUP_VOLS_NOTREADY	Valid values are Y(es) or N(o). If set to Y, backup volumes are made not-ready. Default: Y	
RESET_COPY_PENDING_TS	Valid values are Y(es) or N(o). If set to Y, all table spaces are reset so they are no longer in copy pending status after a system backup. Default: N	
RESET_COPY_PENDING_IX	Valid values are Y(es) or N(o). If set to Y, all index spaces are reset so they are no longer in copy pending status after a system backup. Default: N	

Table 8. Parameters that affect the backup utility (continued)

Parameter	Description	Notes
ALLOW_SHARED_TARGET_VOLUMES	Valid values are Y(es) or N(o). If set to Y, Snap or Flash target volumes can be shared among different backup profiles.  Default: N	If this parameter is set to Y and the shared targets are space efficient volumes, the relationship between the source and target volumes is broken after the system backup is offloaded to tape. The status of the backup will be shown as <b>ON Disk=No</b> or <b>ON OFFLOAD=Yes</b> on the Restore System panel.
RECALL_MIGRATED_WAIT	The maximum number of minutes Db2 Recovery Expert will wait for recall of migrated data sets.  Default: 10	
RECALL_MIGRATED_DATA	Valid values are E(rror), I(gnore) or R(ecall). This parameter controls how migrated data sets are handled. When set to E, Db2 Recovery Expert issues an error message and stops the backup. When set to I, Db2 Recovery Expert ignores migrated data sets and continues with a partial backup. When set to R, Db2 Recovery Expert waits until all migrated data sets have been recalled, then continues with the backup.  Default: E	
SHADOW_IMAGE	Valid values are Y(es) or N(o). If set to Y, a FlashCopy-type backup use ShadowImage commands on Hitachi Data Systems hardware. Only specify Y if your site does not have a FlashCopy emulation license for HDS.  Default: N	
BYPASS RESTRICTED	Valid values are Y(es) or N(o). If set to Y, a backup will not end with a return code of 8 if restricted objects are found during deferred object collection.  Default: N	

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Table 8. Parameters that affect the backup utility (continued)

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Parameter	Description	Notes
RESTRICTED_OBJECTS_WARNING	<p>Valid values are Y(es) or N(o). If set to Y, a backup will end with RC=4 if restricted objects are found. A warning message about restricted objects is issued. If set to N, a backup will end with RC=0 and no warning about the existence of restricted objects will be issued.</p> <p>Default: N</p>	
BYPASS_MISSING_INCREMENTAL	<p>Valid values are Y(es) or N(o). N will end the backup with a code of 8 if the SLB profile is already in incremental status but there is no flashcopy relationship. The following message will be displayed: ARYS418E - An Incremental FlashCopy is requested but there is no existing incremental relationship. Y will produce code 0 and the following message: ARYS417W - An Incremental FlashCopy is requested but there is no existing incremental relationship.</p> <p>Default: N</p>	

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Table 8. Parameters that affect the backup utility (continued)

Parameter	Description	Notes
ALIAS_PROCESS_METHOD	<p>This parameter specifies whether the faster alias processing algorithm should be used when possible, if data sets with single-level aliases only are found on the subsystem (no multi-level aliases). Valid values are:</p> <ul style="list-style-type: none"> <li>• F: Use faster processing when possible.</li> <li>• S: Always use general processing method. This method must be used if multi-level aliases are used in the subsystem.</li> </ul> <p>The default is S.</p> <p>In order to use the faster alias processing algorithm:</p> <ul style="list-style-type: none"> <li>• Specify the RBRMOVER VSAM data set. RBRMOVER contains catalog, alias, and volume information of a Db2 subsystem. It is an optional data set that must be specified in order to use fast alias processing.</li> <li>• Set the ALIAS_PROCESS_METHOD PARMLIB parameter to F.</li> </ul>	
HSM_OUTPUT	<p>This parameter specifies where to output HSM information during system-level backup in non-debug mode. Valid values are:</p> <ul style="list-style-type: none"> <li>• A: output HSM information into a regular ARYOUT DD.</li> <li>• H: output HSM information into a separate HSMOUT DD.</li> <li>• / (slash character): Do not output HSM information.</li> </ul>	<p>When this value is specified, the HSM messages appear in a separate HSMOUT DDNAME. If the HSMOUT DD Open fails, the output is redirected to ARYOUT DD, and warning message ARYS883W appears in the job log to indicate that HSMOUT DD was not opened successfully. For more information, see <a href="#">Reviewing output from a Db2 backup</a>.</p>

Table 9. Global Snap Parameters

Parameter	Description	Notes
MAX_RETURN_CODE	<p>Valid values are 4/8/12/integer. Specifies the maximum return code of all EMC SNAP commands before processing stops</p> <p>Default: / (EMC default)</p>	



Table 9. Global Snap Parameters (continued)

Parameter	Description	Notes
SNAP_WAIT	Valid values are Y(es) or N(o). If Y, the backup utility waits for the SNAP operation to complete before ending the job. If N, the backup utility can end while the SNAP operation completes the Symmetrix caches updates to the source volume until the SNAP operation is complete.  Default: N	
SNAP_WAIT_HOURS	If SNAP_WAIT is Y, the number of hours to wait for the SNAP operation to complete before continuing.  Default: / (EMC default)	
SNAP_WAIT_MINUTES	If SNAP_WAIT is Y, the number of minutes to wait for the SNAP operation to complete before continuing.  Default: / (EMC default)	
SNAP_WAIT_SECONDS	If SNAP_WAIT is Y, the number of seconds to wait for the SNAP operation to complete before continuing.  Default: / (EMC default)	
MAX_ADRDSSU	This is the maximum number of address spaces that can be spawned.  Default: / (EMC default)	
MAX_TASKS1	The maximum number of individual requests that can be attached and used.  Default: / (EMC default)	
MAX_TASKS2	The maximum number of individual activities that can be performed within a single request.  Default: / (EMC default)	
DEBUG_MODE	Valid values are A(II), T(race), D(ump), E(rror) or X(tra). Sets the amount of information written for debugging to the ARYSNAPO DD.  Default: E	

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Table 9. Global Snap Parameters (continued)

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<b>Parameter</b>	<b>Description</b>	<b>Notes</b>
DEBUG_EXTENTS	Value values are Y(es) or N(o). Specifies whether DEBUG information about extents is to be included.  Default: / (EMC default)	
TOLERATE_ENQ_FAILURES	This parameter allows a volume to be SNAPPED when exclusive serialization cannot be obtained. This parameter should be set to Y(es).  Default: / (EMC default)	
COPY_VOLUME_ID	This parameter controls whether the volume serial number of the source volume gets copied to the target volume.  Default: Y	
PHASED_SNAP	If set to Y, this parameter enables phased SNAP or SNAP group processing. This will break the actual EMC SNAP VOLUME command into separate phases. The purpose of this parameter is to improve performance and lessen the impact of the SNAP VOLUME commands on the storage array.  Default: N	
SNAP_GROUP_PDS	If PHASED_SNAP is Y, this parameter must contain the name of a partitioned data set. It is recommended to use an extended PDS (a PDSE). This data set will be used internally to store the phased SNAP commands it needs to execute.	

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Table 9. Global Snap Parameters (continued)

Parameter	Description	Notes
WAIT_FOR_BACKGROUND_COPY	<p>If set to Y, Db2 Recovery Expert will wait for background SNAPS to complete before letting the job complete. If set to Y or S, the backup will end with a copypool FASTREPLICATIONSTATE status check. If set to S, there will be a status check, but Db2 Recovery Expert will not wait for background SNAPS to complete before letting the job complete. Db2 Recovery Expert will monitor the Flash Copy backup in a separate ARYCOPY step but will not halt the completion of the job.</p> <p>Default: N. Db2 Recovery Expert will not wait for the background copy to complete.</p>	<p>If set to S, the user will still be notified when the Flash Copy backup is completed.</p>
WAIT_FOR_OFFLOAD	<p>Valid values are <b>Y</b> and <b>N</b>. If set to <b>Y</b>, Db2 Recovery Expert will wait for the SLB (system-level backup) to finish the physical offload.</p>	<p>The offload is considered finished when the copypool DUMPSTATE status is <b>ALLCOMPLETE</b>. "Waiting for offload" is processed in the same step as offload itself, not in a separate step.</p>

Table 10. Parameters that affect the BCV split utility

Parameter	Description	Notes
BCV_WAIT_SECONDS	<p>Valid values are 01-99. The number of seconds to wait between each check for BCV split completion.</p> <p>Default: 06</p>	
WAIT_RETRIES	<p>Valid values are 01-99. The number of times to check for BCV split completion.</p> <p>Default: 99</p>	

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Table 11. Parameters that affect the restore utility

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<b>Parameter</b>	<b>Description</b>	<b>Notes</b>
ABEND_ON_ERRORS	Valid values are Y(es) or N(o). Y indicates the utility will issue a z/OS abend code if errors are encountered. The abend code issued will be the value specified for USER_ABEND_RETURN_CODE.  Default: N	
USER_ABEND_RETURN_CODE	Valid values are 01-99. This parameter allows you to provide a user abend code if the ABEND_ON_ERRORS parameter is set to Y. If the ABEND_ON_ERRORS parameter is set to N, the program error return code is provided.  Default: 08	
WAIT_FOR_VOL_OFFLINE_SECONDS	Valid values are 01-99. The number of seconds to wait for a volume to go offline.  Default: 06	
WAIT_FOR_VOL_OFFLINE_RETRIES	Valid values are 01-99. The number of retries while waiting for a volume to go offline.  Default: 99	
WAIT_FOR_VOL_ONLINE_SECONDS	Valid values are 01-99. The number of seconds to wait for a volume to come online.  Default: 06	
WAIT_FOR_VOL_ONLINE_RETRIES	Valid values are 01-99. The number of retries while waiting for a volume to come online.  Default: 99	
CLEAN_OLD_SNAP_SESSIONS	Valid values are Y(es) or N(o). If set to Y, inactive SNAP sessions that reside on this volume that are from other source volumes are cleaned (removed) before the restore. If set to N, inactive SNAP sessions are not removed and the restore will end with an error.  Default: N	

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Table 11. Parameters that affect the restore utility (continued)

Parameter	Description	Notes
FORCE_SPLIT	Valid values are Y(es) or N(o). For BCV profiles, the current BCV generation will be split before the restore. If this parameter is set to Y, the FORCE parameter will be added to the split call.  Default: Y	
PERFORM_CHECKSUM	Valid values are Y(es) or N(o). If Y, a checksum operation will be performed on a restored volume to ensure it has not been altered since backup.  Default: N	
CLEAR_CF_STRUCTURES	Valid values are Y(es) or N(o). If Y, a command is issued to clear the coupling facility structure for data sharing systems.  Default: Y	
Db2_UTILITY_SUITE_INSTALLED	Valid values are Y(es) or N(o). Y means that the Db2 RESTORE SYSTEM utility is available for system restore. N means the RESTORE SYSTEM utility is not available therefore the RECOVER utility will be invoked.  Default: Y	

Table 12. Parameters that affect the offload utility

Parameter	Description	Notes
ABEND_ON_ERRORS	Valid values are Y(es) or N(o). Y indicates the utility will issue a z/OS abend code if errors are issued will be the value specified for USER_ABEND_RETURN_CODE.  Default: N	
USER_ABEND_RETURN_CODE	Valid values are 01-99. This parameter allows you to provide a user abend code if the ABEND_ON_ERRORS parameter is set to Y. If the ABEND_ON_ERRORS parameter is set to N, the program error return code is provided.  Default: 08	

Table 12. Parameters that affect the offload utility (continued)

Parameter	Description	Notes
LOAD_ICKDSF	Valid values are Y(es) or N(o). Specify Y to indicate that the utility program ICKDSF is available in the LPA and can be loaded by Db2 Recovery Expert. Specify N to indicate that the utility program ICKDSF is not available and Db2 Recovery Expert will not try to load the program on startup. Default: Y	If the utility program ICKDSF is not loaded and is needed to re-label an offline volume to bring the volume online, then an error message will be generated instructing the user to change the value of this ARY#PARM member.
CLIP_PREFIX	The prefix to use when clipping volume serials during offload processing. Default: ZZ	Db2 Recovery Expert may need to temporarily clip (or change the volser of) the target volume in order to bring the target online.
REINIT_SPACE_EFFICIENT	Valid values are Y(es) or N(o). Y will cause the reinit of space efficient volumes after offload. Default: N	

## Configuring access profiles for Db2 Recovery Expert

You can restrict the use of certain Db2 Recovery Expert functions by using access profiles.

**Note:** If you are migrating from an earlier version of Db2 Recovery Expert to version 3.2 and previously configured the access profiles for RACF or ACF2, it is not necessary to complete this task again.

- To regulate user access to Db2 Recovery Expert functions, create RACF or ACF2 access profiles. This is an option for RACF users. It is required for ACF2 users. Use the information in the following table to create the profiles:

Table 13. Access profiles for Db2 Recovery Expert

Function	Description of Authority	Profile	Access
Access	Grants a user the authority to use Db2 Recovery Expert	ARY.ACCESS. <i>ssid</i> where <i>ssid</i> is a four-character Db2 subsystem name or '*'	READ

A user is not allowed to execute a Db2 Recovery Expert backup or restore utility if they are not granted READ access to the corresponding profile or if the profile does not exist. If the specific RACF Facility Class Profile or ACF2 profile does not exist, then the most granular generic profile will be applied in its place. For example, if ARY.ACCESS.*ssid* does not exist for a given Db2 Recovery Expert subsystem, but a generic profile name ARY.ACCESS.\* exists, then the generic profile is used. Only authorization IDs with READ access to the profile are cleared by RACF or ACF2.

## Setting up the Db2 Recovery Expert server to use VIPA

You can set up the Db2 Recovery Expert server to use VIPA (Virtual IP Address).

If you use VIPA, and the Db2 Recovery Expert server is moved from one LPAR to another, the server address does not need to be re-configured. It is recommended that the Db2 Recovery Expert server IP address is set up as a Distributed Dynamic VIPA rather than just a Dynamic VIPA.

## Setting up a Db2 subsystem with multiple data sharing members

When adding a Db2 subsystem with multiple data sharing members, you must add each individual data sharing member and then add the group as a member. For example, if you had a Db2 data sharing subsystem EDSA that has two members EDS1 and EDS2 you would perform the following procedure when you are creating and associating Db2 entries using Tools Customizer.

1. From the Customizer Workplace panel, issue the ASSOCIATE command. The Associate Db2 Entry for Product panel opens.
2. From the Db2 Entry for Product panel:
  - a) Issue the Create command. The Create a Db2 Entry panel opens. In the **Db2 subsystem ID name** field specify the SSID for the first Db2 member (EDS1). In the **Db2 group attach name** field specify the group attach name (EDSA). PF3 back to the Create a Db2 Entry panel.
  - b) Issue another Create command. The Create a Db2 Entry panel opens. In the **Db2 subsystem ID name** specify the SSID for the second Db2 member (EDS2). In the **Db2 group attach name** field specify the group attach name (EDSA). PF3 back to the Create a Db2 Entry panel.
  - c) After you have performed the previous step for all members of the data sharing group, issue a final Create command. The Create a Db2 Entry panel opens. In the **Db2 subsystem ID name** field specify the group attach for the Db2 subsystem (EDSA). In the **Db2 group attach name** specify the group name (EDSA). PF3 back to the Create a Db2 Entry panel. **Note:** If the Group ID has the same name as one of the SSIDs, this step is not required.
3. When specifying the BSDS and LOADLIBS for the Db2 subsystem at the group name level (EDSA ESDA), you can use the BSDS and LOADLIBS defined for any member of the group.

## Worksheets: Gathering required data set names

Identify and record the data set names that will be used during the customization process and make sure that requirements for certain data sets are met.

### Data set names for Db2 Recovery Expert

Identify and record the following Db2 Recovery Expert data set names:

Data set name	Description	Special requirements	Your data set name
SCCQDENU	Metadata library for Db2 Recovery Expert		
SCCQLOAD	Executable load module library for Db2 Recovery Expert		
SCCQMENU	ISPF messages for Db2 Recovery Expert		
SCCQPENU	ISPF panels for Db2 Recovery Expert		
SCCQSAMP	Sample members for Db2 Recovery Expert		

Data set name	Description	Special requirements	Your data set name
SCCQTENU	Table library for Db2 Recovery Expert	You must have write access to this data set.	

### Data set names of Db2 Recovery Expert

Identify and record the following Db2 Recovery Expert data set names. During the customization process, you will enter the following values on panel CCQPPRD.

Data set name	Description	Special requirements	Your data set name
ARYADBRM	DBRM library for Db2 Recovery Expert		
ARYALOAD	Executable load module library for Db2 Recovery Expert	You must APF authorize this data set.	
ARYAMENU	ISPF messages for Db2 Recovery Expert		
ARYAPENU	ISPF panels for Db2 Recovery Expert		
ARYASAMP	Sample members for Db2 Recovery Expert		
ARYACLST	Table library for Tools Customizer	You must have write access to this data set.	
ARYADENU	Metadata library		
ARYASLIB			

### Data set names of other libraries

Identify and record the following data set names. During the customization process, you will enter the following values on the Setup panel.

Data set name	Description	Special requirements	Your data set name
Discover output data set	<p>Contains the output that is generated when you run the Db2 Recovery Expert Discover EXEC.</p> <p>The Db2 Recovery Expert Discover EXEC retrieves the metadata and values for the parameters from a previous customization of Db2 Recovery Expert.</p> <p>The default name of the data set is Db2TOOL.CCQ110.DISCOVER. You can change the default value on the Db2 Recovery Expert Settings panel or the Discover Customized Product Information panel.</p>	You must have write access to this data set.	



Data set name	Description	Special requirements	Your data set name
Data store data set	<p>Contains product, LPAR, and Db2 parameter values, and Db2 entry associations. Db2 Recovery Expert uses this data set to permanently store all information that is acquired about the product, Db2 subsystems, and LPAR when you customize products on the local LPAR.</p> <p>The default name of the data set is Db2TOOL.CCQ110.DASTOR. You can change the default value on the Tools Customizer Settings panel.</p>	You must have write access to this data set.	
Product customization Library	<p>Contains the customization jobs that Db2 Recovery Expert generates for Db2 Recovery Expert.</p> <p>To customize Db2 Recovery Expert, submit the members of the data set in the order in which they are displayed on the Finish Product Customization panel. The data set naming convention is:</p> <pre data-bbox="444 1100 812 1150"><i>hlq.\$LPAR-name\$.xyzvrm</i></pre> <p>where:</p> <ul style="list-style-type: none"> <li>• <i>hlq</i> is the value of the Customization library qualifier field on the Tools Customizer Settings panel (CCQPSET)</li> <li>• <i>LPAR-name</i> is the four-character LPAR name</li> <li>• <i>xyzvrm</i> is the three-letter product identifier with the version, release, and modification level</li> </ul> <p>For example, the data set name might be Db2TOOL.PRODUCT.CUST.\$MVS1\$.XYZ410.</p>	You must have write access to this data set.	

## APF authorizing load libraries

Db2 Recovery Expert requires that the product LOAD library is APF authorized. Refer to z/OS V1R8.0 MVS System Commands for more information on how to use SETPROG to APF authorize libraries.

Include the following load library as part of your authorized list:

- SARYLOAD

## Worksheets: Gathering parameter values for Db2 Recovery Expert

During the customization process, you will need to provide parameter values that are specific to Db2 Recovery Expert, your versions of Db2, and for your LPARs.

Use the worksheets in this topic to record the appropriate parameter settings for your purposes, and then use these worksheets during the customization process. The worksheets are organized based on the order of the customization panels in the Db2 Recovery Expert.

### Product to customize section

The parameters listed in the Product to Customize section are read-only; they contain information that was provided on other panels, by Tools Customizer, or by the Db2 Recovery Expert metadata data set.

Parameter	Discover ed	Source of this value
<b>Product metadata library</b> This value is the library you specified on the Specify the Product to Customize panel. This field is scrollable. Place your cursor anywhere on the field and press PF11 to view its full contents.	No	This value is specified on the <b>Specify the Product to Customize</b> panel (CCQPHLQ).
<b>LPAR</b> The LPAR field displays the LPAR on which you are customizing Db2 Recovery Expert.	No	This value is supplied by Tools Customizer.
<b>Product name</b> This value displays the current product being customized. For example, Db2 Recovery Expert should be displayed in this field. This field is scrollable. Place your cursor anywhere on the field and press PF11 to view its full contents.	No	This value is supplied by the product metadata file.
<b>Version</b> The Version field displays the version, release and maintenance of the product you are customizing in the format <i>Vn.Rn.nn</i> .	No	This value is supplied by the product metadata file.
<b>Product customization library</b> This value displays the name of the data set in which the generated library of customization jobs will be stored.	No	This value is derived from the user-specified customization library qualifier on the Tools Customizer Settings panel (CCQPSET).

Parameter	Discover ed	Source of this value
<b>Use Db2 group attach</b> This field specifies whether to use the Group Attach name rather than a Db2 subsystem name.	Yes	Specifying YES substitutes the Group Attach name. Specifying NO substitutes the Db2 subsystem name. The default value is NO.

## Customization values for the Discover EXEC when recustomizing a product

### Description

Use the following worksheet to identify and record the customization values for the Db2 Recovery Expert Discover EXEC. The values in this worksheet are for extracting information from a product that has already been customized. During the customization process, you will enter these values on panel CCQPDSC.

**Note:** Complete this worksheet only if you are recustomizing a product that has previously been customized by using Tools Customizer .

Parameter	Sample or default value	Your value
<b>Discover EXEC library</b> The fully qualified data set name that contains the product Discover EXEC.	The name of the Discover EXEC Library that you entered on the settings panel.	
<b>Discover EXEC name</b> The name of the Discover EXEC.	ARYDISC	
<b>Discover output data set</b> The name of the data set for the output from the product Discover EXEC.	The name of the discover output library that you entered on the settings panel.	

## Customization values for the Discover EXEC product

### Description

Use the following worksheet to identify and record the customization values for the Db2 Recovery Expert Discover EXEC. The values in this worksheet are for extracting information from a product that has not ever been customized. During the customization process, you will enter these values on panel CCQPDSC.

Parameter	Sample or default value	Your value
<b>Discover EXEC library</b> The fully qualified data set name that contains the product Discover EXEC.	The name of the Discover EXEC Library that you entered on the settings panel.	
<b>Discover EXEC name</b> The name of the Discover EXEC.	ARYDISC	
<b>Discover output data set</b> The name of the data set for the output from the product Discover EXEC.	The name of the discover output library that you entered on the settings panel.	

Parameter	Sample or default value	Your value
<b>ARY V3.2 LOAD library</b> The load library name for the new release of Db2 Recovery Expert.	Db2TOOL.ARY320.SARYLOAD	
<b>V3.1 control file</b> The name of the VSAM data set that contains the control information for Db2 Recovery Expert V3.1. This KSDS VSAM file contains product customization information for the previous version of the product.	Db2TOOL.ARY310.Db2.CONTROL	
<b>V3.1 CLIST library</b> The name of the PDS library that contains the Db2 Recovery Expert 3.1 product CLISTs which are used to invoke Db2 Recovery Expert V3.1 online under ISPF.	Db2TOOL.ARY310.CLIST	
<b>V3.1 CLIST member</b> The name of the PDS library member that contains the Db2 Recovery Expert V3.1 product CLISTs.	ARYV310	

## Db2 Recovery Expert specific product parameters section

### Description

In order to complete the customization process you must discover or define parameter information that is specific to Db2 Recovery Expert. You enter these values on panel CCQPPRD.

Parameter	Discovered	Values
<b>Startup CLIST library</b> Specifies the library for the ARYV32 and ARYV320 CLISTs. These CLISTs are used to invoke Db2 Recovery Expert online under ISPF.	No	<b>Default value:</b> Db2TOOL.ARY320.CLIST <b>Your value:</b>
<b>Work file device type</b> Specifies the default work file unit device to be used in generated jobs. Example values are SYSDA and DISK.	No	<b>Default value:</b> SYSALLDA <b>Your value:</b>
<b>ARY JCL Library</b> Specifies the name of the library that contains the jobs created for the product.	No	<b>Default value:</b> Db2TOOL.ARY320.JCLLIB <b>Your value:</b>

Parameter	Discovered	Values
<b>ARY Proc Library</b> Specifies the name of the library for the server and agent started task procedures.	No	<b>Default value:</b> Db2TOOL.ARY320.PROCLIB <b>Your value:</b>
<b>Startup CLIST 2</b> Specifies the name of the second startup CLIST.	No	<b>Default value:</b> ARYV320 <b>Your value:</b>
<b>Recovery Expert production load library</b> Specifies the Db2 Recovery Expert load library for production. Specify the fully qualified data set name without quotation marks.	No	<b>Default value:</b> Db2TOOL.ARY320.SARYLOAD <b>Your value:</b>
<b>Control file</b> Specifies the name of the Product Control File (PCF). The PCF is a KSDS VSAM data set that contains the control information for Db2 Recovery Expert. The information that is contained in the PCF is entered via the Tools Customizer Db2 Product and Db2 Recovery Expert Product Parameters panel fields.  Db2 Recovery Expert can share the same PCF with other Db2 Tools products that use the same type of PCF. If you plan on sharing a PCF, specify the name of that file in this field if it is different from the default value.  After installation, some of the fields in the PCF can be modified using the ISPF interface by selecting <b>Administration (0) &gt; Register Db2 subsystems (2)</b> . The fields that can be modified from the ISPF interface include: <ul style="list-style-type: none"> <li>• ZPARMS member name</li> <li>• Bootstrap data set names</li> <li>• Db2 LOAD libraries</li> <li>• Db2 plan names</li> <li>• Log Read and Log Apply defaults</li> </ul>	Yes	<b>Default value:</b> Db2TOOL.ARY320.Db2.CONTROL <b>Your value:</b>
<b>Profile VSAM repository file</b> Specifies the name of the VSAM repository data set that contains information about profiles.	Yes	<b>Default value:</b> Db2TOOL.ARY320.PROFILES <b>Your value:</b>
<b>Coordinated Profile VSAM repository file</b> Specifies the name of the VSAM repository data set that contains information about coordinated recovery profiles.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>

Parameter	Discovered	Values
<b>IMS/Db2 Combined SLB VSAM repository file</b> Specifies the name of the VSAM repository data set that contains information about combined system level backup (CSLB) profiles. CSLB profiles can be used for the recovery of multiple IMS and Db2 subsystems.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Profile mappings VSAM repository file</b> Specifies the name of the VSAM repository data set that contains information about profile mappings.	Yes	<b>Default value:</b> Db2TOOL.ARY320.PROFILE.MAPS <b>Your value:</b>
<b>Profile catalogs VSAM repository file</b> Specifies the name of the VSAM repository data set that contains information about a Db2 system's user catalogs.	Yes	<b>Default value:</b> Db2TOOL.ARY320.PROFILE.CATS <b>Your value:</b>
<b>System backups VSAM repository file</b> Specifies the name of the VSAM repository data set that contains information about system backups.	Yes	<b>Default value:</b> Db2TOOL.ARY320.SYSBACK <b>Your value:</b>
<b>System backups volumes VSAM repository file</b> Specifies the name of the VSAM repository data set that contains information about system backup volumes.  <b>Note:</b>	Yes	<b>Default value:</b> Db2TOOL.ARY320.SYSBACK.VOLS <b>Your value:</b>
<b>System backups SSIDS VSAM repository file</b> Specifies the name of the VSAM repository data set that contains information about system backup subsystem IDs.	Yes	<b>Default value:</b> Db2TOOL.ARY320.SYSBACK.SSIDS <b>Your value:</b>
<b>System backups objects VSAM repository file</b> Specifies the name of the VSAM repository data set that contains information about objects that were backed up.  <b>Note:</b>	Yes	<b>Default value:</b> Db2TOOL.ARY320.SYSBACK.OBJS <b>Your value:</b>
<b>Objects VSAM repository file</b> Specifies the name of the VSAM repository data set that contains the objects in an application profile.	Yes	<b>Default value:</b> Db2TOOL.ARY320.OBJECTS <b>Your value:</b>

Parameter	Discovered	Values
<b>System backup reports VSAM repository file</b> Specifies the name of the VSAM repository data set that contains information about system backup reports.	Yes	<b>Default value:</b> Db2TOOL.ARY320.BREPORT <b>Your value:</b>
<b>Offload options VSAM repository file</b> Specifies the name of the VSAM repository data set that contains information about system backup offload options.	Yes	<b>Default value:</b> Db2TOOL.ARY320.OFFOPTS <b>Your value:</b>
<b>System configuration VSAM repository file</b> Specifies the name of the VSAM repository data set that contains information about subsystem configuration.	Yes	<b>Default value:</b> Db2TOOL.ARY320.MOVDATA <b>Your value:</b>
<b>System RBA capture VSAM repository file</b> Specifies the name of the VSAM repository data set that contains information about each Db2 subsystem's captured RBAs.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>The prefix for the repository backups</b> Specifies the prefix that is used for the repository backups.	Yes	<b>Default value:</b> Db2TOOL.ARY320 <b>Your value:</b>
<b>The suffix for the repository backups</b> Specifies the suffix that is used for the repository backups.	Yes	<b>Default value:</b> ARYBUSUF <b>Your value:</b>
<b>EMC load library</b> Specifies the EMC load library. This library is optional.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Innovation FDR load library</b> Specifies the Innovation FDR load library. This library is optional.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Product PARMLIB data set</b> Specifies the data set that contains the Recovery Expert sample library.	Yes	<b>Default value:</b> Db2TOOL.ARY320.SARYSAMP <b>Your value:</b>
<b>Product PARMLIB member</b> Specifies the name of the member that contains product customizable variables.	Yes	<b>Default value:</b> ARY#PARM <b>Your value:</b>
<b>Server address</b> Specifies the name of the server address that is used for agent-server communications.	No	<b>Default value:</b> machine.company.com <b>Your value:</b>

Parameter	Discovered	Values
<b>ISPF client listener port number</b> Specifies the client port number that is used for agent-server communications.	No	<b>Default value:</b> 9875 <b>Your value:</b>
<b>Passticket Application ID</b> Specifies the Passticket Application ID.	No	<b>Default value:</b> ARYZOS31 <b>Your value:</b>
<b>Recovery Expert ISPF message library</b> Specifies the data set that contains the ISPF messages that are defined and used by Recovery Expert.	Yes	<b>Default value:</b> Db2TOOL.ARY320.SARYMENU <b>Your value:</b>
The following parameters are used in the <b>Configure Required Execs</b> job:		
<b>Create CLIST library</b> Specifies whether the PDS library that will contain the product CLIST will be created.	No	<b>Default value:</b> Y <b>Your value:</b>
<b>Create JCL library</b> Specifies whether the PDS library that will contain the product's started task procedures will be created.	No	<b>Default value:</b> Y <b>Your value:</b>
<b>Create PROC library</b> Specifies whether the PDS library that will contain the product's stored procedures will be created.	No	<b>Default value:</b> Y <b>Your value:</b>
<b>Recovery Expert sample library</b> Specifies the data set that contains the Recovery Expert sample jobs.	Yes	<b>Default value:</b> Db2TOOL.ARY320.SARYSAMP <b>Your value:</b>
The following parameters are used in the <b>Update startup CLISTs parameters</b> job:		
<b>Startup CLIST1</b> Specifies the name of the first startup CLIST.	No	<b>Default value:</b> ARYV32 <b>Your value:</b>
<b>High-level qualifier for load library</b> Specifies the high-level qualifier that is used for the load library.	Yes	<b>Default value:</b> Db2TOOL.ARY320 <b>Your value:</b>
<b>Suffix for the message library</b> Specifies the suffix that is used for the message library.	Yes	<b>Default value:</b> SARYMENU <b>Your value:</b>
<b>Suffix for the panel library</b> Specifies the suffix that is used for the panel library.	Yes	<b>Default value:</b> SARYPENU <b>Your value:</b>



Parameter	Discovered	Values
<b>Suffix for the skeleton library</b> Specifies the suffix that is used for the skeleton library.	Yes	<b>Default value:</b> SARYSLIB <b>Your value:</b>
<b>Suffix for the load library</b> Specifies the suffix that is used for the load library.	Yes	<b>Default value:</b> SARYLOAD <b>Your value:</b>
<b>Suffix of the table library</b> Specifies the suffix used for the table library.	Yes	<b>Default value:</b> SARYTENU <b>Your value:</b>
<b>Authentication Mode</b> Specifies how the ISPF client authenticates users. Valid values are PASSTICKET to indicate that users are authenticated using RACF passtickets or PASSWORD to indicate that users are authenticated using passwords. The default value is PASSTICKET.	No	<b>Default value:</b> PASSTICKET <b>Your value:</b>
<b>TCP/IP Stack Name</b> Specifies the name of the TCP/IP stack. The default value is TCPIPSTK.	No	<b>Default value:</b> TCPIPSTK <b>Your value:</b>
<b>IMS CLIST library name</b> Specifies where the version of IMS Recovery Expert that will be used in coordinated recovery is located.	No	<b>Default value:</b> (no default) <b>Your value:</b>
<b>IMS CLIST member name</b> Specifies the member name in the <b>IMS CLIST library</b> for the version of IMS Recovery Expert that will be used in coordinated recovery.	No	<b>Default value:</b> (no default) <b>Your value:</b>

Parameter	Discovered	Values
<p><b>_Create Recovery Expert objects for Db2</b> Specify a / on the line command next to this field to make the following lower level jobs available for selection:</p> <ul style="list-style-type: none"> <li>• Drop the Recovery Expert database</li> <li>• Create IBM Recovery Expert stogroup</li> <li>• Create Recovery Expert database</li> <li>• Migrate Recovery Expert objects from v3.1</li> <li>• Create schema level repository</li> <li>• Create views on schema level repository</li> <li>• Create views on system catalog</li> <li>• Create objects for Db2 Automation Tool</li> <li>• Alter existing Db2 Recovery Expert objects for APAR PI35099</li> <li>• Alter existing Db2 Recovery Expert Auto Tool objects for APAR PI35099</li> <li>• Alter existing Db2 Recovery Expert objects for APAR PI56483</li> <li>• Alter existing Db2 Recovery Expert objects for APAR PI57596</li> <li>• Alter existing Db2 Recovery Expert objects for APAR PI68005</li> <li>• Alter existing Db2 Recovery Expert objects for APAR PI80997</li> </ul>	No	<p><b>Default value:</b> (not automatically selected)</p> <p><b>Your value:</b></p>
The following parameters are used in the <b>Bind plans and packages plans</b> jobs:		
<p><b>Recovery Expert DBRM library</b> Specifies the Recovery Expert library that contains the product-supplied DBRMs. These DBRMs are inputs to the bind process.</p>	Yes	<p><b>Default value:</b> Db2TOOL.ARY320.SARYDBRM</p> <p><b>Your value:</b></p>

Parameter	Discovered	Values
<p><b>*Bind product packages</b></p> <p>The asterisk before this field indicates that the <b>Bind product packages</b> job is always generated. Some product packages operating with the Db2 Catalog have to be processed by a special BIND driver ARY#BIND supported with the product. Any bind or re-bind commands generated outside of the product are insufficient and may cause miscellaneous SQL errors (-151, -607). If you need to bind or re-bind any product packages, please generate the JCL with TCz and run it for the product. Using any other method is strongly discouraged.</p>	No	<p><b>Default value:</b> (always selected)</p> <p><b>Your value:</b></p>
<p><b>*Bind product plans</b></p> <p>The asterisk before this field indicates that the <b>Bind product plans</b> job is always generated.</p>	No	<p><b>Default value:</b> (always selected)</p> <p><b>Your value:</b></p>
<p><b>_Bind product plans to support Db2 Auto Tool</b></p> <p>Specify a / on the line command next to this field to generate a job that will bind the product plans to support Db2 Automation Tool.</p>	No	<p><b>Default value:</b> (not automatically selected)</p> <p><b>Your value:</b></p>
The following parameters are used in the <b>Grant Recovery Expert Privileges</b> jobs:		
<p><b>_Grant Recovery Expert privileges</b></p> <p>Specify a / on the line command next to this field to:</p> <ul style="list-style-type: none"> <li>• Generate a job that will grant privileges to support Recovery Expert.</li> <li>• Make the job that will grant privileges to support the Db2 Auto Tool available for selection.</li> </ul>	No	<p><b>Default value:</b> (not automatically selected)</p> <p><b>Your value:</b></p>
<p><b>*Grant privileges to support Recovery Expert</b></p> <p>The asterisk before this field indicates that the <b>Grant privileges to support Recovery Expert</b> job is always generated.</p>	No	<p><b>Default value:</b> (always selected)</p> <p><b>Your value:</b></p>
<p><b>_Grant privileges to support Db2 Auto Tool</b></p> <p>Specify a / on the line command next to this field to generate a job that will grant privileges to support Db2 Automation Tool.</p>	No	<p><b>Default value:</b> (not automatically selected)</p> <p><b>Your value:</b></p>
The following parameters are used in the <b>Create control file</b> job.		

Parameter	Discovered	Values
<p><b>_Create control file</b> Specify a / on the line command next to this field to generate the <b>Create required VSAM product control file</b> job and specify a volume for the file.</p> <p>This job creates the Product Control File (PCF) which is a required VSAM KSDS file that is used by Recovery Expert to store product control information. If a control file exists, you do not need to run this job to create a new file. If you are creating a new PCF than you must have specified a name for the file in the Tools Customizer <b>Control file</b> field and, if required, a volume serial number in the <b>Volser for control file</b> field.</p>	No	<p><b>Default value:</b> (not automatically selected)</p> <p><b>Your value:</b></p>
<p><b>Volser for control files</b> Specifies the volume serial number for the Product Control File (PCF). The PCF contains the control information for Recovery Expert. This field is only required if you are creating a new PCF and your environment requires a volume serial number.</p>	No	<p><b>Default value:</b> (no default)</p> <p><b>Your value:</b></p>
The following parameters are used in the <b>Create VSAM repository files</b> job.		
<p><b>_Create VSAM repository files</b> Specify a / on the line command next to this field to generate the <b>Create VSAM repository files to store metadata</b> job and specify a volume for the file.</p>	No	<p><b>Default value:</b> (not automatically selected)</p> <p><b>Your value:</b></p>
<p><b>Volser for repository files</b> Specifies the volume for the VSAM data set that contains the VSAM repository files for Recovery Expert. This field is only required if you are creating a new repository file. A new repository file is only required if a file does not exist.</p>	No	<p><b>Default value:</b> (no default)</p> <p><b>Your value:</b></p>
The following parameters are used in the <b>Create optional CAR VSAM repository file</b> job.		
<p><b>_Create optional CAR VSAM repository file</b> Specify a / on the line command next to this field to generate the <b>Create optional CAR VSAM repository files</b> job and specify a volume for the file.</p>	No	<p><b>Default value:</b> (not automatically selected)</p> <p><b>Your value:</b></p>

Parameter	Discovered	Values
<b>Volser for repository files</b> Specifies the volume of the VSAM data set that contains the CAR VSAM repository files for Recovery Expert. This field is only required if you are creating a new repository file. A new repository file is only required if a file does not exist.	No	<b>Default value:</b> (no default)  <b>Your value:</b>
The following parameters are used in the <b>Create optional CLSB VSAM repository file</b> job.		
<b>_Create optional CLSB VSAM repository file</b> Specify a / on the line command next to this field to generate the <b>Create optional CLSB VSAM repository files</b> job and specify a volume for the file.	No	<b>Default value:</b> (not automatically selected)  <b>Your value:</b>
<b>Volser for repository files</b> Specifies the volume of the VSAM data set that contains the CLSB VSAM repository file for Recovery Expert. This field is only required to create a new repository file. A new repository file is only required if a file does not exist.	No	<b>Default value:</b> (no default)  <b>Your value:</b>
The following parameters are used in the <b>Create backup GDG files</b> job		
<b>_Create job to build backup GDG files</b> Specify a / on the line command next to this field to generate the <b>Create backup GDG file</b> job and specify the number of backup generations to keep on disk.	No	<b>Default value:</b> (not automatically selected)  <b>Your value:</b>
<b>The number of backup generations</b> Specifies the number of backup generations that will be kept on disk.	Yes	<b>Default value:</b> 00005  <b>Your value:</b>
<b>*Create job to update control file</b> The asterisk before this field indicates that the <b>Update Control File</b> job is always generated. You should run this job if you change any of the fields in the Product Control File (PCF). You can update PCF fields using either the Tools Customizer or using the ISPF interface. See the PCF table in Appendix F for more information on the fields in the PCF file.	No	<b>Default value:</b> (automatically selected)  <b>Your value:</b>
<b>*Allow using member id in profiles</b> Specifies whether to allow the member ID value to be present in profile names.	Yes	<b>Default Value:</b> (automatically selected)  <b>Your value:</b>
The following parameters are used in the <b>Load the schema level repository</b> job		
The following parameters are used in the <b>Load the schema level repository</b> job		

Parameter	Discovered	Values
<p><b>_Create job to load the schema level repository</b> Specify a / on the line command next to this field to generate the <b>Load schema level repository</b> job.</p>	No	<p><b>Default value:</b> (not automatically selected)</p> <p><b>Your value:</b></p>
The following parameters are used in the <b>Install browser interface</b> job:		
<p><b>_Create job to install browser interface</b> Specify a / on the line command next to this field to generate the <b>Install browser interface</b> job; and specify the <b>Browser HFS file location</b>, and <b>Browser MVS doc file location</b> fields.</p>	No	<p><b>Default value:</b> (not automatically selected)</p> <p><b>Your value:</b></p>
<p><b>Browser HFS file location</b> Specifies the HFS directory where the GUI will be installed.</p>	No	<p><b>Default value:</b> /u/db2tool/ary320/htdocs</p> <p><b>Note:</b> A unique HFS file path is required for each product being used. The default value listed here is intended only for Db2 Recovery Expert.</p>
<p><b>Browser MVS doc file location</b> Specifies the data set that contains the directory archived using the PAX utility.</p>	No	<p><b>Default value:</b> Db2TOOL.ARY320.SARYGUIW (ARYGUIW)</p> <p><b>Your value:</b></p>
The following parameters are used in the <b>Customize server configuration</b> job:		
<p><b>_Create job to customize server configuration</b> Specify a / on the line command next to this field to generate the <b>Customize server configuration</b> job and specify the parameters that are required for the job.</p>	No	<p><b>Default value:</b> (not automatically selected)</p> <p><b>Your value:</b></p>
<p><b>Server-agent listener port number</b> Specifies the port number that is used for agent-server communications.</p>	No	<p><b>Default value:</b> 9876</p> <p><b>Your value:</b></p>
<p><b>Web client listener port number</b> Specifies the port number on which the server will listen for incoming connection requests from instances of Web clients.</p>	No	<p><b>Default value:</b> 9975</p> <p><b>Your value:</b></p>
<p><b>Key Database Dir Path</b> Specifies the directory path for the key database.</p>	No	<p><b>Default value:</b> /u/db2tool/ary320/certs</p> <p><b>Your value:</b></p>
<p><b>Key Database File Name</b> Specifies the file name for the key database.</p>	No	<p><b>Default value:</b> arycert.db</p> <p><b>Your value:</b></p>
<p><b>Key Database Stash File Name</b> Specifies the file name for the key database stash file.</p>	No	<p><b>Default value:</b> arysert.sth</p> <p><b>Your value:</b></p>

Parameter	Discovered	Values
<p><b>Enable FIPS 140-2</b></p> <p>Specifies whether the product will run with a security configuration that meets the FIPS 140-2 standard. A setting of true in this field will only apply when <b>Use SSL</b> is set to true and it will only apply to the SSL-based communication layer.</p>	No	<p><b>Default value:</b> false</p> <p><b>Your value:</b></p>
<p><b>Enable TLS 1.3</b></p> <p>Specifies whether the product will allow TLS protocol version 1.3. A setting of true in this field will only apply when <b>Use SSL</b> is set to true, and it will only apply to the SSL-based communication layer. This setting works only for z/OS Version 2 Release 4 or higher. This setting doesn't work with <b>Enable FIPS 140-2</b> set to true.</p>	No	<p><b>Default value:</b> false</p> <p><b>Your value:</b></p>
<p><b>Server Configuration file</b></p> <p>Specifies the Db2 Recovery Expert server configuration file. The file must be allocated to the ARYCFG DD. The file can be a sequential data set; a PDS or PDSE member; or an HFS file.</p>	No	<p><b>Default value:</b> Db2TOOL.ARY320.JCLLIB (ARYCFGS)</p> <p><b>Your value:</b></p>
<p><b>Browser HFS file location</b></p> <p>Specifies the HFS directory where the GUI will be installed.</p>	No	<p><b>Default value:</b> /u/db2tool/ary320/htdocs</p> <p><b>Note:</b> A unique HFS file path is required for each product being used. The default value listed here is intended only for Db2 Recovery Expert.</p>
<p><b>Use SSL</b></p> <p>Specifies whether SSL is used. Setting this to true enables SSL in the server. SSL allows HTTPS to be used in the URL instead of HTTP. When HTTPS is used all communication with the server is encrypted. To use HTTP, set this to false. For more information, see <a href="#">“Server security”</a> on page 172.</p>	No	<p><b>Default value:</b> true</p> <p><b>Your value:</b></p>
<p><b>Key Database Password</b></p> <p>If you choose to enable SSL, then you will need a certificate. You can provide your own certificate or choose to use a self-signed generated certificate (this is usually very helpful in the testing phase). This field specifies the certificate.</p>	No	<p><b>Default value:</b> (no default)</p> <p><b>Your value:</b></p>
<p><b>Organization</b></p> <p>Specifies a company name that is associated with the Key Database.</p>	No	<p><b>Default value:</b> Company Name</p> <p><b>Your value:</b></p>

Parameter	Discovered	Values
<b>Country Code</b> Specifies a country code that is associated with the Key Database.	No	<b>Default value:</b> US <b>Your value:</b>
The following parameters are used in the <b>Customize server</b> job		
<b>_Create job to customize server JCL</b> Specify a / on the line command next to this field to generate the <b>Customize server</b> job and specify the server configuration file.	No	<b>Default value:</b> (not automatically selected) <b>Your value:</b>
<b>Server Configuration file</b> Specifies the Db2 Recovery Expert server configuration file. The file must be allocated to the ARYCFG DD. The file can be a sequential data set; a PDS or PDSE member; or an HFS file.	No	<b>Default value:</b> Db2TOOL.ARY320.JCLLIB (ARYCFGS) <b>Your value:</b>
The following parameters are used in the <b>Customize server started task</b> job		
<b>_Customize server started task proc</b> Specify a / on the line command next to this field to generate the <b>Customize server started task</b> job and specify the name of the server configuration file.	No	<b>Default value:</b> (not automatically selected) <b>Your value:</b>
<b>Server Configuration file</b> Specifies the Db2 Recovery Expert server configuration file. The file must be allocated to the ARYCFG DD. The file can be a sequential data set; a PDS or PDSE member; or an HFS file.	No	<b>Default value:</b> Db2TOOL.ARY320.JCLLIB (ARYCFGS) <b>Your value:</b>
The following parameters are used in the <b>Customize agent configuration</b> job		
<b>_Create job to customize agent configuration</b> Specify a / on the line command next to this field to generate the <b>Customize agent configuration</b> job and specify the required parameters.	No	<b>Default value:</b> (not automatically selected) <b>Your value:</b>
<b>Agent Configuration file</b> Specifies the Db2 Recovery Expert agent configuration file. The file must be allocated to the ARYCFG DD. The file can be a sequential data set; a PDS or PDSE member; or an HFS file.	No	<b>Default value:</b> Db2TOOL.ARY320.JCLLIB (ARYCFGGA) <b>Your value:</b>
<b>Server-agent listener port number</b> Specifies the port number that is used for server and agent communications.	No	<b>Default value:</b> 9876 <b>Your value:</b>



Parameter	Discovered	Values
<p><b>Use SSL</b> Specifies whether SSL is used. Setting this to true enables SSL in the server. SSL allows HTTPS to be used in the URL instead of HTTP. When HTTPS is used all communication with the server is encrypted. To use HTTP, set this to false. For more information, see “<a href="#">Agent security</a>” on page 176 .</p>	No	<p><b>Default value:</b> true</p> <p><b>Your value:</b></p>
<p><b>Key Database Dir Path</b> Specifies the directory path for the key database.</p>	No	<p><b>Default value:</b> /u/db2tool/ary320/certs</p> <p><b>Your value:</b></p>
<p><b>Key Database File Name</b> Specifies the file name for the key database.</p>	No	<p><b>Default value:</b> arycert.db</p> <p><b>Your value:</b></p>
<p><b>Key Database Stash File Name</b> Specifies the file name for the key database stash file.</p>	No	<p><b>Default value:</b> arysert.sth</p> <p><b>Your value:</b></p>
<p><b>Enable FIPS 140-2</b> Specifies whether the product will run with a security configuration that meets the FIPS 140-2 standard. A setting of true in this field will only apply when <b>Use SSL</b> is set to true and it will only apply to the SSL-based communication layer.</p>	No	<p><b>Default value:</b> false</p> <p><b>Your value:</b></p>
<p><b>Enable TLS 1.3</b> Specifies whether the product will allow TLS protocol version 1.3. A setting of true in this field will only apply when <b>Use SSL</b> is set to true, and it will only apply to the SSL-based communication layer. This setting works only for z/OS Version 2 Release 4 or higher. This setting doesn't work with <b>Enable FIPS 140-2</b> set to true.</p>	No	<p><b>Default value:</b> false</p> <p><b>Your value:</b></p>
<p><b>Subsystem monitoring delay</b> Optional parameter that specifies how often to auto-refresh the list of active Db2 subsystems, where N = Number of seconds between refreshes.</p>		<p><b>Default value:</b> 0</p> <p><b>Your value:</b></p>
The following fields are used to generate the <b>Customize agent job JCL</b> job:		
<p><b>_Create job to customize agent job JCL</b> Specify a / on the line command next to this field to generate the <b>Customize agent job JCL</b> job and specify the required parameters.</p>	No	<p><b>Default value:</b> (not automatically selected)</p> <p><b>Your value:</b></p>

Parameter	Discovered	Values
<b>Recovery Expert ISPF skeleton library</b> Specifies the file name for the ISPF skeleton library.	No	<b>Default value:</b> Db2TOOL.ARY320.SARYSLIB <b>Your value:</b>
<b>Agent Configuration file</b> Specifies the Db2 Recovery Expert agent configuration file. The file must be allocated to the ARYCFG DD. The file can be a sequential data set; a PDS or PDSE member; or an HFS file.	No	<b>Default value:</b> Db2TOOL.ARY320.JCLLIB (ARYCFGGA) <b>Your value:</b>
The following fields are used to generate the <b>Customize agent started task proc</b> job:		
<b>_Customize agent started task proc</b> Specify a / on the line command next to this field to generate the <b>Customize Agent started task</b> jobs and specify the required parameters.	No	<b>Default value:</b> (not automatically selected) <b>Your value:</b>
<b>Recovery Expert ISPF skeleton library</b> Specifies the file name for the ISPF skeleton library.	No	<b>Default value:</b> Db2TOOL.ARY320.SARYSLIB <b>Your value:</b>
<b>Agent Configuration file</b> Specifies the Db2 Recovery Expert agent configuration file. The file must be allocated to the ARYCFG DD. The file can be a sequential data set; a PDS or PDSE member; or an HFS file.	No	<b>Default value:</b> Db2TOOL.ARY320.JCLLIB (ARYCFGGA) <b>Your value:</b>
The following fields are used to generate the <b>Customize RBA Capture</b> jobs:		
<b>_Create the jobs for RBA Capture</b> Specify a / on the line command next to this field to generate the <b>Customize RBA Capture</b> jobs and specify the required parameters.	No	<b>Default value:</b> (not automatically selected) <b>Your value:</b>
<b>*Create RBA Capture VSAM repository data set</b> This job creates the RBA Capture VSAM repository data set. This job is automatically generated when you select the field <b>_Create the jobs for RBA Capture</b> . If required, specify the volume in the <b>Volser for repository files</b> field.	No	<b>Default value:</b> (automatically selected) <b>Your value:</b>
<b>Volser for repository files</b> Specifies the volume for the RBA Capture VSAM repository data set. This field is only required if you are creating a new repository file. A new repository file is only required if a file does not exist.	No	<b>Default value:</b> (no default) <b>Your value:</b>

Parameter	Discovered	Values
<p><b>*Create RBA Capture GDG file used for cleanup</b></p> <p>This job creates a GDG file that is used when performing a cleanup of the RBA capture utility repository file. When a cleanup job is run, old entries will be written to this output GDG file. This job is automatically generated when you select the field <b>_Create the jobs for RBA Capture</b>. Specify the number of generation to use for the RBA Capture cleanup file in the <b>RBA Capture Cleanup Generations</b> field.</p>	No	<p><b>Default value:</b> (automatically selected)</p> <p><b>Your value:</b></p>
<p><b>RBA Capture Cleanup Generations</b></p> <p>Specifies the number of generations to use for the RBA Capture cleanup file.</p>	No	<p><b>Default value:</b> 010</p> <p><b>Your value:</b></p>
<p><b>*Customize RBA Capture Cleanup job</b></p> <p>This job performs a cleanup on the RBA Capture Cleanup file. This job is automatically generated when you select the field <b>_Create the jobs for RBA Capture</b>. No parameters are required.</p>	No	<p><b>Default value:</b> (automatically selected)</p> <p><b>Your value:</b></p>
<p><b>*Customize RBR Capture started task procedure</b></p> <p>This job customizes the RBR Capture started task procedure. This job is automatically generated when you select the field <b>_Create the jobs for RBA Capture</b>. No parameters are required.</p>	No	<p><b>Default value:</b> (automatically selected)</p> <p><b>Your value:</b></p>
<p>The following field is used to generate the <b>Install Verification</b> job:</p>		

Parameter	Discovered	Values
<p><b>_Create Install Verification job</b></p> <p>Specify a / on the line command next to this field to generate the <b>Install Verification</b> job. The install verification job (IVP) verifies that Db2 Recovery Expert has been installed correctly. The IVP job uses the following ARYIN DD SYSIN parameters to determine what is to be verified:</p> <ul style="list-style-type: none"> <li>• <b>ISPF</b> to indicate that only the ISPF interface is to be checked.</li> <li>• <b>GUI</b> to indicate that only the web browser interface is to be checked.</li> <li>• <b>Complete</b> to indicate that the complete product, both ISPF and web browser interface is checked.</li> <li>• <b>SSID ssid</b> to enter a single SSID that is to be checked. By default all Db2 SSID's entered into the control file are checked. If the SSIDs are on different LPARS, then a separate IVP job should be created and executed on each LPAR for each Db2.</li> </ul> <p>The default value is <b>Complete</b>. You can change the default value by editing this job using the ISPF editor. Select the job for editing from the Finish Product Customization panel.</p>	No	<p><b>Default value:</b> (not automatically selected)</p> <p><b>Your value:</b></p>

## Db2 parameters section

### Description

The following table provides information about the Db2 parameters that must be discovered or specified during the customization process.

Parameter	Discovered	Values
<p><b>Db2 subsystem ID</b></p> <p>Specifies the ID of the Db2 subsystem.</p>	Yes	<p><b>Default value:</b> IA1A</p> <p><b>Your value:</b></p>
<p><b>Group attach name</b></p> <p>Specifies the group attach name.</p>	No	<p><b>Default value:</b> IA1A</p> <p><b>Your value:</b></p>
<p><b>Mode</b></p> <p>Specifies the mode for the Db2 subsystem. Value can be NFM or CM.</p>	No	<p><b>Default value:</b> NFM</p> <p><b>Your value:</b></p>

Parameter	Discovered	Values
<p><b>Level Number Load</b> Specifies the version level for Db2. Value can be 101, 111, or 121.</p> <p><b>Note:</b> You must specify a level value before you can access the rest of the Db2 product parameters.</p>	No	<p><b>Default value:</b> 101</p> <p><b>Your value:</b></p>
<p><b>Load Library</b> Specifies the Db2 Load library that contains all the Db2 runtime libraries. You can use the <b>Add</b> option to enter more than one LOAD library.</p>	Yes	<p><b>Default value:</b> DSN.SDSNLOAD</p> <p><b>Your value:</b></p>
<p><b>Run Library</b> Specifies the Db2 Run library. This library is required in order to run DDL/DML in batch. You can use the <b>Add</b> option to enter more than one Run library.</p>	Yes	<p><b>Default value:</b> DSN.RUNLIB.LOAD</p> <p><b>Your value:</b></p>
<p><b>Exit Library</b> Specifies the Db2 Exit library that contains all the user's customized LOADLIB members. You can use the <b>Add</b> option to enter more than one Exit library.</p>	No	<p><b>Default value:</b> DSN.SDSNEXIT</p> <p><b>Your value:</b></p>
<p><b>Bootstrap data set</b> Specifies the Bootstrap data set name. You can use the <b>Add</b> option to enter more than one Bootstrap data set.</p>	Yes	<p><b>Default value:</b> DSN.SDSNBSSDS</p> <p><b>Your value:</b></p>
<p><b>SYSAFF for Db2 Utilities</b> Specifies the LPAR on which the Db2 utilities should be run.</p>	No	<p><b>Default value:</b></p> <p><b>Your value:</b></p>
<p><b>Plan name for the DSNTDP2 utility</b> Specifies the name of the plan for the DSNTDP2 utility.</p>	No	<p><b>Default value:</b> DSNTDP2</p> <p><b>Your value:</b></p>

Parameter	Discovered	Values
<b>Stogroup for Recovery Expert objects</b> Specifies the stogroup name for the Recovery Expert repository objects.	No	SYSDEFLT
<b>Database for Recovery Expert objects</b> Specifies the database name for the Recovery Expert repository objects.	No	<b>Default value:</b> ARYDB <b>Your value:</b>
<b>Qualifier for repository objects</b> Specifies the three character qualifier that will be used for repository objects.	No	<b>Default value:</b> ARY <b>Your value:</b>
<b>Qualifier for Db2 Automation Tool objects</b> Specifies the three character qualifier that will be used for Db2 Automation Tool objects.	No	<b>Default value:</b> HAA <b>Your value:</b>
<b>SQLID to create Recovery Expert objects</b> Specifies the SQLID that is used when creating Recovery Expert objects.	No	<b>Default value:</b> ARY <b>Your value:</b>
<b>SQLID to grant Recovery Expert objects</b> Specifies the SQLID to be used to grant Recovery Expert repository objects. You can use the <b>Add</b> option to enter more than one SQLID; the maximum is 10 secondary SQLIDs. Always delete the default SQLID, <b>PUBLIC</b> , before adding secondary SQLIDs.	No	<b>Default value:</b> PUBLIC <b>Your value:</b>

Parameter	Discovered	Values
<b>VCAT name for optional storage group</b> Specifies the high-level qualifier that is used to create an optional storage group for repository objects.	No	<b>Default value:</b> ARY <b>Your value:</b>
<b>Owner of Recovery Expert packages</b> Specifies the owner prefix that will be used with the Recovery Expert packages.	No	<b>Default value:</b> ARY <b>Your value:</b>
<b>Owner of Recovery Expert plans</b> Specifies the owner prefix that will be used with the Recovery Expert plans.	No	<b>Default value:</b> ARY <b>Your value:</b>
<b>Bind packages EBDIC</b> Specifies whether packages will be bound as EBDIC.	No	<b>Default value:</b> Y <b>Your value:</b>
<b>Db2 ZPARMS</b> Specifies the ZPARM load module member name that is generated for the Db2 subsystem.	Yes	<b>Default value:</b> DSNZPARM <b>Your value:</b>
<b>Plan for display data extract</b> Specifies the name of the plan that includes the modules that are used for extracting data. The displayed value might be the name of an existing plan if a version of Recovery Expert exists.	Yes	<b>Default value:</b> ARYP3201 <b>Your value:</b>
<b>Plan for the SLR load</b> Specifies the name of the plan that includes the modules that load the schema level repository. The displayed value might be the name of an existing plan if a version of Recovery Expert exists.	Yes	<b>Default value:</b> ARYP3202 <b>Your value:</b>

Parameter	Discovered	Values
<p><b>Plan for recovery plan generation</b> Specifies the name of the plan that includes the modules that are used for generating recovery plans. The displayed value might be the name of an existing plan if a version of Recovery Expert exists.</p>	Yes	<p><b>Default value:</b> ARYP3203</p> <p><b>Your value:</b></p>
<p><b>Plan for JCL gen and SQL execution</b> Specifies the name of the plan that includes the modules that are used to generate JCL and run SQL. The displayed value might be the name of an existing plan if a version of Recovery Expert exists.</p>	Yes	<p><b>Default value:</b> ARYP3204</p> <p><b>Your value:</b></p>
<p><b>Plan for log analysis services</b> Specifies the name of the plan that includes the modules that are used for log analysis services. The displayed value might be the name of an existing plan if a version of Recovery Expert exists.</p>	Yes	<p><b>Default value:</b> ARYP3205</p> <p><b>Your value:</b></p>
<p><b>Plan for recover to different data set</b> Specifies the name of the plan that includes the modules that are used for redirected recovery. The displayed value might be the name of an existing plan if a version of Recovery Expert exists.</p>	No	<p><b>Default value:</b> ARYP3206</p> <p><b>Your value:</b></p>



Parameter	Discovered	Values
<b>Primary allocation for table spaces</b> Specifies the primary space allocation for Db2 table space objects. The value -1 specifies that Db2 will decide allocation.	No	<b>Default value:</b> 1440 <b>Your value:</b>
<b>Secondary allocation for table spaces</b> Specifies the secondary space allocation for Db2 table space objects. The value -1 specifies that Db2 will decide allocation.	No	<b>Default value:</b> 3600 <b>Your value:</b>
<b>BP to be used for 8K page table spaces</b> Specifies the buffer pool to be used for 8K page table spaces.	No	<b>Default value:</b> BP8K0 <b>Your value:</b>
<b>BP to be used for 16K page table spaces</b> Specifies the buffer pool to be used for 16K page table spaces.	No	<b>Default value:</b> BP16K0 <b>Your value:</b>
<b>BP to be used for all other table spaces</b> Specifies the buffer pool to be used for all other page table spaces.	No	<b>Default value:</b> BP0 <b>Your value:</b>
<b>Primary allocation for index spaces</b> Specifies the primary space allocation for Db2 index space objects. The value -1 specifies that Db2 will decide allocation.	No	<b>Default value:</b> 720 <b>Your value:</b>
<b>Secondary allocation for index spaces</b> Specifies the secondary space allocation for Db2 index space objects. The value -1 specifies that Db2 will decide allocation.	No	<b>Default value:</b> 720 <b>Your value:</b>

Parameter	Discovered	Values
<b>BP name for index spaces</b> Specifies the buffer pool to be used for all index spaces except for those that are 8K per page.	No	<b>Default value:</b> BP0 <b>Your value:</b>
<b>BP name for 8K index spaces</b> Specifies the buffer pool to be used for 8K page index spaces.	No	<b>Default value:</b> BP8K0 <b>Your value:</b>
<b>Use Archive Log 1</b> Specify Y for log services to use archive log 1. Otherwise, specify N.	Yes	<b>Default value:</b> Y <b>Your value:</b>
<b>Use Archive Log 2</b> Specify Y for log services to use archive log 2. Otherwise, specify N.	Yes	<b>Default value:</b> N <b>Your value:</b>
<b>Active log priority</b> Specify Y to use the active log whenever an active log is available and contains data that also resides on an archive log, Specify N to indicate that archive logs have priority over active logs.	Yes	<b>Default value:</b> Y <b>Your value:</b>
<b>Data set name prefix</b> Specifies the data set name prefix used when creating temporary work files. If this is left blank, the user's ID is used.	Yes	<b>Default value:</b> Db2TOOL.ARY.SSID <b>Your value:</b>
<b>Capture Automation Tool profiles</b> Specify whether to capture Automation Tool profiles. The following values are valid: Y to capture the profiles or N to not capture the profiles.	No	<b>Default value:</b> N <b>Your value:</b>

Parameter	Discovered	Values
<b>Load authorization information into SLR</b> Specify Y to load authorization information into the SLR. Otherwise, specify N.	Yes	<b>Default value:</b> Y <b>Your value:</b>
<b>Load plan and package information into SLR</b> Specify Y to load plan and package information into the SLR. Otherwise, specify N.	Yes	<b>Default value:</b> Y <b>Your value:</b>
<b>Elapsed time per CPU second</b> Specifies the elapsed time per CPU second. The valid range is 1.00-999.00.	Yes	<b>Default value:</b> 010.00 <b>Your value:</b>
<b>Elapsed time per tape mount</b> Specifies the elapsed time per tape mount. The valid range is 1.00-999.00.	Yes	<b>Default value:</b> 120.00 <b>Your value:</b>
<b>Log Analysis Tool data set prefix</b> Specifies the Log Analysis Tool data set prefix.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Log Analysis Tool volsers</b> Specifies the Log Analysis Tool volume serial numbers.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Log Analysis Tool data unit</b> Specifies the Log Analysis Tool data unit.	Yes	<b>Default value:</b> C <b>Your value:</b>
<b>Log Analysis Tool data pri quantity</b> Specifies the Log Analysis Tool data primary quantity.	Yes	<b>Default value:</b> 00005 <b>Your value:</b>

Parameter	Discovered	Values
<b>Log Analysis Tool data sec quantity</b> Specifies the Log Analysis Tool data secondary quantity.	Yes	<b>Default value:</b> 00005 <b>Your value:</b>
<b>Log Analysis Tool index unit</b> Specifies the Log Analysis Tool index unit. Value can be C or T.	Yes	<b>Default value:</b> C <b>Your value:</b>
<b>Log Analysis Tool index primary quantity</b> Specifies the Log Analysis Tool index primary quantity.	Yes	<b>Default value:</b> 00005 <b>Your value:</b>
<b>Log Analysis Tool index secondary quantity</b> Specifies the Log Analysis Tool index secondary quantity.	Yes	<b>Default value:</b> 00005 <b>Your value:</b>
<b>Log Analysis Tool SMS data class</b> Specifies the Log Analysis Tool SMS data class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Log Analysis Tool SMS storage class</b> Specifies the Log Analysis Tool SMS storage class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Log Analysis Tool SMS management class</b> Specifies the Log Analysis Tool SMS management class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Log Analysis Tool can use Db2 sort</b> Specifies whether the Log Analysis Tool can use Db2 Sort.	Yes	<b>Default value:</b> N <b>Your value:</b>
<b>File tailoring device type</b> Specifies the default work file unit device to be used for file tailoring.	Yes	<b>Default value:</b> SYSALLDA <b>Your value:</b>

Parameter	Discovered	Values
<b>File tailoring allocation unit</b> Specifies the file tailoring allocation unit. Value can be C or T.	Yes	<b>Default value:</b> C <b>Your value:</b>
<b>File tailoring primary quantity</b> Specifies the file tailoring primary space quantity.	Yes	<b>Default value:</b> 00001 <b>Your value:</b>
<b>File tailoring secondary quantity</b> Specifies the file tailoring secondary space quantity.	Yes	<b>Default value:</b> 00001 <b>Your value:</b>
<b>File tailoring SMS data class</b> Specifies the file tailoring SMS data class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>File tailoring SMS storage class</b> Specifies the file tailoring SMS storage class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>File tailoring SMS management class</b> Specifies the file tailoring SMS management class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Local Primary data set name mask</b> Specifies the default data set name mask to be used for local primary copies.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Local Primary device type</b> Specifies the default work file unit device to be used for local primary copies. Sample values are SYSDA and DISK.	Yes	<b>Default value:</b> SYSALLDA <b>Your value:</b>
<b>Local Primary catalog image copy</b> Specifies the local primary catalog image copy.	Yes	<b>Default value:</b> Y <b>Your value:</b>

Parameter	Discovered	Values
<b>Local Primary allocation unit</b> Specifies the local primary allocation unit. Value can be C or T.	Yes	<b>Default value:</b> C <b>Your value:</b>
<b>Local Primary primary quantity</b> Specifies the local primary space quantity.	Yes	<b>Default value:</b> 00001 <b>Your value:</b>
<b>Local Primary secondary quantity</b> Specifies the local primary secondary space quantity.	Yes	<b>Default value:</b> 00001 <b>Your value:</b>
<b>Local Primary SMS data class</b> Specifies the local primary SMS data class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Local Primary SMS storage class</b> Specifies the local primary SMS storage class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Local Primary SMS management class</b> Specifies the local primary SMS management class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Local Primary volume count</b> Specifies the local primary volume count.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Local Primary expiration date</b> Specifies the local primary expiration date.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Local Primary retention period</b> Specifies the local primary retention period.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Local Backup data set name mask</b> Specifies the default data set name mask to be used for local backup copies.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>

Parameter	Discovered	Values
<b>Local Backup device type</b> Specifies the default work file unit device to be used for local backup copies. Sample values are SYSDA and DISK.	Yes	<b>Default value:</b> SYSALLDA <b>Your value:</b>
<b>Local Backup catalog image copy</b> Specifies the local backup catalog image copy.	Yes	<b>Default value:</b> Y <b>Your value:</b>
<b>Local Backup allocation unit</b> Specifies the local backup allocation unit.	Yes	<b>Default value:</b> C <b>Your value:</b>
<b>Local Backup primary quantity</b> Specifies the local backup primary space quantity.	Yes	<b>Default value:</b> C <b>Your value:</b>
<b>Local Backup secondary quantity</b> Specifies the local backup secondary space quantity.	Yes	<b>Default value:</b> 00001 <b>Your value:</b>
<b>Local Backup SMS data class</b> Specifies the local backup SMS data class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Local Backup SMS storage class</b> Specifies the local backup SMS data class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Local Backup SMS management class</b> Specifies the local backup SMS management class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Local Backup volume count</b> Specifies the local backup volume count.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Local Backup expiration date</b> Specifies the local backup expiration date.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>

Parameter	Discovered	Values
<b>Local Backup retention period</b> Specifies the local backup retention period.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery Site Primary data set name mask</b> Specifies the default data set name mask to be used for recovery site primary copies.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery Site Primary device type</b> Specifies the default work file unit device to be used for recovery site primary copies. Sample values are SYSDA and DISK.	Yes	<b>Default value:</b> SYSALLDA <b>Your value:</b>
<b>Recovery Site Primary catalog image copy</b> Specifies the recovery site primary catalog image copy.	Yes	<b>Default value:</b> Y <b>Your value:</b>
<b>Recovery Site Primary allocation unit</b> Specifies the recovery site primary allocation unit.	Yes	<b>Default value:</b> C <b>Your value:</b>
<b>Recovery Site Primary quantity</b> Specifies the recovery site primary space quantity.	Yes	<b>Default value:</b> 00001 <b>Your value:</b>
<b>Recovery Site Primary secondary quantity</b> Specifies the recovery site primary secondary space quantity.	Yes	<b>Default value:</b> 00001 <b>Your value:</b>
<b>Recovery Site Primary SMS data class</b> Specifies the recovery site primary SMS data class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>



Parameter	Discovered	Values
<b>Recovery Site Primary SMS storage class</b> Specifies the recovery site primary SMS storage class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery Site Primary SMS management class</b> Specifies the recovery site primary SMS management class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery Site Primary volume count</b> Specifies the recovery site primary volume count.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery Site Primary expiration date</b> Specifies the recovery site primary expiration date.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery Site Primary retention period</b> Specifies the recovery site primary retention period.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery Site Backup data set name mask</b> Specifies the default data set name mask to be used for recovery site backup copies.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery Site Backup device type</b> Specifies the default work file unit device to be used for recovery site backup copies. Sample values are SYSDA and DISK.	Yes	<b>Default value:</b> SYSALLDA <b>Your value:</b>
<b>Recovery Site Backup catalog image copy</b> Specifies the recovery site backup catalog image copy.	Yes	<b>Default value:</b> Y <b>Your value:</b>

Parameter	Discovered	Values
<b>Recovery Site Backup allocation unit</b> Specifies the recovery site backup allocation unit.	Yes	<b>Default value:</b> C <b>Your value:</b>
<b>Recovery Site Backup primary quantity</b> Specifies the recovery site backup primary space quantity.	Yes	<b>Default value:</b> 00001 <b>Your value:</b>
<b>Recovery Site Backup secondary quantity</b> Specifies the recovery site backup secondary space quantity.	Yes	<b>Default value:</b> 00001 <b>Your value:</b>
<b>Recovery Site Backup SMS data class</b> Specifies the recovery site backup SMS data class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery Site Backup SMS storage class</b> Specifies the recovery site backup SMS storage class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery Site Backup SMS management class</b> Specifies the recovery site backup SMS management class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery Site Backup volume count</b> Specifies the recovery site backup volume count.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery Site Backup expiration date</b> Specifies the recovery site backup expiration date.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery Site Backup retention period</b> Specifies the recovery site backup retention period.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>

Parameter	Discovered	Values
<b>Recovery output device type</b> Specifies the default work file unit device to be used for recovery output.	Yes	<b>Default value:</b> SYSALLDA <b>Your value:</b>
<b>Recovery output allocation unit</b> Specifies the recovery output allocation unit.	Yes	<b>Default value:</b> C <b>Your value:</b>
<b>Recovery output primary quantity</b> Specifies the recovery output primary space quantity.	Yes	<b>Default value:</b> 00001 <b>Your value:</b>
<b>Recovery output secondary quantity</b> Specifies the recovery output secondary space quantity.	Yes	<b>Default value:</b> 00001 <b>Your value:</b>
<b>Recovery output SMS data class</b> Specifies the recovery output SMS data class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery output SMS storage class</b> Specifies the recovery output SMS storage class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery output SMS management class</b> Specifies the recovery output SMS management class.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery output volume count</b> Specifies the recovery output volume count.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery output expiration date</b> Specifies the recovery output expiration date.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Recovery output retention period</b> Specifies the recovery output retention period.	Yes	<b>Default value:</b> (no default) <b>Your value:</b>

Parameter	Discovered	Values
<b>Generate system-level backups</b> Specify Y to generate system-level backups. Otherwise, specify N.	Yes	<b>Default value:</b> Y <b>Your value:</b>
<b>Task list data set</b> The Db2 task list data set is used by the Db2 Administrative Task Scheduler. It contains a copy of the task list. This parameter is optional.	No	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Allow to use the RECOVER utility</b> Specifies whether IBM RECOVER utility could be used for redirected recovery.	No	<b>Default value:</b> N <b>Your value:</b>
<b>Use RECOVER for Redirected Recovery of indexes</b> Specifies whether IBM RECOVER utility could be used for redirected recovery of indexes.	No	<b>Default value:</b> N <b>Your value:</b>
<b>Use Db2 Sort when possible?</b> Specifies whether Db2 Sort will be used if it is possible when performing redirected recovery.	No	<b>Default value:</b> N <b>Your value:</b>
<b>Sort program installed</b> Specifies the sort program that is installed in your environment and may be used when performing redirected recovery. Specify D for Db2 sort and S for Syncsort.	No	<b>Default value:</b> D <b>Your value:</b>
<b>Number of buffers</b> Specifies the number of buffer pools that will be used when performing redirected recovery.	No	<b>Default value:</b> 5 <b>Your value:</b>

Parameter	Discovered	Values
<b>Channel programs</b> Specifies the number of channel programs that will be used when performing redirected recovery.	No	<b>Default value:</b> 2 <b>Your value:</b>
<b>Work file device type</b> Specifies the device type that will be used for work files when performing redirected recovery.	No	<b>Default value:</b> SYSALLDA <b>Your value:</b>
<b>SYSPRINT device type</b> Specifies the device type that will be used for SYSPRINT when performing redirected recovery.	No	<b>Default value:</b> SYSALLDA <b>Your value:</b>
<b>MINILOG device type</b> Specifies the device type that will be used for MINILOG when performing redirected recovery.	No	<b>Default value:</b> SYSALLDA <b>Your value:</b>
<b>Work file data set type</b> Specifies the data set type that will be used for work files when performing redirected recovery.	No	<b>Default value:</b> B <b>Your value:</b>
<b>SYSPRINT data set type</b> Specifies the data set type that will be used for SYSPRINT when performing redirected recovery.	No	<b>Default value:</b> B <b>Your value:</b>
<b>MINILOG data set type</b> Specifies the data set type that will be used for MINILOG when performing redirected recovery.	No	<b>Default value:</b> B <b>Your value:</b>
<b>Work file space unit</b> Specifies the space unit type that will be used for work files when performing redirected recovery.	No	<b>Default value:</b> T <b>Your value:</b>

Parameter	Discovered	Values
<b>SYSPRINT space units</b> Specifies the space unit type that will be used for SYSPRINT when performing redirected recovery.	No	<b>Default value:</b> T <b>Your value:</b>
<b>MINILOG space units</b> Specifies the space unit type that will be used for MINILOG when performing redirected recovery.	No	<b>Default value:</b> T <b>Your value:</b>
<b>Work file primary quantity</b> Specifies the primary space allocation that will be used for work files when performing redirected recovery.	No	<b>Default value:</b> 50 <b>Your value:</b>
<b>SYSPRINT primary quantity</b> Specifies the primary space allocation that will be used for SYSPRINT when performing redirected recovery.	No	<b>Default value:</b> 50 <b>Your value:</b>
<b>MINILOG primary quantity</b> Specifies the primary space allocation that will be used for MINILOG when performing redirected recovery.	No	<b>Default value:</b> 50 <b>Your value:</b>
<b>Work file secondary quantity</b> Specifies the secondary space allocation that will be used for work files when performing redirected recovery.	No	<b>Default value:</b> 50 <b>Your value:</b>
<b>SYSPRINT secondary quantity</b> Specifies the secondary space allocation that will be used for SYSPRINT when performing redirected recovery.	No	<b>Default value:</b> 50 <b>Your value:</b>

Parameter	Discovered	Values
<b>MINILOG secondary quantity</b> Specifies the secondary space allocation that will be used for MINILOG when performing redirected recovery.	No	<b>Default value:</b> 50 <b>Your value:</b>
<b>Work file maximum volumes</b> Specifies the maximum volumes that will be used for work files when performing redirected recovery.	No	<b>Default value:</b> (no default) <b>Your value:</b>
<b>SYSPRINT maximum volumes</b> Specifies the maximum volumes that will be used for SYSPRINT when performing redirected recovery.	No	<b>Default value:</b> (no default) <b>Your value:</b>
<b>MINILOG maximum volumes</b> Specifies the maximum volumes that will be used for MINILOG when performing redirected recovery.	No	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Work file SMS data class</b> Specifies the SMS data class for work files when performing redirected recovery.	No	<b>Default value:</b> (no default) <b>Your value:</b>
<b>SYSPRINT SMS data class</b> Specifies the SMS data class for SYSPRINT when performing redirected recovery.	No	<b>Default value:</b> (no default) <b>Your value:</b>
<b>MINILOG SMS data class</b> Specifies the SMS data class for MINILOG when performing redirected recovery.	No	<b>Default value:</b> (no default) <b>Your value:</b>

Parameter	Discovered	Values
<b>Work file SMS storage class</b> Specifies the SMS storage class for work files when performing redirected recovery.	No	<b>Default value:</b> (no default) <b>Your value:</b>
<b>SYSPRINT SMS storage class</b> Specifies the SMS storage class for SYSPRINT when performing redirected recovery.	No	<b>Default value:</b> (no default) <b>Your value:</b>
<b>MINILOG SMS storage class</b> Specifies the SMS storage class for MINILOG when performing redirected recovery.	No	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Work file SMS management class</b> Specifies the SMS management class for work files when performing redirected recovery.	No	<b>Default value:</b> (no default) <b>Your value:</b>
<b>SYSPRINT SMS management class</b> Specifies the SMS management class for SYSPRINT when performing redirected recovery.	No	<b>Default value:</b> (no default) <b>Your value:</b>
<b>MINILOG SMS management class</b> Specifies the SMS management class for MINILOG when performing redirected recovery.	No	<b>Default value:</b> (no default) <b>Your value:</b>
<b>Sort work unit device</b> Specifies the unit device for the sort work files when performing redirected recovery.	No	<b>Default value:</b> SYSALLDA <b>Your value:</b>



Parameter	Discovered	Values
<b>Sort work number of DDs</b> Specifies the number of DD statements included for sort work files when performing redirected recovery.	No	<b>Default value:</b> 3 <b>Your value:</b>
<b>Sort work primary space</b> Specifies the amount of primary space allocated for sort work files when performing redirected recovery.	No	<b>Default value:</b> 20 <b>Your value:</b>
<b>Sort work secondary space</b> Specifies the amount of secondary space allocated for sort work files when performing redirected recovery.	No	<b>Default value:</b> 1 <b>Your value:</b>
<b>Utility REGION size</b> Specifies a region size that is used when running utility recovery jobs when performing redirected recovery.	No	<b>Default value:</b> 0 <b>Your value:</b>

## LDRM parameters section

### Description

The following table provides additional information about the LDRM parameters that must be discovered or specified during the customization process.

**Note:** You must define the EMC load library parameter to configure the LDRM utility.

Parameter	Discovered	Values
Use snapshots for recovery	No	<b>Default value:</b> N <b>Your value:</b> Y
Load library 1, 2	No	<b>Default value:</b> Null <b>Your value:</b>
Parmlib data set	No	<b>Default value:</b> <b>Your value:</b>
Parmlib members suffix	No	<b>Default value:</b> <b>Your value:</b>

Parameter	Discovered	Values
VDG name	No	<b>Default value:</b> <b>Your value:</b>
New HLQ	No	<b>Default value:</b> <b>Your value:</b>

## LPAR parameters section

### Description

The following table provides additional information about the LPAR parameters that must be discovered or specified during the customization process.

Parameter	Required	Discovered	Values
<b>JES version</b> Specifies the Job Entry Subsystem (JES) version that will be used.	Yes	No	<b>Default value:</b> 2 <b>Your value:</b>
<b>Message library</b> Some parts of Recovery Expert run under batch TSO/ISPF. The ISPF message library is required in the JCL to start ISPF in batch. This library is optional. Specify the third library that was supplied by IBM for ISPF.	Yes	No	<b>Default value:</b> ISP.SISPMENU <b>Your value:</b>
<b>ISPF table input library</b> Some parts of Recovery Expert run under batch TSO/ISPF. The ISPF table library is required in the JCL to start ISPF in batch. This library is optional. Specify the library that was supplied by IBM for ISPF.	Yes	No	<b>Default value:</b> ISP.SISPTENU <b>Your value:</b>
<b>Link list library</b> Some parts of Recovery Expert run under batch TSO/ISPF. The ISPF link list library is required in the JCL to start ISPF in batch. This library is optional. Specify the library that was supplied by IBM for ISPF.	Yes	No	<b>Default value:</b> ISPF.ISPLINK <b>Your value:</b>

## Create customized Db2 Recovery Expert jobs

This section describes each of the Db2 Recovery Expert jobs that can be generated during customization. Depending on your selections in the Product Parameters panels one or more of these jobs will be displayed in the Finish Product Customization panel. You can edit or browse the job JCL using the Edit line command in the panel.

Generated Jobs	Jobname	Template	Required
<p><b>Configure Required Execs</b> This job copies the required execs into the CLIST library. You must also specify the product parameters <b>Create CLIST library, Create JCL library, Create PROC library, and Recovery Expert sample library.</b></p>	ssEXECS	ARYEXECS	Yes
<p><b>Update startup CLISTs parameters</b> This job configures the startup CLIST. You must also specify the <b>Startup CLIST1, High-level qualifier for load library, Suffix for the message library, Suffix for the panel library, Suffix for the skeleton library, Suffix for the load library, Suffix for the table library, Authentication Mode, IMS CLIST library name, and the IMS CLIST member name</b> fields.</p> <p><b>Note:</b> To change the name of the TCP/IP stack that is accessed by the ISPF interface, you must edit this job and update the parameter entry TCP/IPSTK to the equivalent in your environment: TCP/IPSTK - NAME OF THE TCP/IP STACK</p>	ss32	ARYV32	Yes
<p><b>Drop the Recovery Expert database</b> This job drops the Db2 Recovery Expert database.</p>	ssDRPDdd	ARYDRODB	Optional
<p><b>Create IBM Recovery Expert stogroup</b> This job creates the Recovery Expert stogroup. Select and run this job only when you install Db2 Recovery Expert for the first time.</p>	ssDDLSDd	ARYDDLSG	Optional
<p><b>Create Recovery Expert database</b> This job step creates the Recovery Expert database. Select and run this job only when you install Db2 Recovery Expert for the first time.</p>	ssDDLDDd	ARYDDKDB	Optional
<p><b>Migrate Recovery Expert objects from v3.1</b> This job migrates all SLR objects to v3.2 format. It is a required job if you are upgrading to v3.2.</p>	ssDAL3	ARYDAL3	Required
<p><b>Create schema-level repository</b> This job creates the Db2 Recovery Expert schema-level repository. This job creates all of the Db2 objects that Recovery Expert uses. Select and run this job only when you install Recovery Expert for the first time.</p>	ssDDL1dd	ARYDDL1	Optional

Generated Jobs	Jobname	Template	Required
<p><b>Create views on schema-level repository</b> This job creates the views needed for the schema-level repository. Select and run this job only when you install Db2 Recovery Expert for the first time.</p>	ssDDL2dd	ARYDDL2	Optional
<p><b>Create views on system catalog</b> This job creates the views on the Db2 system catalog tables. Select and run this job only when you install Db2 Recovery Expert for the first time.</p>	ssDDL3dd	ARYDDL3	Optional
<p><b>Create objects for Db2 Automation Tool</b> This job creates the objects that are necessary to interface with the Db2 Automation Tool profiles.</p>	ssHAAAdd	ARYHAA	Optional
<p><b>Bind product packages</b> This job binds the product packages.</p>	ssBINDdd	ARYBIND1	Yes
<p><b>Bind product plans</b> This job binds the product plans.</p>	ssBINDdd	ARYBIND2	Yes
<p><b>Bind product plans to support Db2 Auto Tool</b> This job binds the product plans to support Db2 Automation Tool.</p>	ssBINDdd	ARYBIND3	Optional
<p><b>Grant Recovery Expert privileges</b> This job grants the privileges that are required to run Recovery Expert.</p>	ssGRANdd	ARYGRANT	Optional
<p><b>Grant privileges to support Db2 Auto Tool</b> This job grants the privileges that are required to run Db2 Recovery Expert.</p>	ssHAAGdd	ARYHAAG	Optional
<p><b>Create control file</b> This job creates the Product Control File (PCF). The PCF is a required VSAM KSDS that is used by Recovery Expert to store product and Db2 related values. If a control file exists, you do not need to create a new file. You must also specify the volume serial number for the control file in the <b>Volser for control file</b> field.</p>	ssCNTFL	ARYCNTFL	Optional
<p><b>Create VSAM repository files</b> This job creates the VSAM repository files that Recovery Expert uses to store metadata information. If these files exist, you do not need to create new files. You must also specify the volume serial number for the file in the <b>Volser for repository file</b> field.</p>	ssREPO	ARYREPO	Optional

Generated Jobs	Jobname	Template	Required
<p><b>Create optional CAR VSAM repository file</b>  This job generates the VSAM repository file that will be used for coordinated application recovery. You must also specify the volume serial number for the repository file in the <b>Volser for repository file</b> field.</p>	ssCARUP	ARYCARUP	Optional
<p><b>Create optional CSLB VSAM repository file</b>  This job creates the VSAM file that is used to support the combined system level backup for IMS and Db2 feature. You must also specify the volume serial number for the repository file in the <b>Volser for repository file</b> field.</p>	ssCSLUP	ARYCSLUP	Optional
<p><b>Create backup GDG files</b>  This job creates the GDG files that are used to back up the repository file. You must also specify the number of backup generations when selecting this job.</p>	ssGDG	ARYGDG	Optional
<p><b>Update control file</b>  This job updates the Db2 Recovery Expert Product Control File (PCF). You can change PCF fields using Tools Customizer. You can also update some fields using the ISPF interface. You should run this job if you have changed any PCF fields. See the PCF table in Appendix F for more information on the fields in the PCF file.</p>	ssCF1Udd	ARYCF1UP	Yes
<p><b>Load the schema-level repository</b>  This job loads the schema level repository.</p>	ssSLRdd	ARYSLR	Yes
<p><b>Install browser interface</b>  This job will install the web browser interface. If you select to run this you must specify the <b>HFS file location</b> and the <b>Browser MVS doc file location</b> fields.</p>	ssUNPAX	ARYUNPAX	Yes

Generated Jobs	Jobname	Template	Required
<p><b>Customize server configuration</b></p> <p>This job will customize the server configuration file. For this job to run successfully you must also have entered your specific environment information in the following Tools Customizer fields:</p> <ul style="list-style-type: none"> <li>• <b>Server-agent listener port number</b></li> <li>• <b>ISPF client listener port number</b></li> <li>• <b>Web client listener port number</b></li> <li>• <b>Key Database Dir Path</b></li> <li>• <b>Key Database File Name</b></li> <li>• <b>Key Database Stash File Name</b></li> <li>• <b>Enable FIPS 14--2</b></li> <li>• <b>Server Configuration file</b></li> <li>• <b>Browser HFS file location</b></li> <li>• <b>Use SSL</b></li> </ul> <p><b>Note:</b> The server configuration file includes many preset optional parameters in addition to these environment specific parameters. To modify any of the preset optional parameters you must edit the server configuration file. The member name of the server configuration file is ARYCFGS. By default, ARYCFGS is a member of Db2TOOL.ARY320.JCLLIB. (You can change the default data set name when you specify where to find the server configuration file using the Db2 Recovery Expert product parameter Server Configuration File on the Tools Customization panel CCQPPRD. If changed, you must specify the new name.)</p>	ssSRVCF	ARYSRVCF	Yes
<p><b>Generate new Key Database</b></p> <p>This job will provide certificate information for the Key Database. You will run this job if you are enabling SSL. You must also specify the <b>Key Database Password, Organization</b> and <b>Country Code</b> fields.</p>	ssSSLCR	ARYSSLCR	Optional
<p><b>Customize server job</b></p> <p>This job customizes the server. You must also specify the <b>Server Configuration file</b> field.</p>	ssSRVJB	ARYSRVJB	Yes
<p><b>Customize server started task</b></p> <p>This job customizes the server started task. You must also specify the <b>Server Configuration file</b> field.</p>	ssSRVSP	ARYSRVSP	Yes

Generated Jobs	Jobname	Template	Required
<p><b>Customize agent configuration</b>  This job customizes the agent configuration file. For this job to run successfully you must also have entered your specific environment information in the following Tools Customizer fields:</p> <ul style="list-style-type: none"> <li>• <b>Agent configuration file</b></li> <li>• <b>Server-agent listener port number</b></li> <li>• <b>Use SSL</b></li> <li>• <b>Key Database Dir Path</b></li> <li>• <b>Key Database File Name</b></li> <li>• <b>Key Database Stash File Name</b></li> <li>• <b>Enable FIPS 140-2</b></li> <li>• <b>Enable TLS 1.3</b></li> <li>• <b>Subsystem monitoring delay</b> (optional)</li> </ul> <p><b>Note:</b> The agent configuration file includes many preset optional parameters in addition to these environment specific parameters. To modify any of the preset optional parameters you must edit the agent configuration file. The member name of the agent configuration file is ARYCFGA. ARYCFGA is a member of Db2TOOL.ARY320.JCLLIB. (You can change the default data set name when you specify where to find the agent configuration file using the Db2 Recovery Expert product parameter Agent Configuration File on the Tools Customization panel CCQPPRD. If changed, you must specify the new name.)</p>	ssAGTCF	ARYAGTCF	Yes
<p><b>Customize agent job</b>  This job customizes the agent specifications. You must also specify the <b>Recovery Expert ISPF skeleton library</b> and the <b>Agent configuration file</b> fields.</p>	ssAGTJB	ARYAGTJB	Yes
<p><b>Customize agent started task</b>  This job will customize the agent started task procedure. You must also specify the <b>Recovery Expert ISPF skeleton library</b> and the <b>Agent configuration file</b> fields.</p>	ssAGTSP	ARYAGTSP	Yes
<p><b>Create RBA Capture VSAM repository file</b>  This job will create the RBA Capture VSAM repository file. You must also specify the <b>RBA Capture Cleanup data set</b> and the <b>Volser for repository files</b> fields.</p>	ssRBARP	ARYRBARP	Yes
<p><b>Create RBA Capture GDG file used for cleanup</b>  This job will create the RBA Capture GDG file used for cleanup. You must also specify the <b>RBA capture Cleanup Generations</b> field.</p>	ssRBAGD	ARYRBAGD	Yes

Generated Jobs	Jobname	Template	Required
<p><b>Customize RBA Capture cleanup job</b> This job will customize the RBA Capture cleanup job.</p>	ssRBACL	ARYRBACL	Yes
<p><b>Customize RBA started task procedure</b> This job will customize the RBA capture started task procedure.</p> <p><b>Note:</b> The RBA Capture started task procedure requires an input PDS member to be created for each LPAR that it will be run on. This member will be input into the SYSIN DD statement and will contain each SSID for that LPAR in which the RBAs should be collected.</p>	ssRBASP	ARYRBASP	Yes
<p><b>Install verification</b> The install verification job (IVP) verifies that Db2 Recovery Expert has been installed correctly. The IVP job uses the following ARYIN DD SYSIN parameters to determine what is to be verified:</p> <ul style="list-style-type: none"> <li>• <b>ISPF</b> to indicate that only the ISPF interface is to be checked.</li> <li>• <b>GUI</b> to indicate that only the web browser interface is to be checked.</li> <li>• <b>Complete</b> to indicate that the complete product, both ISPF and web browser interface is checked.</li> <li>• <b>SSID <i>ssid</i></b> to enter a single SSID that is to be checked. By default all Db2 SSID's entered into the control file are checked. If the SSIDs are on different LPARS, then a separate IVP job should be created and executed on each LPAR for each Db2.</li> </ul> <p>The default value is <b>Complete</b>. You can change the default value by editing this job using the ISPF editor.</p> <p>Examples</p> <pre>//ARYIN DD * COMPLETE</pre> <pre>//ARYIN DD * ISPF</pre> <pre>//ARYIN DD * GUI</pre> <pre>//ARYIN DD * SSID <i>ssid</i></pre>	ssIVP	ARYIVP	Optional



## Customizing Db2 Recovery Expert

Using Tools Customizer to customize Db2 Recovery Expert consists of identifying the product to customize; defining any required Db2 Recovery Expert, LPAR, and Db2 parameters; generating the customization jobs; and submitting the jobs.

Customization roadmaps describe the steps that you must complete to customize Db2 Recovery Expert. Separate roadmaps are provided for the three most common types of customizations.

Use the following table to determine which roadmap corresponds to your environment.

Table 14. Customization roadmaps

Environment description	Roadmap
You do not have a customized version of Db2 Recovery Expert, and you need to customize it for the first time.	<a href="#">“Roadmap: Customizing Db2 Recovery Expert for the first time” on page 133</a>
You have already customized a version of Db2 Recovery Expert, and you want to use the same parameter values to customize a different version.	<a href="#">“Roadmap: Customizing a new version of Db2 Recovery Expert from a previous customization” on page 134</a>
You have a customized version of Db2 Recovery Expert, but you want to change one or more parameter values.	<a href="#">“Roadmap: Recustomizing Db2 Recovery Expert” on page 135</a>

### Roadmap: Customizing Db2 Recovery Expert for the first time

This roadmap lists and describes the steps that are required to customize Db2 Recovery Expert for the first time.

If you are customizing a previous version of Db2 Recovery Expert, see [“Roadmap: Customizing a new version of Db2 Recovery Expert from a previous customization” on page 134](#).

Before you complete these steps, ensure that the following prerequisites have been met:

- All of the product customization steps that must be done before Tools Customizer is started are complete.
- The LPAR ISPF libraries that are required to submit the jobs are known.
- Tools Customizer is started.
- The Tools Customizer settings have been reviewed or modified, and saved.

Complete the steps in the following table to customize Db2 Recovery Expert for the first time.

Table 15. Steps for customizing Db2 Recovery Expert for the first time

Step	Description	Instructions
1	Specify the product metadata library for the product that you want to customize. The name of this library is <i>hlq.SARYDENU</i> .	<a href="#">“Specifying the metadata library for the product to customize” on page 136</a>
2	Create new Db2 entries and associate them with Db2 Recovery Expert.	<a href="#">“Creating and associating Db2 entries” on page 139</a>
3	Define the required parameters.	<a href="#">“Defining parameters” on page 140</a>
4	Generate the customization jobs for the product or for the Db2 entries on which Db2 Recovery Expert is ready to be customized.	<a href="#">“Generating customization jobs” on page 144</a>
5	Submit the generated customization jobs.	<a href="#">“Submitting customization jobs” on page 144</a>

The following table lists some of the common administrative tasks that you might need to do during the customization process.

*Table 16. Administrative tasks*

<b>Description</b>	<b>Instructions</b>
Browse the different types of parameters.	<a href="#">“Browsing parameters” on page 146</a>
Copy an existing Db2 entry to the list of Db2 entries on which Db2 Recovery Expert can be customized.	<a href="#">“Copying Db2 entries” on page 146</a>
Remove one or more Db2 entries from the associated list.	<a href="#">“Removing Db2 entries” on page 148</a>
Delete one or more Db2 entries from the main list.	<a href="#">“Deleting Db2 entries” on page 148</a>
Display a list of customization jobs that have been previously generated.	<a href="#">“Displaying customization jobs” on page 149</a>
Maintain the customization jobs in the customization library.	<a href="#">“Maintaining customization jobs” on page 149</a>

## Roadmap: Customizing a new version of Db2 Recovery Expert from a previous customization

This roadmap lists and describes the steps for customizing a new version of Db2 Recovery Expert based on the existing customization values of a previous version of the same product.

Use this roadmap even if the previous version of Db2 Recovery Expert was not customized by using Tools Customizer.

Before you complete these steps, ensure that the following prerequisites have been met:

- All of the product customization steps that must be done before Tools Customizer is started are complete.
- Tools Customizer is started.
- The Tools Customizer settings have been reviewed or modified, and saved.

Complete the steps in the following table to customize a new version of Db2 Recovery Expert from a previous customization.

*Table 17. Steps for customizing a new version of Db2 Recovery Expert from a previous customization*

<b>Step</b>	<b>Description</b>	<b>Instructions</b>
1	Specify the product metadata library for the product that you want to customize. The name of this library is <i>hlq.SARYDENU</i> .	<a href="#">“Specifying the metadata library for the product to customize” on page 136</a>
2	Use the Db2 Recovery Expert Discover EXEC to discover information about the version of Db2 Recovery Expert that you previously customized manually.	<a href="#">“Discovering Db2 Recovery Expert information automatically” on page 137</a>
3	Define the required parameters.	<a href="#">“Defining parameters” on page 140</a>
4	Generate the customization jobs for the product or for the Db2 entries on which Db2 Recovery Expert is ready to be customized.	<a href="#">“Generating customization jobs” on page 144</a>
5	Submit the generated customization jobs.	<a href="#">“Submitting customization jobs” on page 144</a>

The following table lists some of the common administrative tasks that you might need to do during the customization process.

*Table 18. Administrative tasks*

<b>Description</b>	<b>Instructions</b>
Browse the different types of parameters.	<a href="#">“Browsing parameters” on page 146</a>
Copy an existing Db2 entry to the list of Db2 entries on which Db2 Recovery Expert can be customized.	<a href="#">“Copying Db2 entries” on page 146</a>
Remove one or more Db2 entries from the associated list.	<a href="#">“Removing Db2 entries” on page 148</a>
Delete one or more Db2 entries from the main list.	<a href="#">“Deleting Db2 entries” on page 148</a>
Display a list of customization jobs that have been previously generated.	<a href="#">“Displaying customization jobs” on page 149</a>
Maintain the customization jobs in the customization library.	<a href="#">“Maintaining customization jobs” on page 149</a>

## Roadmap: Recustomizing Db2 Recovery Expert

This roadmap lists and describes the steps to change parameter values and regenerate customization jobs for Db2 Recovery Expert after you have customized it for the first time.

The new customization jobs will replace the customization jobs that were previously generated and stored in the customization library. Part of the recustomization process includes selecting or deselecting optional tasks or steps, changing the definitions of parameters that have already been defined, or both. Use the method in this roadmap instead of deleting customization jobs from the customization library.

Before you complete these steps, ensure that the following prerequisites have been met:

- All of the product customization steps that must be done before Tools Customizer is started are complete.
- Tools Customizer is started.

Complete the steps in the following table to recustomize Db2 Recovery Expert.

*Table 19. Required steps for recustomizing Db2 Recovery Expert*

<b>Step</b>	<b>Description</b>	<b>Instructions</b>
1	Specify the product metadata library for the product that you want to recustomize. The name of this library is <i>hlq.SARYDENU</i> .	<a href="#">“Specifying the metadata library for the product to customize” on page 136</a>
2	Edit the specific tasks, steps, or parameters that need to be changed.	<ul style="list-style-type: none"> <li>• <a href="#">“Defining Db2 Recovery Expert parameters” on page 140</a></li> <li>• <a href="#">“Defining Db2 parameters” on page 142</a></li> </ul>
3	Generate the customization jobs for the product or for the Db2 entries on which Db2 Recovery Expert is ready to be customized.	<a href="#">“Generating customization jobs” on page 144</a>
4	Submit the new generated customization jobs.	<a href="#">“Submitting customization jobs” on page 144</a>

The following table lists some of the common administrative tasks that you might need to do during the customization process.

Table 20. Administrative tasks

Description	Instructions
Browse the different types of parameters.	<a href="#">“Browsing parameters” on page 146</a>
Copy an existing Db2 entry to the list of Db2 entries on which Db2 Recovery Expert can be customized.	<a href="#">“Copying Db2 entries” on page 146</a>
Remove one or more Db2 entries from the associated list.	<a href="#">“Removing Db2 entries” on page 148</a>
Delete one or more Db2 entries from the main list.	<a href="#">“Deleting Db2 entries” on page 148</a>
Display a list of customization jobs that have been previously generated.	<a href="#">“Displaying customization jobs” on page 149</a>
Maintain the customization jobs in the customization library.	<a href="#">“Maintaining customization jobs” on page 149</a>

## Specifying the metadata library for the product to customize

You must specify a metadata library for the product that you want to customize.

The product metadata library contains the information that determines which tasks, steps, and parameters are required to customize Db2 Recovery Expert. This information controls what is displayed on the **Product Parameters** panel, the **LPAR Parameters** panel, and the **DB2 Parameters** panel.

After Db2 Recovery Expert has been SMP/E installed, the default name of the product metadata library is *high\_level\_qualifier.SARYDENU*, where *high\_level\_qualifier* is all of the segments of the data set name except the lowest-level qualifier.

1. Specify option 1 on the **Tools Customizer for z/OS** panel.

The **Specify the Product or Pack Metadata Library** panel is displayed. This panel contains a list of the product metadata libraries that you specified most recently. If you are using Tools Customizer for the first time, this list is empty, as shown in the following figure:

```

CCQPHLQ          Specify the Product or Pack Metadata Library          15:12:22
Command =====>                                         Scroll ==> PAGE

Type the name of the metadata library for the product or the pack in the
Metadata library field, or select the library in the list of previous
libraries and press Enter to populate the field. Press Enter to continue.

The default name of the metadata library after the product or pack has been
SMP/E installed is <hlq>.SxxxDENU, where <hlq> is the high-level qualifier for
the product or the pack, and xxx is the three-character prefix for the product
or the pack.

Product or pack metadata library . ARY.WRK031C.SARYDENU

Name              Version  Metadata
Library

=>
=>
=>
=>

```

Figure 8. The **Specify the Metadata Library** panel

2. Use one of the following methods to specify the product metadata library:
  - Type the name of a fully qualified partitioned data set (PDS) or an extended partitioned data set (PDSE) in the **Product or pack metadata library** field. Double quotation marks (") cannot be used around the name. Single quotation marks (') can be used but are not required. If you are customizing Db2 Recovery Expert for the first time, you must use this method.

- Place the cursor in any column of the Recent Metadata Libraries list, and press Enter to populate **Product or pack metadata library** field. Press Enter again to select product or pack for customization.

If you are customizing Db2 Recovery Expert for the first time, the **Run Discover EXEC** panel is displayed. Otherwise, the **Customizer Workplace** panel is displayed.

- Complete the steps that correspond to your environment:

#### **Customizing Db2 Recovery Expert for the first time**

Do not run the Db2 Recovery Expert Discover EXEC. Press End. The **Customizer Workplace** panel is displayed. If your environment requires associated Db2 entries, ensure that they are created and associated. If your environment does not require associated Db2 entries, skip this step, and edit Db2 Recovery Expert parameters.

#### **Customizing Db2 Recovery Expert from a previous or current customization**

Press Enter to run the Db2 Recovery Expert Discover EXEC. The **Discover Customized Product Information** panel is displayed. Specify the required information for running the EXEC.

## **Discovering Db2 Recovery Expert information automatically**

You can use the Db2 Recovery Expert Discover EXEC to discover information from a previous or current customization of Db2 Recovery Expert.

**Tip:** Using the Db2 Recovery Expert Discover EXEC to discover information from a previous or current customization saves time and reduces errors that can occur when parameters are specified manually.

Db2 Recovery Expert provides the Discover EXEC that you will run. Therefore, the information that can be discovered depends on Db2 Recovery Expert.

Parameter values that are discovered and parameter values that are specified manually are saved in the data store. If parameter values for the product that you want to customize exist in the data store, Tools Customizer issues a warning before existing values are replaced.

1. On the **Customizer Workplace** panel, issue the DISCOVER command.

If you chose to run the Db2 Recovery Expert Discover EXEC on the pop-up panel after you specified the product to customize, skip this step.

**Tip:** You can run any Tools Customizer primary command by using either of the following methods:

- Place the cursor on the name of the primary command, and press Enter.
- Type the primary command name in the command line, and press Enter.

The **Discover Customized Product Information** panel is displayed, as shown in the following figure:

```

CCQPDSC          Discover Customized Product Information          16:38:37
Command ==>>>          Scroll ==>> PAGE

For the product you are customizing, the Discover EXEC retrieves product
information from an already customized product. Specify the required
information, and press Enter to run the Discover EXEC. Press End to cancel.

Product to Customize
  Product metadata library : ARY.WRK031C.SARYDENU          > LPAR. . . : RS22
  Product name . . . . . : DB2 Recovery Expert for z/OS > Version . : 3.3.0

More:      +
Discover EXEC for Extracting Information from an Already Customized Product
Discover EXEC library . . . ARY.WRK031C.SARYDENU
Discover EXEC name . . . . . ARYDISC
Discover output data set . . ARY.TCZ.DISCOVER

Information for Discover EXEC
Current ARY LOAD library . . . . . ARY.SARYLOAD          >
Current ARY ISPM library . . . . . ARY.SARYISPM         >
Discover from this ARY control file . . . ARY.CONTROL    >
Discover from this ARY CLIST library . . . ARY.SARYCLST  >
Discover from this BIND JCL library and member
          ARY.SARYSAMP(ARYBIND)          >

```

Figure 9. The **Discover Customized Product Information** panel

2. Either accept the default values for the following input fields that Tools Customizer generates, or replace the default values with your own values:

**Discover EXEC library**

The fully qualified data set name that contains the Db2 Recovery Expert Discover EXEC.

**Discover EXEC name**

The name of the Db2 Recovery Expert Discover EXEC.

**Discover output data set**

The fully qualified data set where output from the Db2 Recovery Expert Discover EXEC is stored.

3. Either accept or change the default values in the **Information for Discover EXEC** fields.
 

These fields are generated by Db2 Recovery Expert. They show the information that is required to run the Db2 Recovery Expert Discover EXEC.
4. Issue the RUN command to run the Db2 Recovery Expert Discover EXEC.
 

Alternatively, save your information without running the Db2 Recovery Expert Discover EXEC by issuing the SAVE command.

If you issue the RUN command to run the Db2 Recovery Expert Discover EXEC, the parameter information is discovered for Db2 Recovery Expert, and the **Customizer Workplace** panel is displayed.

The discovered parameter values for Db2 Recovery Expert replace any existing values.

The next step depends on your environment:

- If Db2 entries were not discovered, or if you need to customize Db2 Recovery Expert on new Db2 entries, create and associate the entries.
- If Db2 entries were discovered and you want to customize Db2 Recovery Expert on only these entries, define the parameters.

**Related tasks**

Creating and associating Db2 entries

Db2 entries are optional for Db2 Recovery Expert. You can create new Db2 entries and associate them with Db2 Recovery Expert.

Defining parameters

To customize Db2 Recovery Expert, you must define Db2 Recovery Expert parameters, LPAR parameters, and Db2 parameters, if your customization requires Db2 entries.

## Creating and associating Db2 entries

Db2 entries are optional for Db2 Recovery Expert. You can create new Db2 entries and associate them with Db2 Recovery Expert.

The list of associated Db2 entries is on the **Customizer Workplace** panel.

1. Issue the ASSOCIATE command on the **Customizer Workplace** panel.

The **Associate DB2 Entry for Product** panel is displayed, as shown in the following figure:

```
CCQPDAD                Associate DB2 Entry for Product                16:36:42
Command ==>                Scroll ==> PAGE

Select any of the following DB2 entries to add them to the Customizer
Workplace panel. You use the Customizer Workplace panel to choose the DB2
subsystems, data sharing members, and group attach names on which to
customize the product.

Commands: CREATE - Create new DB2 entries

DB2 Entries
Line commands: A - Associate  C - Copy  D - Delete
Cmd  SSID  GrpAttch
      *    *
----- End of DB2 entries -----
```

Figure 10. The **Associate DB2 Entry for Product** panel

2. Create Db2 entries.

If you need to associate Db2 entries that are already in the main list, skip this step and go to step 3.

- a) Issue the CREATE command to create one Db2 entry, or issue CREATE *nn* to create multiple Db2 entries, where *nn* is the number of new entries to be created.

The **Create DB2 Entries** panel is displayed, as shown in the following figure:

```
CCQPCDB                Create DB2 Entries                Row 1 of 1
Command ==>                Scroll ==> PAGE

Specify the SSID, the group attach name, or both in the appropriate columns
for each new DB2 entry and press Enter. To create additional entries, issue
the Inn line command, where nn is the number of entries to be inserted, and
press Enter. To cancel, press End.

New DB2 Entries
Line commands: I - Insert into list  R - Remove from list
Cmd  SSID  GrpAttch  Message
-----End of DB2 entries -----
```

Figure 11. The **Create DB2 Entries** panel

- b) In the appropriate columns, specify a Db2 subsystem ID, Db2 group attach name, or Db2 data sharing member name for the Db2 entry that you want to create, and press Enter.

Valid values are 1 - 4 characters. You can use symbolic characters. You cannot use blanks.

### Tips:

- To insert multiple Db2 entries, specify the *Inn* line command, where *nn* is the number of Db2 entries to be inserted.
- You will define specific parameters for these new Db2 entries, such as parameters that define a subsystem as primary, on the **DB2 Parameters** panel. This panel is displayed after you select these new Db2 entries and issue the line command to generate the jobs, after you issue the primary command to generate the jobs for all associated Db2 entries, or when you manually edit the Db2 parameters.

The **Associate DB2 Entry for Product** panel is displayed, and the new Db2 entry is displayed in the main list, as shown in the following figure:

```

CCQPDAD          Associate DB2 Entry for Product          Row 1 to 3 of 3
Command ===>          Scroll ===> CSR

Select any of the following DB2 entries to add them to the Customizer
Workplace panel. You use the Customizer Workplace panel to choose the DB2
subsystems, data sharing members, and group attach names on which to
customize the product.

Commands:  CREATE - Create new DB2 entries

DB2 Entries
Line commands: A - Associate  C - Copy  D - Delete
Cmd  SSID  GrpAtch
   *      *
  DBAA  --
  DBAB  --
  DBAC  --
----- End of DB2 entries -----

```

Figure 12. Associate DB2 Entry for Product panel

- c) Repeat steps b and c for each Db2 entry that you want to create.
  - d) When you have created all the Db2 entries, associate them with Db2 Recovery Expert, or press End to display the **Customizer Workplace** panel.
3. Associate Db2 entries.
- a) Specify A against one or more Db2 entries in the main list, and press Enter to associate them with Db2 Recovery Expert.

The **Customizer Workplace** panel is displayed with the associated Db2 entries displayed in the associated list.

Define the parameters.

### Related concepts

[Tools Customizer terminology](#)

Tools Customizer uses several unique terms that you should be familiar with before you begin to use Tools Customizer.

## Defining parameters

To customize Db2 Recovery Expert, you must define Db2 Recovery Expert parameters, LPAR parameters, and Db2 parameters, if your customization requires Db2 entries.

You must define the Db2 Recovery Expert parameters first for the following reasons:

- If you ran the Db2 Recovery Expert Discover EXEC, you must review the values that were discovered.
- If you select optional tasks and steps on the **Product Parameters** panel that affect the Db2 entry on which you will customize Db2 Recovery Expert, additional parameters might be displayed on the **DB2 Parameters** panel.
- If other steps must be completed in a specific sequence, customization notes on the **Product Parameters** panel will display the correct sequence.

### Defining Db2 Recovery Expert parameters

Db2 Recovery Expert parameters are specific to Db2 Recovery Expert.

If you ran the Db2 Recovery Expert Discover EXEC, you must review the parameters that were discovered.

1. Specify E next to the **Product parameters** field on the **Customizer Workplace** panel, and press Enter. The **Product Parameters** panel is displayed, as shown in the following figure. If other steps must be completed in a specific sequence before you define the Db2 Recovery Expert parameters, a note labeled **Important** will display the correct sequence on this panel.



```

CCQPPRD                               Product Parameters                               13:57:25
Command ==>>>                          Scroll ==>>> PAGE

Complete the following tasks to customize the products. The required tasks,
required steps within a required or selected task, and required parameters
are preceded by an asterisk (*). Ensure that values are specified for the
required parameters. Press End to save and exit.

Commands: SAVE  VERIFYOFF
Line Commands: / - Select

Product to Customize
  Product metadata library : ARY.WRK031C.SARYDENU      > LPAR. . . : RS25
  Product name . . . . . : DB2 Recovery Expert for z/OS > Version . : 3.1.0

Product customization library : PDB0B.TCZ.$RS25$.ARY310

Required parameters
Startup Clist library. . . . . DB2TOOLS.ARY310.CLIST
Startup Clist 2 . . . . . ARYV310
Recovery Expert production load library . . . . . DB2TOOLS.ARY310.SARYLOAD
Control file . . . . . DB2TOOLS.ARY310.DB2.CONTROL
Profile VSAM repository . . . . . DB2TOOLS.ARY310.PROFILES
Profile mappings VSAM repository . . . . . DB2TOOLS.ARY310.PROFILE.MAPS
System catalogs VSAM repository . . . . . DB2TOOLS.ARY310.PROFILE.CATS
System Backups VSAM repository . . . . . DB2TOOLS.ARY310.SYSBACK
System Backups Volumes VSAM repository . . . . . DB2TOOLS.ARY310.SYSBACK.VOLS
System Backups SSIDs VSAM repository . . . . . DB2TOOLS.ARY310.SYSBACK.SSIDS
System Backups Objects VSAM repository . . . . . DB2TOOLS.ARY310.SYSBACK.OBJS
System Backups Objects VSAM repository . . . . . DB2TOOLS.ARY310.OBJECTS
System Backup Reports VSAM repository . . . . . DB2TOOLS.ARY310.BREPORT
Offload options VSAM repository . . . . . DB2TOOLS.ARY310.OFFOPTS
System configuration VSAM repository . . . . . DB2TOOLS.ARY310.MOVDATA
Product parmlib dataset. . . . . DB2TOOLS.ARY310.PARMLIB
Product parmlib member. . . . . ARY#PARM

/ Customize the Agent job
  Recovery Expert ISPF skeleton library. : DB2TOOLS.ARY310.SARYSLIB
  Agent Configuration file . . . . . : DB2TOOLS.ARY310.AGTCNFG

/ Customize the Server job
  Server Configuration file . . . . . : DB2TOOLS.ARY310.SRVCNFG

```

Figure 13. The **Product Parameters** panel

You can use the following primary commands on this panel:

**SAVE**

Saves the specified product or component parameter values.

**VERIFY / VERIFYOFF**

Use the VERIFY and VERIFYOFF commands to turn on and off parameter verification of product or component parameters. Before you can generate customization jobs, you must verify that all required parameters are set to a valid value. The product or component parameter status of **Verify Values** on the **Customize Workplace** panel indicates that the values have not been verified.

Enter these commands either by typing them in the command field and pressing Enter or by positioning the cursor on the command and pressing Enter. When VERIFY is active, VERIFYOFF is displayed so that you can toggle between the two states. By default, verification is turned on when you display the **DB2 Parameters** panel, and the verification state is reset to VERIFY every time you exit the Customization Workplace panel by pressing PF3.

Turning verification off is useful when you need to exit the panel before you have entered all of the required parameters, but you want to save the parameters that you have specified. When you disable verification, it is disabled only for the Product or Component Parameters Values panel.

2. Select any required tasks and steps, and specify values for any parameters. After you select a task or step with a slash (/), put the cursor in the selected field and press Enter.

If tasks, steps, and parameters are required, they are preselected with a slash (/). Otherwise, they are not preselected.

All of the required parameters have default values, which you can either accept or change.

**Tips:**

- In the command line, specify the KEYS command, and map EXPAND to one of the function keys.
- For a detailed description of all input fields, put the cursor in the field, and press F1 or the key that is mapped to Help.
- The following elements apply to specific fields:
  - **Add** is displayed when parameters can have multiple values but currently have only one value. To specify multiple values in these fields, place the cursor on **Add**, and press Enter. Use the displayed panel to add or delete additional values.
  - **List** is displayed when the complete list of valid values for the fields is too long to be displayed on the panel. To see the complete list of values, place the cursor on **List**, and press F1 or the key that is mapped to Help.
  - **More** is displayed when input fields contains multiple values. To see all of the values in the field, place the cursor on **More**, and press Enter.
- 3. Optional: Select other tasks and steps with a slash (/) and press Enter to activate the input fields. Either accept or change the default values that are displayed.
- 4. Press End to save your changes and exit, or issue the SAVE command to save your changes and stay on the **Product Parameters** panel.

The **Customizer Workplace** panel is displayed, and the status of the product parameters is Ready to Customize.

If the status of other parameters on the **Customizer Workplace** panel is Incomplete, Verify Values, or Discovered, edit these parameters.

**Related tasks**

Defining Db2 parameters

Db2 parameters are parameters for a Db2 entry.

## Defining Db2 parameters

Db2 parameters are parameters for a Db2 entry.

If you did not run the Db2 Recovery Expert Discover EXEC, you must create and associate one or more Db2 entries before you can define the Db2 parameters. For more information, see [“Creating and associating Db2 entries” on page 139](#).

1. Specify E next to one or more Db2 entries in the associated list, which is in the Associated Db2 Entries and Parameter Status section on the **Customizer Workplace** panel, and press Enter.

The **DB2 Parameters** panel is displayed, as shown in the following figure:

```

CCQpdb2                                DB2 Parameters                                13:36:01
Enter values for all of the DB2 parameters. Press End to save and exit.

Commands: SAVE - Save parameter values

Product to Customize
  Product metadata library : ARY.WRK031C.SARYDENU    > LPAR. . . : RS22
  Product name . . . . . : IBM DB2 Recovery Expert  > Version . : 3.1.0

DB2 subsystem ID . . . . . : EA1A
Group attach name . . . . . :

General DB2 Information
  Mode . . . . . NFM      (CM,CM8,CM9,NFM)
  Level Number . . . . .      (810,910,101)

DB2 Libraries
  Load Library . . . . . DSN.SDSNLOAD    > Add...
  Run Library . . . . . DSN.RUNLIB.LOAD  > Add...
  Bootstrap data set . . . . . DSN.SDSNBSDS > Add...

DB2 Utilities
  Plan name for the DSNTEP2 utility . . . . DSNTEP2

Recovery Expert DB2 vars
  DB2 ZPARMs member . . . . . DSNZPARM
  Plan 1 . . . . . ARYP3101
  Plan 2 . . . . . ARYP3102
  Plan 3 . . . . . ARYP3103
  Plan 4 . . . . . ARYP3104
  Plan 5 . . . . . ARYP3105
  VCAT name for optional index creation. . . ARY
  Database for Recovery Expert objects. . . ARYDB
  Stogroup for Recovery Expert objects. . . SYSDEFLT

```

Figure 14. The **DB2 Parameters** panel

You can use the following primary commands on this panel:

**SAVE**

Saves the specified product or component parameter values.

**VERIFY / VERIFYOFF**

Use the VERIFY and VERIFYOFF commands to turn on and off parameter verification of Db2 parameters. Before you can generate customization jobs, you must verify that all required parameters are set to a valid value. The Db2 parameter status of `Verify Values` on the Customize Workplace panel indicates that the values have not been verified.

Enter these commands either by typing them in the command field and pressing Enter or by positioning the cursor on the command and pressing Enter. When VERIFY is active, VERIFYOFF is displayed so that you can toggle between the two states. By default, verification is turned on when you display the **DB2 Parameters panel**, and the verification state is reset to VERIFY every time you exit the Customization Workplace panel by pressing PF3.

Turning verification off is useful when you need to exit the panel before you have entered all of the required parameters, but you want to save the parameters that you have specified. When you disable verification, it is disabled only for the **DB2 Parameters Values** panel.

2. Specify values for all parameters that are displayed.

**Tips:**

- In the command line, specify the KEYS command, and map EXPAND to one of the function keys.
- For a detailed description of all input fields, put the cursor in the field, and press F1 or the key that is mapped to Help.
- The following elements apply to specific fields:

- **Add** is displayed when parameters can have multiple values but currently have only one value. To specify multiple values in these fields, place the cursor on **Add**, and press Enter. Use the displayed panel to add or delete additional values.
- **List** is displayed when the complete list of valid values for the fields is too long to be displayed on the panel. To see the complete list of values, place the cursor on **List**, and press F1 or the key that is mapped to Help.
- **More** is displayed when input fields contains multiple values. To see all of the values in the field, place the cursor on **More**, and press Enter.

Many parameters have default values, which you can either accept or change.

3. Press End to save your changes and exit, or issue the SAVE command to save your changes and stay on the same panel.

The status of the Db2 entries that you selected on the **Customizer Workplace** panel is Ready to Customize.

If the status of other parameters on the **Customizer Workplace** panel is Incomplete, Verify Values, or Discovered, edit these parameters.

#### **Related tasks**

Defining Db2 Recovery Expert parameters

Db2 Recovery Expert parameters are specific to Db2 Recovery Expert.

## **Generating customization jobs**

To generate customization jobs for Db2 Recovery Expert and any associated Db2 entries, issue the GENERATEALL command, or select one or more Db2 entries on which to customize Db2 Recovery Expert.

Generate the customization jobs by using one of the following methods.

- If you want to generate customization jobs at the product level and for any associated Db2 entries, issue the GENERATEALL command, and press Enter.
- If you want to generate customization jobs for specific Db2 entries, select the Db2 entries by specifying the G line command against them, and press Enter. The available Db2 entries are in the associated list in the Associated Db2 Entries and Parameter Status section.

**Important:** Regenerating customization jobs will replace any existing jobs, including jobs that you might have manually modified after they were generated.

If the status is Incomplete or Discovered for Db2 Recovery Expert parameters, LPAR parameters, or Db2 parameters, Tools Customizer automatically starts an editing session for the types of parameters that are required. The session continues until the panel for each type of required parameter has been displayed.

If an automatic editing session is started, accept the displayed parameter values, or define values for the required types of parameters, select optional parameters, tasks, or steps for your environment, and save the parameter values. Otherwise, the customization jobs are generated, and you can submit them.

**Tip:** If the customization jobs are generated, but you are not ready to submit them, you can see them later by issuing the JOBLIST command on the **Customizer Workplace** panel. The JOBLIST command displays the **Finish Product Customization** panel, which you can use to submit the jobs.

## **Submitting customization jobs**

Submit the customization jobs to customize Db2 Recovery Expert.

Ensure that the correct jobs are generated.

The following figure shows part of the **Finish Product Customization** panel. The table on this panel shows the customization jobs that are generated by Tools Customizer. They are grouped by job sequence number.

Submit the members in the order in which they apply to each DB2 entry. To submit the job, edit the member and issue the TSO SUBMIT command, or edit the customized library and submit the jobs from there.

#### Product to Customize

```
Product metadata library : ARY.WRK031C.SARYDENU > LPAR . . : RS22
Product name . . . . . : DB2 Recovery Expert > Version . : 3.1.0
```

Line Commands: E - Edit B - Browse

```
Product customization library . : PDBOB.TCZ.$RS22$.ARY310 >
```

Cmd	Member	SSID	GrpAttch	Template	Generated	Description
	A0V31	--	--	ARYV31	2011/11/14	Configure Startup Clist 1
	A1V310	--	--	ARYV310	2011/11/14	Configure Startup Clist 2
	A3DDLDA	EA1A	--	ARYDDLDB	2011/11/14	Create IBM Recovery Expert DB
	B2DXNFAX	EA1A	--	ARYDXNF1	2011/11/14	Create DB2 Objects V10
	B5DXNFAX	EA1A	--	ARYDXNF2	2011/11/14	Create DB2 Objects V10 #2
	B8DXNFAX	EA1A	--	ARYDXNF3	2011/11/14	Create DB2 Objects V10 #3
	B9HAAAX	EA1A	--	ARYHAA	2011/11/14	Create Autotool objects
	C0DRAAX	EA1A	--	ARYDRA	2011/11/14	Create DRA objects
	C1INDEAX	EA1A	--	ARYINDEX	2011/11/14	Create indexes on DB2 catalog
	C4BXNFAX	EA1A	--	ARYBXNF1	2011/11/14	V10 Bind Packages
	C7BXNFAX	EA1A	--	ARYBXNF2	2011/11/14	V10 Bind Plans
	D0BXNFAX	EA1A	--	ARYBXNF3	2011/11/14	V10 Bind DRA
	D3BXNFAX	EA1A	--	ARYBXNF4	2011/11/14	V10 Bind Autotool
	D4GRANAX	EA1A	--	ARYGRANT	2011/11/14	Grant privileges
	D5CNTFL	--	--	ARYCNTFL	2011/11/14	Create Control File
	D6REPO	--	--	ARYREPO	2011/11/14	Create VSAM Repository Files
	D7GDG	--	--	ARYGDG	2011/11/14	Create backup GDG files
	D8CF1UAX	EA1A	--	ARYCF1UP	2011/11/14	Update Control File 1
	D9SLRAX	EA1A	--	ARYSLR	2011/11/14	Load the SLR
	E0UNPAX	--	--	ARYUNPAX	2011/11/14	Unpax and install browser inter
	E1SJAGT	--	--	ARYSJAGT	2011/11/14	Customize the Agent job.
	E2CFGA	--	--	ARYCFGA	2011/11/14	Customize Agent config file
	E3JSRV	--	--	ARYJSRV	2011/11/14	Customize the Server job.
	E4CFGS	--	--	ARYCFGS	2011/11/14	Customize Server config file
	E5IVP	--	--	ARYIVP	2011/11/14	Install Verification

Figure 15. The **Finish Product Customization** panel

The member-naming conventions depend on whether the customization jobs are for Db2 entries, and LPAR, or the product.

The New filed indicates if the job member is newly created/updated. It is either YES or NO. YES indicates the job member is newly created or updated, and it needs to be submitted for customization. NO indicates the job member is not newly created/updated, it does not need to be submitted for customization.

#### Customization jobs for Db2 entries

The members use the following naming convention:

```
<job_sequence_number><job_ID><DB2_entry_ID>
```

where

##### **job\_sequence\_number**

Two alphanumeric characters, A0 - Z9, that Tools Customizer assigns to a customization job. The number for the first template in the sequence is A0, the number for the second template is A1, and so on.

##### **job\_ID**

Characters 4 - 7 of the template name, if the template name contains five or more characters. Otherwise, only character 4 is used. Db2 Recovery Expert assigns the template name.

##### **DB2\_entry\_ID**

Two alphanumeric characters, AA - 99, that Tools Customizer assigns to a Db2 entry.

For example, the XYZBNDDB2\_entry\_ID\_1 and XYZBNDDB2\_entry\_ID\_2 jobs are generated from the XYZBNDGR template, and the XYZ4DB2\_entry\_ID\_1 and XYZ4DB2\_entry\_ID\_2 jobs are generated

from the XYZ4 template. If the jobs are generated on two Db2 entries, the following member names are listed sequentially: A0BNDGAA, A0BNDGAB, A14AA, A14AB.

### Customization jobs for an LPAR or the product

The members use the following naming convention:

```
<job_sequence_number><job_ID>
```

where

#### **job\_sequence\_number**

Two alphanumeric characters, A0 - Z9, that Tools Customizer assigns to a customization job. The number for the first template in the sequence is A0, the number for the second template is A1, and so on.

#### **job\_ID**

Characters 4 - 8 of the template name, if the template name contains five or more characters. Otherwise, only character 4 is used. For example, for the XYZMAKE template, the job ID is MAKE. For the XYZM template, the job ID is M. Db2 Recovery Expert assigns the template name, and it is displayed in the Template column.

For example, the XYZBNDGR job is generated from the XYZBNDGR template, and the XYZ4 job is generated from the XYZ4 template. The following member names are listed sequentially: A0BNDGR, A14.

1. Submit the generated customization jobs by following the process that you use in your environment or by using the following method:
  - a) Specify B or E against a customization job or the product customization library, and press Enter. An ISPF browsing or editing session is started.
  - b) Browse the customization job or each member in the library to ensure that the information is correct.
  - c) Run the TSO SUBMIT command.
2. Press End.

Db2 Recovery Expert is customized, and the **Customizer Workplace** panel is displayed. The status is Customized for the Db2 entries on which Db2 Recovery Expert was customized.

You can generate more customization jobs for other Db2 entries, view a list of customization jobs that you previously generated, or recustomize Db2 Recovery Expert.

## Browsing parameters

You can browse the product or component parameters, the LPAR parameters, and the Db2 parameters in read-only mode.

1. On the **Customizer Workplace** panel, specify B next to the **Product parameters** field, the **LPAR parameters** field, or the Db2 entry that you want to browse, and press Enter. The panel that corresponds to your specification is displayed.
2. Press End to exit.

## Copying Db2 entries

You can copy associated and not associated Db2 entries to other Db2 entries or to new Db2 entries.

Go to the step that applies to your environment:

- To copy an associated Db2 entry to another associated Db2 entry or to an entry that is not associated, go to step 1.
- To copy an associated Db2 entry to a new entry, go to step 2.
- To copy a Db2 entry that is not associated to a new entry, go to step 3.

1. To copy an associated Db2 entry to another associated Db2 entry or to an entry that is not associated, complete the following steps:
  - a) Specify C against a Db2 entry in the associated list of Db2 entries on the **Customizer Workplace** panel, and press Enter.  
The **Copy Associated DB2 Entry** panel is displayed.
  - b) Select one or more Db2 entries to which information will be copied by specifying the / line command, and press Enter.  
The Associated column indicates whether the Db2 entry is associated.  
**Tip:** To copy information into all of the Db2 Entries in the list, issue the SELECTALL primary command, and press Enter.  
The **Copy DB2 Parameter Values** panel is displayed.
  - c) Specify an option for copying common and product-specific Db2 parameter values.  
Common Db2 parameter values apply to all Db2 entries for all products that you have customized by using Tools Customizer. Product-specific Db2 parameter values apply only to the product that you are currently customizing.
    - To copy the common Db2 parameter values and the product-specific Db2 parameter values, specify option 1, and press Enter.
    - To copy only the product-specified Db2 parameter values, specify option 2, and press Enter.

In some cases, the Db2 parameter values might contain the Db2 subsystem ID as an isolated qualifier in data set names. For example, in the DB01.DB01TEST.DB01.SANLLOAD, data set name, the DB01 subsystem ID is isolated in the first and third qualifiers but is not isolated in the second qualifier. When the Db2 subsystem ID is an isolated qualifier in data set names, the **Change DB2 Subsystem ID in DB2 Parameter Values** panel is displayed. Otherwise, the **Customizer Workplace** panel is displayed.
  - d) If the **Change DB2 Subsystem ID in DB2 Parameter Values** panel is displayed, specify an option for changing the subsystem IDs. Otherwise, skip this step.
    - To change the subsystem ID in isolated qualifiers in data set names, specify option 1, and press Enter.
    - To use the same subsystem ID in all values, specify option 2, and press Enter.

The **Customizer Workplace** panel is displayed with the copied associated entry in the list.
2. To copy an associated Db2 entry to a new entry, complete the following steps:
  - a) Specify C against a Db2 entry in the associated list of Db2 entries on the **Customizer Workplace** panel, and press Enter.  
The **Copy Associated DB2 Entry** panel is displayed.
  - b) Issue the CREATE command.  
The **Create DB2 Entries** panel is displayed.
  - c) Specify the SSID, the group attach name, or both in the appropriate columns for each new Db2 entry, and press Enter.  
**Tip:** To add rows for additional entries, specify the *Inn* line command, where *nn* is the number of entries to be created, and press Enter.  
The **Copy Associated DB2 Entry** panel is displayed with the new entries in the list. The new entries are preselected.
  - d) Press Enter to complete the copy process.  
The **Customizer Workplace** panel is displayed with the copied entries in the list.
3. To copy a Db2 entry that is not associated to a new entry, complete the following steps:
  - a) Issue the ASSOCIATE command on the **Customizer Workplace** panel.  
The **Associate DB2 Entry for Product** panel is displayed.

- b) Select one or more Db2 entries by specifying the / line command, and press Enter.  
The **Copy a DB2 Entry** panel is displayed.
- c) Specify the SSID, the group attach name, or both in the appropriate columns for the new Db2 entry, and press Enter.  
The **Associate DB2 Entry for product** panel is displayed with the copied entry in the list.
- d) If you want to associate the copied entry, specify A against it, and press Enter.  
The **Customizer Workplace** panel is displayed with the copied entries in the list.

Edit any of the parameters or generate the jobs.

#### **Related concepts**

[Tools Customizer terminology](#)

Tools Customizer uses several unique terms that you should be familiar with before you begin to use Tools Customizer.

## **Removing Db2 entries**

You can remove Db2 entries from the associated list.

When you remove Db2 entries from the associated list, any customization jobs for the entries are removed from the list of jobs on the **Finish Product Customization** panel, and they are deleted.

On the **Customizer Workplace** panel, specify R next to one or more Db2 entries that you want to remove, and press Enter.

The selected Db2 entries are removed from the associated list and added to the main list on the **Associate DB2 Entry for Product** panel, and the customization jobs are deleted.

#### **Related concepts**

[Tools Customizer terminology](#)

Tools Customizer uses several unique terms that you should be familiar with before you begin to use Tools Customizer.

## **Deleting Db2 entries**

You can delete Db2 entries from the main list.

When you delete Db2 entries from the main list, any associations and all customization jobs for products that are customized on the entries will be deleted.

1. On the **Customizer Workplace** panel, issue the ASSOCIATE command.

The **Associate DB2 Entry for Product** panel is displayed.

2. Specify D next to one or more Db2 entries that you want to delete, and press Enter.

If the entry is associated with any products, the **Delete Associated DB2 Entry** panel for the first Db2 entry that you selected is displayed. Otherwise, the **Delete DB2 Entry** panel is displayed.

3. To delete the Db2 entries, press Enter.

If the Db2 entries are associated with any products in the table on the **Delete Associated DB2 Entry** panel, any associations and all customization jobs for the products that are customized on it are deleted. Otherwise, only the Db2 entries are deleted. If you selected multiple Db2 entries to delete, the next Db2 entry that you selected is displayed on either the **Delete Associated DB2 Entry** panel or the **Delete DB2 Entry** panel. Otherwise, the **Associate DB2 Entry for Product** panel is displayed.

If you selected multiple Db2 entries to delete, repeat step 3 until all selected entries are deleted. Then, continue the customization process.



## Displaying customization jobs

You can view a list of the members that contain the customization jobs before or after you submit the jobs.

The customization jobs that you generate for one Db2 entry are also displayed when you customize Db2 Recovery Expert for another Db2 entry later.

On the **Customizer Workplace** panel, issue the JOBLIST command.

The **Finish Product Customization** panel is displayed. This panel shows the list of jobs that you have previously generated. They are grouped by job sequence number. Use this panel to browse or edit the generated jobs before you submit them.

## Maintaining customization jobs

Instead of deleting customization jobs outside of Tools Customizer, you can maintain the correct jobs for Db2 Recovery Expert by completing the steps for recustomization.

You cannot delete or rename customization jobs from the customization library by starting an ISPF browse or edit session from the **Finish Product Customization** panel. If you try to delete customization jobs by using this method, the CCQC034S message is issued. If you try to rename customization jobs, the CCQC035S message is issued.

If you delete or rename customization jobs from the customization library by using ISPF outside of Tools Customizer, Tools Customizer will not recognize that the jobs were deleted, and the **Finish Product Customization** panel will still display them. If you browse or edit jobs that were deleted from the library outside of Tools Customizer, the CCQC027S message is issued.

To maintain the correct customization jobs in the customization library, complete the steps for recustomization.

## Using Tools Customizer in a multiple-LPAR environment

Currently, Tools Customizer supports only the local LPAR; however, you can propagate customizations to additional LPARs by using either of two different methods.

In a multiple-LPAR environment, Tools Customizer identifies the LPAR to which you are logged on. Tools Customizer uses this LPAR name for several different parameter settings, one of which is the data store. When you use the data store during the customization of Db2 Recovery Expert that is on a different LPAR, Tools Customizer issues message CCQD586S, which indicates that the product has already been customized based on values from the data store on the first LPAR. This message is issued to prevent the data store from becoming corrupted.

This behavior occurs in the following conditions:

- Tools Customizer is installed on a DASD device that is shared by multiple LPARs.
- After a product is customized by using Tools Customizer, the data store is copied to another LPAR.

To customize products running against a Db2 subsystem on an LPAR where Tools Customizer is not installed, consider using one of the following methods:

### Install one instance of Tools Customizer on one LPAR

If you intend to reuse the customization values for all the instances of your products on all LPARs, use this method.

- a. Associate all the Db2 entries in this one instance of Tools Customizer. The LPARs on which the Db2 subsystems reside do not matter.
- b. Generate the customization jobs for each Db2 entry.
- c. Copy the generated customization jobs to the LPAR to run against the specific Db2 entries. Some LPAR-specific edits might be required. You can make these edits in the customized jobs that you copied. Note that this situation is one of the few situations where you might need to make manual changes to the jobs that are customized by Tools Customizer.

## Install one instance of Tools Customizer on each LPAR

If you do not want to reuse previous customization values and you want to start new customizations, use this method.

**Important:** This method will likely not be the preferred approach for most organizations because most organizations tend to use similar or identical customization values for each product instance on all LPARs.

## Starting Tools Customizer

Start Tools Customizer by running a REXX EXEC from the ISPF Command Shell panel.

Tools Customizer must be SMP/E installed. You must know the high-level qualifier of where the Tools Customizer libraries reside. The high-level qualifier is considered to be all the segments of the data set name except the lowest-level qualifier, which is SCCQEXEC.



**Attention:** Ensure that Tools Customizer load libraries are not APF authorized. APF authorizing Tools Customizer libraries results in an abend.

To run the REXX EXEC, you must either change the placeholder in the EXEC for the high-level qualifier of the Tools Customizer EXEC library or pass the high-level qualifier as a parameter when you run the EXEC. The REXX EXEC is in the CCQTCZ member of the EXEC library.

1. Optional: Change the placeholder for the high-level qualifier in the REXX EXEC:
  - a) Find the EXEC library data set for Tools Customizer. The name of the data set is *high\_level\_qualifier.SCCQEXEC*.
  - b) Edit data set member CCQTCZ and replace the <TCZ HLQ> string with the high-level qualifier of the EXEC library data set.  
For example, if the name of the Tools Customizer EXEC library is CCQTCZ.USABSAND.SCCQEXEC, replace <TCZ HLQ> with CCQTCZ.USABSAND.

You have to change the placeholder for the high-level qualifier only once. When you run the REXX EXEC, you do not have to pass the high-level qualifier as a parameter.

2. Run the REXX EXEC (CCQTCZ):
  - a) From the **ISPF Primary Option Menu**, select option 6.  
The **ISPF Command Shell** panel is displayed.
  - b) Specify the EX command to run the REXX EXEC.  
For example, if the Tools Customizer EXEC library is CCQTCZ.USABSAND.SCCQEXEC and you changed the placeholder for the high-level qualifier in the REXX EXEC, specify:

```
EX 'CCQTCZ.USABSAND.SCCQEXEC(CCQTCZ)'
```

If you did not change the placeholder for the high-level qualifier in the REXX EXEC, specify:

```
EX 'CCQTCZ.USABSAND.SCCQEXEC(CCQTCZ)' 'CCQTCZ.USABSAND'
```

You can also specify a trace data set name and a user profile when you run the REXX EXEC.

- The default trace data set name is *USERID.CCQ.TRACE*. To specify a different trace data set name, append the trace data set name to the command. For example, to specify a trace data set name of CCQTCZ.MYTRACE, enter:

```
EX 'CCQTCZ.USABSAND.SCCQEXEC(CCQTCZ)' 'CCQTCZ.USABSAND, CCQTCZ.MYTRACE'
```

- To specify a user profile other than your own, append the user profile name to the command. For example, to specify a user profile of SHRPROF, enter:

```
CCQTCZ.USABSAND.SCCQEXEC(CCQTCZ)' 'CCQTCZ.USABSAND, ,CCQTCZ.SHRPROF'
```

Tools Customizer will use the settings from the specified profile. This profile will be updated when you exit Tools Customizer, but your own profile will remain unchanged.

The **IBM Customizer Tools for z/OS** main menu panel is displayed.

If you are running Tools Customizer for the first time, you must modify the Tools Customizer user settings. If you have already set the Tools Customizer user settings, either customize or recustomize Db2 Recovery Expert.

## Tools Customizer troubleshooting

Before you report a problem with Tools Customizer to IBM Software Support, you need to gather the appropriate diagnostic information.

Provide the following information for all Tools Customizer problems:

- A clear description of the problem and the steps that are required to re-create the problem
- Relevant screen captures
- All messages that were issued as a result of the problem
- Product release number and the number of the last program temporary fix (PTF) that was installed
- The version of Db2 that you are using and the type and version of the operating system that you are using
- The Tools Customizer trace data set
- The Tools Customizer data store data set and the *high\_level\_qualifier*.SCCQTENU data set

## Modifying Tools Customizer user settings

Before you can customize Db2 Recovery Expert with Tools Customizer, you must review the settings that Tools Customizer uses. You might have to change the default values to suit your environment. In most cases, you can change the Tools Customizer values at any time. For example, after you have customized Db2 Recovery Expert and are customizing a different product or solution pack, you might have to change the settings.

1. On the **IBM Tools Customizer for z/OS** main panel (CCQPHME), specify option 0, **User settings for Tools Customizer**.

The **Tools Customizer Settings** panel (CCQPSET) is displayed, as shown in the following figure:

```
CCQPSET          Tools Customizer Settings          14:03:51
Command ==>>
Enter the settings for customizing a product or press End to save and exit.

Commands: SAVE  OPTIONS

Product Customization Settings

*Customization library qualifier . . DB2TOOL.PRODUCT.CUST
  Volume serial . . . . .
*Use DB2 group attach . . . . . YES (YES/NO)

Tools Customizer Library Settings

*Metadata library . . . . . DB2TOOL.CCQ110.SCCQDENU
*Discover output data set . DB2TOOL.CCQ110.DISCOVER
  Volume serial . . . . .
*Data store data set . . . . . DB2TOOL.CCQ110.DATAST01
  Volume serial . . . . .

User Job Card Settings for Customization Jobs

==> //          JOB
      (ACCOUNT), 'NAME',
```

Figure 16. The **Tools Customizer Settings** panel (CCQPSET)

**Note:** An asterisk next to a field indicates that the field is required.

2. Review the values for the following required fields. Use the default value or specify your own value. You must have appropriate READ and WRITE access to the data sets that are specified.

### Customization library qualifier

The high-level qualifier that is used as the prefix for the customization library. The customization library is a data set in which the generated jobs to customize Db2 Recovery Expert are stored. WRITE access to this qualifier is required.

For each product to be customized, the first value that is specified for the qualifier is always used, even if you change it after you have generated the customization jobs. For example, if you customize a product and then specify a new qualifier for recustomization, although the new qualifier is saved and displayed, the original value is used.

To maintain multiple instances of Tools Customizer, specify a unique customization library qualifier for each instance of Tools Customizer.

Data set names that exceed 42 characters must be enclosed in single quotation marks (').

### Volume serial

The volume name in which the customization library will reside. If you don't specify a volume name, it will be assigned by the system.

### Use DB2 group attach

Db2 Recovery Expert does not support Db2 group attach names. You must specify NO in the **Use DB2 group attach** field.

### Tools Customizer metadata library

The name of the data set that contains the metadata that is used to display the Db2 and LPAR parameters. The parameters that are displayed on the **LPAR Parameters** panel and the **DB2 Parameters** panel depend on the parameters that you define and the tasks and steps that you select on the **Product Parameters** panel for the product that you are customizing. For example, the Db2 parameters that are required, based on the selected tasks and steps, are displayed on the **DB2 Parameters** panel, and you can edit them. If they are not required, they are not displayed. Read access to this data set is required. Data set names that exceed 42 characters must be enclosed in single quotation marks (').

### Discover output data set

The name of the data set in which the output from the Db2 Recovery Expert Discover EXEC is stored. Each product has its own Discover EXEC. The Discover EXEC retrieves the product, LPAR, and Db2 parameters from a previously customized product. Write access to this data set is required. Data set names that exceed 42 characters must be enclosed in single quotation marks (').

### Volume serial

The volume name in which the discover output data set will reside. If you don't specify a volume name, it will be assigned by the system.

### Data store data set

The name of the data set where Tools Customizer stores information about product, LPAR, and Db2 parameter values. Information about which products are associated with which Db2 entries (Db2 subsystems, Db2 group attach names, and Db2 data sharing members) is also stored in this data set. Data set names that exceed 42 characters must be enclosed in single quotation marks ('). The specified data store data set can be used with only one invocation of Tools Customizer at a time. Data set names that exceed 42 characters must be enclosed in single quotation marks (').

### Volume serial

The volume name in which the data store data set will reside. If you don't specify a volume name, it will be assigned by the system.

### User job card settings for customization jobs

The job card information to be inserted into the generated jobs for customizing a product. The default value is the job statement information from the **ISPF Batch Selection** panel.

The first line of the job card automatically begins with the following information:

```
//          JOB
```

where characters 3 - 10 are reserved by Tools Customizer for the job name and includes a blank space after JOB. This name cannot be edited. Information that you specify on the first line of the job card cannot exceed 57 characters. This character limit includes a continuation character. All other lines of the job card cannot exceed 72 characters.

3. Press End to save and exit.

If the Discover output data set and the data store data set that you specified do not exist, Tools Customizer creates them.

**Important:** If the ISPF sessions unexpectedly ends before you exit Tools Customizer, the fields on the **Tools Customizer Settings** panel (CCQPSET) will be repopulated with default values, and you will be required to review them or specify new values again.

The values are saved, and the **IBM Tools Customizer for z/OS** main menu panel (CCQPHME) is displayed again.

You are ready to customize or recustomize Db2 Recovery Expert or to change parameter settings.

## After customizing Db2 Recovery Expert using Tools Customizer

### Db2 migration

Db2 migration migrates the Db2 Recovery Expert objects for your version of Db2.

Ensure that the mode and levels are correct for each SSID.

Complete the following steps to migrate Db2 Recovery Expert objects.

1. Specify E next to the **Product parameters** field on the Customizer Workplace panel, and press Enter.

```
TCUSTMZR          Product Parameters: DB2 Recovery Expert          xx:xx:xx

Complete the following tasks to customize the products. The required tasks,
required steps within a required or selected task, and required parameters
are preceded by an asterisk (*). Ensure that values are specified for the
required parameters. Press End to save and exit.

Commands: SAVE  VERIFYOFF
Line Commands: / - Select

Product customization library : TUSER.ARY.TCZ.SYSTEM.DSNAME          More:  - +
_ Db2 Migration
  _ Migrate schema-level repository
  _ Re-create views on schema-level repository
  _ Re-create views on system catalog
  _ Re-create log-based repository
```

**Note:** The contents of this panel have been condensed to improve readability. Use PF7 to scroll up and PF8 to scroll down.

2. On the displayed Product Parameters panel, enter a / next to the **Db2 Migration** field to enable Db2 migration.
3. Select the following fields to include additional steps in the Db2 migration:

#### **Migrate schema-level repository**

Specify / in this field to migrate the Db2 Recovery Expert schema-level repository. Enabling this step will rebuild all of the Db2 objects that Db2 Recovery Expert uses.

#### **Re-create views on schema-level repository**

Specify / to enable a step that will re-create views on the schema-level repository.

### Re-create views on system catalog

Specify / to enable a step that will re-create views on the Db2 system catalog.

### Re-create log based repository

Specify / to enable a step that will re-create views on the log based dropped repository.

4. Once you are satisfied with your selection, press PF3 to save and exit.
5. Run the generated job on the LPAR that is appropriate for the subsystem to migrate Db2 Recovery Expert objects.
6. Bind the Db2 Recovery Expert packages and plans. The following steps list the tasks that are required to load the table databind the packages and plans:
  - a) Using Tools Customizer, update the Db2 Mode information in the Associated Db2 Entries and Parameter Status section.
  - b) Generate new binds jobs for the upgraded Db2 subsystem. **Note:** Some product packages operating with the Db2 Catalog have to be processed by a special BIND driver ARY#BIND supported with the product. Any bind or re-bind commands generated outside of the product are insufficient and may cause miscellaneous SQL errors (-151, -607). If you need to bind or re-bind any product packages, please generate the JCL with TCz and run it for the product. Using any other method is strongly discouraged.
  - c) Submit the jobs. The bind step must end with a return code of 4 or less. All warnings and errors must be reviewed/corrected before continuing with the product install.
7. Update the Db2 Recovery Expert control file if necessary and recycle agent started tasks/jobs to pick up any control file changes.
8. Submit the Load the SLR job generated by Tools Customizer. The update step must end with a return code of zero. All warnings and errors must be corrected before continuing with the product install.

## Db2 universal migration

This procedure migrates the Db2 Recovery Expert objects for your version of Db2.

This procedure is an alternative to the standard [Db2 migration](#) procedure. **Note:** Do not select this option unless directed to do so by IBM Software Support. Db2 Universal Migration is intended to make migration to the newest Db2 Recovery Expert environment as simple as possible. If IBM Software Support recommends using this option, start by ensuring that the mode and levels are correct for each SSID.

Complete the following steps to migrate Db2 Recovery Expert objects.

1. Specify **E** next to the **Product parameters** field on the Customizer Workplace panel, and press Enter.

```
TCUSTMZR          Product Parameters: DB2 Recovery Expert          xx:xx:xx

Complete the following tasks to customize the products. The required tasks,
required steps within a required or selected task, and required parameters
are preceded by an asterisk (*). Ensure that values are specified for the
required parameters. Press End to save and exit.

Commands: SAVE  VERIFYOFF
Line Commands: / - Select

Product customization library : TUSER.ARY.TCZ.SYSTEM.DSNAME          More:  - +
_ Db2 Universal Migration

  Prepare Universal
Migration
```

**Note:** The contents of this panel have been condensed to improve readability. Use PF7 to scroll up and PF8 to scroll down.

2. On the **Product Parameters** panel, enter a slash (/) next to the **Db2 Universal Migration** field to enable Db2 universal migration.

3. Select **Prepare Universal Migration** by entering a slash (/) in this field to migrate the Db2 Recovery Expert environment. Enabling this step will alter or rebuild outdated Db2 objects that Db2 Recovery Expert uses.
4. Once you have made your selection, press F3 to save and exit.
 

**Note:** The job has multiple running modes:

  - UPGRADE: You can upgrade the Recovery Expert environment by making runtime changes.
  - UPGRADE-PREVIEW: Generate the DDL statements to upgrade the Recovery Expert environment. The statements are stored in the ARYSQL DD dataset. You can manually specify the allocation parameters as per your criteria. Use DSNTEP2 or SPUFI to execute the DDL.
5. Submit the generated job. The default mode of the generated job is UPGRADE-PREVIEW. No changes are done to the environment when the job is submitted.
  - The statements to update the environment are stored in the ARYSQL DD dataset. Use DSNTEP2 or SPUFI to apply the changes.
  - If the running mode is set to UPGRADE, the changes to the environment are applied on run time.
6. Bind the Db2 Recovery Expert packages and plans. Follow these steps to load the table databind the packages and plans:
  - a. Using Tools Customizer, update the Db2 Mode information in the **Associated Db2 Entries and Parameter Status** section.
  - b. Generate new bind jobs for the upgraded Db2 subsystem.
 

**Note:** Some product packages operating with the Db2 Catalog have to be processed by a special BIND driver, ARY#BIND supported with Db2 Recovery Expert. Any bind or re-bind commands generated outside of the product are insufficient and may cause miscellaneous SQL errors (-151, -607). If you need to bind or re-bind any product packages, generate the JCL with Tools Customizer and run it for the product.
  - c. Submit the jobs. The bind step must end with a return code of 4 or less. All warnings and errors must be reviewed and corrected before continuing with the product install.
7. Update the Db2 Recovery Expert control file if necessary and recycle agent started tasks/jobs to pick up any control file changes.
8. Submit the Load the SLR job generated by Tools Customizer. The update step must end with a return code of 0 (zero). All warnings and errors must be corrected before continuing with the product install.

## Db2 Recovery Expert Product Control File (PCF)

This table identifies the fields that are in the Product Control File (PCF), specifies the corresponding name of the field in the Tools Customizer (TCz) and/or ISPF panel, specifies the Tools Customizer (TCz) parameter group (Db2, LPAR, or PRODUCT) where the PCF field is specified, and identifies whether you can update the field using the ISPF interface.

<i>Table 21. Product Control File (PCF)</i>			
Field name in PCF	Field Name in TCZ Panel And/or ISPF panel	TCz	ISPF
Set Db2 SSID	Db2 subsystem ID	Db2	Yes
Set Product CFG	Not used	N/A	N/A
Set Product VER	Not used	N/A	N/A
Db2 Subsystem Information			
Update Db2 ZPARMS	Db2 ZPARMS member	Db2	Yes
Update Db2 Bootstrap1	Bootstrap data set	Db2	Yes

Table 21. Product Control File (PCF) (continued)

Field name in PCF	Field Name in TCZ Panel And/or ISPF panel	TCz	ISPF
Update LOADLIB1	Load library	Db2	Yes
Update LOADLIB2	Load library	Db2	Yes
Db2 Administrative Task Scheduler			
Update Db2 TASKLIST DS	Task list data set	Db2	
Add or update product plans			
Update ARY Plan 1	Plan for display data extract	Db2	Yes
Update ARY Plan 2	Plan for the SLR load	Db2	Yes
Update ARY Plan 3	Plan for recovery plan generation	Db2	Yes
Update ARY Plan 4	Plan for JCL gen and SQL execution	Db2	Yes
Update ARY Plan 5	Plan for log analysis services	Db2	Yes
Update ARY Plan 6	Plan for recover to different dataset	Db2	Yes
Add or update log services options			
Update ARY MSGLIBRARY	Message Library	Product	
Update ARY ARCHLOG1	Use Archive Log 1	Db2	
Update ARY ARCHLOG2	Use Archive Log 2	Db2	
Update ACTLOGPRI	Active log priority	Db2	
Add or Update data set prefix generation			
Update ARY DSN Prefix	Data set name prefix	Db2	
Add or update schema level repository data capture options			
Update SLR LOAD AUTHS	Load authorization information into SLR	Db2	
Update SLR LOAD BINDS	Load plan and package information into SLR	Db2	
Add or update cost analysis values			
Update ARY Cost ECPU	Elapsed time per CPU second	Db2	
Update ARY Cost ETPM	Elapsed time per tape mount	Db2	
Add or Update table activity quiet time repository names			
*The default values for these fields should not be changed.			



Table 21. Product Control File (PCF) (continued)

Field name in PCF	Field Name in TCZ Panel And/or ISPF panel	TCz	ISPF
Update QT GRP TBOWNER	Qualifier for repository objects	Db2	
Update QT GRP TBNAME	*		
Update QT GRP IXOWNER	Qualifier for repository objects	Db2	
Update QT GRP IXNAME	*		
Update QT ENTRY OWNER	Qualifier for repository objects	Db2	
Update QT ENTRY NAME	*		
Update QT DATABASE	Database for Recovery Expert objects	Db2	
Update QT TABLESPACE	*		
Add or update log analysis services ROWDATA data set attributes			
Update LAS DSN PREFIX	Log Analysis Tool data set prefix	Db2	
Update LAS VOLSERS	Log Analysis Tool volsers	Db2	
Update LAS DATA AUNIT	Log Analysis Tool data unit	Db2	
Update LAS DATA PQTY	Log Analysis Tool data pri quantity	Db2	
Update LAS DATA SQTY	Log Analysis Tool data sec quantity	Db2	
Update LAS INDEX AUNIT	Log Analysis Tool index unit	Db2	
Update LAS INDEX PQTY	Log Analysis Tool index primary quantity	Db2	
Update LAS INDEX SQTY	Log Analysis Tool index secondary quantity	Db2	
SMS class parameters for log analysis data sets			
Update LAS SMSDC	Log Analysis Tool SMS data class	Db2	
Update LAS SMSSC	Log Analysis Tool SMS storage class	Db2	
Update SMSMC	Log Analysis Tool SMS management class	Db2	
Allow log analysis to use Db2 sort when available			
Update LAS Db2 Sort	Log Analysis Tool can use Db2 sort	Db2	

Table 21. Product Control File (PCF) (continued)

Field name in PCF	Field Name in TCZ Panel And/or ISPF panel	TCz	ISPF
Add or update character conversion information			
*The default values for these fields should not be changed			
UPDATE CCS SLR TECHNQ	*		
UPDATE CCS SLR SBCS	*		
UPDATE CCS SLR DBCS	*		
UPDATE CCS SLR MIXED	*		
UPDATE CCS ARY TECHNQ	*		
UPDATE CCS ARY SBCS	*		
UPDATE CCS ARY DBCS	*		
UPDATE CCS ARY MIXED	*		
Add or update default data set information			
UPDATE FTW DEVICE	File tailoring device type	Db2	
UPDATE FTW ALCUNIT	File tailoring allocation unit	Db2	
UPDATE FTW PQTY	File tailoring primary quantity	Db2	
UPDATE FTW SQTY	File tailoring secondary quantity	Db2	
UPDATE FTW SMSDC	File tailoring SMS data class	Db2	
UPDATE FTW SMSSC	File tailoring SMS storage class	Db2	
UPDATE FTW SMSMC	File tailoring SMS management class	Db2	
Add or update primary image copy output data set mask			
UPDATE CLP DSN MASK	Local Primary data set name mask	Db2	
Add or update local primary image copy output data set allocation defaults			
UPDATE CLP DEVICE	Local Primary device type	Db2	
UPDATE CLP CATALOG	Local Primary catalog image copy	Db2	
UPDATE CLP ALCUNIT	Local Primary allocation unit	Db2	
UPDATE CLP PQTY	Local Primary primary quantity	Db2	
UPDATE CLP SQTY	Local Primary secondary quantity	Db2	
UPDATE CLP SMSDC	Local Primary SMS data class	Db2	

Table 21. Product Control File (PCF) (continued)

Field name in PCF	Field Name in TCZ Panel And/or ISPF panel	TCz	ISPF
UPDATE CLP SMSSC	Local Primary SMS storage class	Db2	
UPDATE CLP SMSMC	Local Primary SMS management class	Db2	
UPDATE CLP MULTIVOL	Local Primary volume count	Db2	
UPDATE CLP EXPIREDT	Local Primary expiration date	Db2	
UPDATE CLP RETPERIOD	Local Primary retention period	Db2	
Add or update local backup image copy output data set mask			
UPDATE CLB DSN MASK	Local Backup data set name mask	Db2	
Add or update local backup image copy output data set allocation defaults			
UPDATE CLB DEVICE	Local Backup device type	Db2	
UPDATE CLB CATALOG	Local Backup catalog image copy	Db2	
UPDATE CLB ALCUNIT	Local Backup allocation unit	Db2	
UPDATE CLB PQTY	Local Backup primary quantity	Db2	
UPDATE CLB SQTY	Local Backup secondary quantity	Db2	
UPDATE CLB SMSDC	Local Backup SMS data class	Db2	
UPDATE CLB SMSSC	Local Backup SMS storage class	Db2	
UPDATE CLB SMSMC	Local Backup SMS management class	Db2	
UPDATE CLB MULTIVOL	Local Backup volume count	Db2	
UPDATE CLB EXPIREDT	Local Backup expiration date	Db2	
UPDATE CLB RETPERIOD	Local Backup retention period	Db2	
Add or update recover site primary image copy output data set mask			
UPDATE CRP DSN MASK	Recovery Site Primary data set name mask	Db2	
Add or update recover site primary image copy output data set allocation defaults			
UPDATE CRP DEVICE	Recovery Site Primary device type	Db2	

Table 21. Product Control File (PCF) (continued)

Field name in PCF	Field Name in TCZ Panel And/or ISPF panel	TCz	ISPF
UPDATE CRP CATALOG	Recovery Site Primary catalog image copy	Db2	
UPDATE CRP ALCUNIT	Recovery Site Primary allocation unit	Db2	
UPDATE CRP PQTY	Recovery Site Primary quantity	Db2	
UPDATE CRP SQTY	Recovery Site Primary secondary quantity	Db2	
UPDATE CRP SMSDC	Recovery Site Primary SMS data class	Db2	
UPDATE CRP SMSSC	Recovery Site Primary SMS storage class	Db2	
UPDATE CRP SMSMC	Recovery Site Primary SMS management class	Db2	
UPDATE CRP MULTIVOL	Recovery Site Primary volume count	Db2	
UPDATE CRP EXPIREDT	Recovery Site Primary expiration date	Db2	
UPDATE CRP RETPERIOD	Recovery Site Primary retention period	Db2	
Add or update recover site backup image copy output data set mask			
UPDATE CRB DSN MASK	Recovery Site Backup data set name mask	Db2	
Add or update recover site backup image copy output data set allocation defaults			
UPDATE CRB DEVICE	Recovery Site Backup device type	Db2	
UPDATE CRB CATALOG	Recovery Site Backup catalog image copy	Db2	
UPDATE CRB ALCUNIT	Recovery Site Backup allocation unit	Db2	
Db2 UPDATE CRB PQTY	Recovery Site Backup primary quantity	Db2	
UPDATE CRB SQTY	Recovery Site Backup secondary quantity	Db2	
UPDATE CRB SMSDC	Recovery Site Backup SMS data class	Db2	
UPDATE CRB SMSSC	Recovery Site Backup SMS storage class	Db2	

Table 21. Product Control File (PCF) (continued)

Field name in PCF	Field Name in TCZ Panel And/or ISPF panel	TCz	ISPF
UPDATE CRB SMSMC	Recovery Site Backup SMS management class	Db2	
UPDATE CRB MULTIVOL	Recovery Site Backup volume count	Db2	
UPDATE CRB EXPIREDT	Recovery Site Backup expiration date	Db2	
UPDATE CRB RETPERIOD	Recovery Site Backup retention period	Db2	
Recovery output data set allocation defaults			
UPDATE RDA DEVICE	Recovery output device type	Db2	
UPDATE RDA ALCUNIT	Recovery output allocation unit	Db2	
UPDATE RDA PQTY	Recovery output primary quantity	Db2	
UPDATE RDA SQTY	Recovery output secondary quantity	Db2	
UPDATE RDA SMSDC	Recovery output SMS data class	Db2	
UPDATE RDA SMSSC	Recovery output SMS storage class	Db2	
UPDATE RDA SMSMC	Recovery output SMS management class	Db2	
UPDATE RDA MULTIVOL	Recovery output volume count	Db2	
UPDATE RDA EXPIREDT	Recovery output expiration date	Db2	
UPDATE RDA RETPERIOD	Recovery output retention period	Db2	
System Backup Recovery Services			
UPDATE IPC IPC_RBR	Generate system-level backups	Db2	
System Backup Recovery Services Options			
**Manual edit only			
UPDATE RBR DEVICE	Work file device type	Product	
UPDATE RBR EMC LOAD1	EMC Load Library	Product	
UPDATE RBR EMC LOAD2	**		
UPDATE RBR EMC LOAD3	**		

Table 21. Product Control File (PCF) (continued)

Field name in PCF	Field Name in TCZ Panel And/or ISPF panel	TCz	ISPF
UPDATE RBR FDR LOAD1	Innovation FDR load library	Product	
UPDATE RBR FDR LOAD2	**		
UPDATE RBR PROF REPO	Profile VSAM repository file		
UPDATE RBR MAPS REPO	Profile mappings VSAM repository file	Product	
UPDATE RBR CATS REPO	Profile catalogs VSAM repository	Product	
UPDATE RBR SYSBK REPO	System backups VSAM repository file	Product	
UPDATE RBR BKUP VOLS	System backups Volumes VSAM repository file	Product	
UPDATE RBR BKUP SSID	System backups SSIDs VSAM repository file	Product	
UPDATE RBR BKUP OBJS	System backups objects VSAM repository	Product	
UPDATE RBR REPORT REPO	System backup Reports VSAM repository file	Product	
UPDATE RBR OFFLD REPO	Offload options VSAM repository file	Product	
UPDATE RBR PARMLIB	Product PARMLIB data set	Product	
UPDATE RBR PARMLIB MBR	Product PARMLIB member	Product	
UPDATE RBR DSMEMBER	**Allow using members in profiles		
UPDATE RBR CASESENSTR	Use Case sensitive translation	Db2	Yes
Redirected Recovery parameters			
UPDATE RDD USEDb2SORT	User Db2 Sort when possible	Db2	Yes
UPDATE RDD SRTPGMINST	Sort program installed	Db2	Yes
UPDATE RDD BUFNUMBER	Number of buffers	Db2	Yes
UPDATE RDD CHNLPGMS	Channel programs	Db2	Yes
UPDATE RDD WFDEVTYPE	Work file device type	Db2	Yes
UPDATE RDD SPDEVTYPE	SYSPRINT device type	Db2	Yes
UPDATE RDD WFDSTYPE	Work file data set type	Db2	Yes
UPDATE RDD SPDSTYPE	SYSPRINT data set type	Db2	Yes

Table 21. Product Control File (PCF) (continued)

Field name in PCF	Field Name in TCZ Panel And/or ISPF panel	TCz	ISPF
UPDATE RDD WFSPCUN	Work file track or cylinder	Db2	Yes
UPDATE RDD SPSPCUN	SYSPRINT track or cylinder	Db2	Yes
UPDATE RDD WFPRIMQT	Work file primary quantity	Db2	Yes
UPDATE RDD SPPRIMQT	SYSPRINT primary quantity	Db2	Yes
UPDATE RDD WFSECQT	Work file secondary quantity	Db2	Yes
UPDATE RDD SPSECQT	SYSPRINT secondary quantity	Db2	Yes
UPDATE RDD WFMAXVOL	Work file maximum volumes	Db2	Yes
UPDATE RDD SPMAXVOL	SYSPRINT maximum volumes	Db2	Yes
UPDATE RDD WFSMSDC	Work file SMS data class	Db2	Yes
UPDATE RDD SPSMSDC	SYSPRINT SMS data class	Db2	Yes
UPDATE RDD WFSMSSC	Work file SMS storage class	Db2	Yes
UPDATE RDD SPSMSSC	SYSPRINT SMS storage class	Db2	Yes
UPDATE RDD WFSMSMC	Work file SMS management class	Db2	Yes
UPDATE RDD SPSMSMC	SYSPRINT SMS management class	Db2	Yes
UPDATE RDD SWUNDEV	Sort Work Parameters: Unit device	Db2	Yes
UPDATE RDD SWDDNUM	Sort Work Parameters: Number of DDs	Db2	Yes
UPDATE RDD SWPRISPC	Sort Work Parameters: Primary space	Db2	Yes
UPDATE RDD SWSECSPC	Sort Work Parameters: Secondary space	Db2	Yes
UPDATE RDD UTILREGSZ	Utility Region Size	Db2	Yes
UPDATE RDD MLGDEVIC	Minilog device type	Db2	Yes
UPDATE RDD MLGDTSTY	Minilog data set type	Db2	Yes
UPDATE RDD MLGTRKCYL	Minilog space units	Db2	Yes
UPDATE RDD MLGVOLCNT	Minilog maximum volumes	Db2	Yes
UPDATE RDD MLGDATAACL	Minilog SMS data class	Db2	Yes
UPDATE RDD MLGSTORCL	Minilog SMS storage class	Db2	Yes
UPDATE RDD MLGMGMTCL	Minilog SMS management class	Db2	Yes
UPDATE RDD MLGPRIM8	Minilog primary quantity	Db2	Yes

Table 21. Product Control File (PCF) (continued)

Field name in PCF	Field Name in TCZ Panel And/or ISPF panel	TCz	ISPF
UPDATE RDD MLGSEC8	Minilog secondary quantity	Db2	Yes

## Tools Customizer reference

Before you use Tools Customizer, you should understand the Tools Customizer terminology and the data sets that Tools Customizer uses during customization.

### Tools Customizer terminology and data sets

Before you use Tools Customizer, you should understand the Tools Customizer terminology and the data sets that Tools Customizer uses during customization.

#### Tools Customizer terminology

Tools Customizer uses several unique terms that you should be familiar with before you begin to use Tools Customizer.

##### Products and components

How an IBM Tool is packaged determines whether it is referred to as a product or as a component in the Tools Customizer documentation and interface. An IBM Tool that is ordered as a stand-alone entity (that is, not as part of a solution pack) is referred to as a product. An IBM Tool that is part of a solution pack is referred to as a component. Some IBM Tools are available in both formats; therefore, the same IBM Tool can be referred to as a product or as a component depending on how it is packaged.

##### Db2 entry

You can customize Db2 Recovery Expert on one or more Db2 entries. A Db2 entry can be any of the following items:

##### Db2 subsystem

A distinct instance of a relational database management system (RDBMS) that is not part of a data sharing group. An example of a Db2 subsystem name is DB01.

##### Db2 group attach name

Db2 Recovery Expert does not support Db2 group attach names.

##### Db2 data sharing member

A Db2 subsystem that is assigned by the cross-system coupling facility (XCF) to a data sharing group. An example of a Db2 data sharing member name is DB02.

Tools Customizer maintains the following lists of Db2 entries:

##### Associated list

The list of Db2 entries that are associated with Db2 Recovery Expert. If the product to be customized requires Db2 entries, you can customize Db2 Recovery Expert only on Db2 entries that are in the associated list. When you customize Db2 Recovery Expert, this list is displayed in the Db2 Entries, Associations, and Parameter Status section of the **Customizer Workplace** panel.

You can add and copy Db2 entries to the associated list. When you add or copy Db2 entries to the associated list, the entries are associated with Db2 Recovery Expert.

##### Main list

The list of all Db2 entries that are defined but are not associated with Db2 Recovery Expert. Tools Customizer obtains information about these Db2 entries either from entries that were created manually or from the customizations of other products that were discovered. If you remove a Db2 entry from the associated list, the Db2 entry is added to the main list. When you create a new



Db2 entry, it is added to the main list, and when you associate the new entry with Db2 Recovery Expert, it is removed from the main list and added to the associated list. The main list is displayed on the **Associate a Db2 Entry for Product** panel.

If the associated list does not have the Db2 entries on which you want to customize Db2 Recovery Expert, you can associate existing entries from the main list to the associated list.

You can create new Db2 entries and copy existing entries to the main list.

### High-level qualifier

The high-level qualifier is considered to be all of the qualifiers except the lowest level qualifier. A high-level qualifier includes a mid-level qualifier.

### Product parameters

Parameters that are specific to Db2 Recovery Expert. These parameters are defined by Db2 Recovery Expert and are stored in a data member that is defined by Db2 Recovery Expert.

### LPAR parameters

Parameters on the local LPAR that are required to customize Db2 Recovery Expert. These parameters are defined by Tools Customizer and are stored in an LPAR parameter data member.

### Db2 parameters

Parameters for a Db2 entry. These parameters are defined by Tools Customizer and are stored in a Db2 parameter data member.

### Status type

#### Product, LPAR, and Db2 entry status type

After you specify the product that you want to customize, the product, the LPAR, and the Db2 entries have a status. The status is partly based on whether required parameters are defined. For some products, LPAR parameters or Db2 parameters might not be required. In these cases, the status is Not Required.

To customize Db2 Recovery Expert, all of the required parameters must be defined.

If required parameters for the product parameters, LPAR parameters, or Db2 parameters are not defined, the status of the parameters is Incomplete. Define values for parameters by manually editing them or by generating the customization jobs and specifying values for all of the required parameters that are displayed on the panels.

When values for all of the required parameters are defined, the status is Ready to Customize. Customization jobs can be generated only when all of the required parameters are defined and the status is Ready to Customize or Customized for the product parameters, LPAR parameters, and Db2 parameters for the Db2 entries on which Db2 Recovery Expert will be customized.

The following table shows the meaning of the status types. Each status is defined differently for each type of parameter.

*Table 22. Status types for the product, the LPAR, and the Db2 entries*

Status	Product	LPAR	Db2 entries
Incomplete	The required product parameters are not defined.	The required parameters are not defined.	The required parameters are not defined.
Discovered	The product parameter definitions were discovered by using the product Discover EXEC.	N/A	N/A

Table 22. Status types for the product, the LPAR, and the Db2 entries (continued)

Status	Product	LPAR	Db2 entries
Ready to Customize	The required product, is Ready to Customize or Customized for the LPAR and at least one associated Db2 entry. You can generate the customization jobs.	The required LPAR parameters are defined or LPAR parameters are not required.	The required Db2 parameters are defined or Db2 parameters are not required.
Verify Values	The required product or component parameter values are defined but they either have not been verified or verification is not enabled on the Product or Component Parameters panel.	The required LPAR parameter values are defined, but they either have not been verified or verification is not enabled on the LPAR Parameters panel.	The required Db2 parameter values are defined, but they either have not been verified or verification is not enabled on the Db2 Parameters panel.
Customized	The jobs are customized on the local LPAR.	The jobs are customized for the product or for all of the associated Db2 entries on the local LPAR.	The jobs are customized for the Db2 entry.
Errors in Customization	N/A	N/A	Errors occurred while the customization jobs were being generated.
Not Required	N/A	LPAR parameters are not required.	Db2 parameters are not required.

### Related tasks

#### [Creating and associating Db2 entries](#)

Db2 entries are optional for Db2 Recovery Expert. You can create new Db2 entries and associate them with Db2 Recovery Expert.

#### [Copying Db2 entries](#)

You can copy associated and not associated Db2 entries to other Db2 entries or to new Db2 entries.

#### [Removing Db2 entries](#)

You can remove Db2 entries from the associated list.

## Data sets that Tools Customizer uses during customization

Tools Customizer uses several unique data sets during the customization process. Familiarize yourself with these data sets before you begin to use Tools Customizer.

Several different data sets are required to customize Db2 Recovery Expert with Tools Customizer. These data sets are supplied by Db2 Recovery Expert, supplied by Tools Customizer, or allocated by Tools Customizer.

Db2 Recovery Expert provides the following data sets:

### Metadata library

Contains the metadata for the product to be customized. Tools Customizer uses the metadata to determine which tasks, steps, and parameters to display on the **Product Parameters** panel, the **LPAR Parameters** panel, and the **DB2 Parameters** panel. This data set also contains the templates that Tools Customizer uses to generate the customization jobs.

The metadata library naming convention is *high\_level\_qualifier.SARYDENU*, where *high\_level\_qualifier* is all of the segments of the data set name except the lowest-level qualifier.

You specify the metadata library on the **Specify the Metadata Library** panel. READ access to this data set is required.

### **Discover EXEC library**

Contains the Db2 Recovery Expert Discover EXEC. When you customize Db2 Recovery Expert, you can use the Discover EXEC to automatically retrieve and store product information, such as parameter values from an already customized product. Tools Customizer saves the discovered information in the data store.

The default name of the data set is the high-level qualifier for the metadata library plus a lowest-level qualifier. For Db2 Recovery Expert, the lowest-level qualifier is SARYDENU. You can change the default value on the **Discover Customized Product Information** panel. EXECUTE access to this data set is required.

Tools Customizer provides the following data sets:

### **Tools Customizer metadata library**

Contains the metadata for the Db2 and LPAR parameters that are required to customize Db2 Recovery Expert. Tools Customizer uses the metadata to determine which parameters to display on the **DB2 Parameters** panel and the **LPAR Parameters** panel. In addition, Tools Customizer uses information in the metadata library to determine whether additional Db2 and LPAR parameters need to be displayed on these panels. As you customize different products, different Db2 and LPAR parameters might need to be defined.

The default name of the data set is DB2TOOL.CCQ110.SCCQDENU. You can change the default value on the **Tools Customizer Settings** panel. READ access to this data set is required.

### **Tools Customizer table library**

Stores information about jobs that are customized. Job information that is stored includes a description of the job, its member name and template name, the SSID, and when the job was generated.

The default name of the data set is DB2TOOL.CCQ110.SCCQTENU. WRITE access to this data set is required.

Tools Customizer requires that the following data sets exist during the customization process. If the data sets do not exist, Tools Customizer automatically allocates them.

### **Discover output data set**

Contains the output that is generated when you run the Db2 Recovery Expert Discover EXEC. The Db2 Recovery Expert Discover EXEC retrieves the metadata and values for the parameters from a previous customization of Db2 Recovery Expert.

The default name of the data set is DB2TOOL.CCQ110.DISCOVER. You can change the default value on the **Tools Customizer Settings** panel or the **Discover Customized Product Information** panel. WRITE access to this data set is required.

### **Data store data set**

Contains product, LPAR, and Db2 parameter values, and Db2 entry associations. Tools Customizer uses this data set to permanently store all information that is acquired about the product, Db2 subsystems, and LPAR when you customize products on the local LPAR.

The default name of the data set is DB2TOOL.CCQ110.DATASTOR. You can change the default value on the **Tools Customizer Settings** panel. WRITE access to this data set is required.

### **Customization library**

Contains the customization jobs that Tools Customizer generates for Db2 Recovery Expert.

Tools Customizer checks whether a customization library name was specified for more than one instance of the same version of the same product. If the same customization library name is specified for more than one product of the same version, the CCQD123E message is issued to prevent you from

overwriting previously generated customization jobs. Ensure that you specify unique qualifier for the customization library for each instance of the product.

To customize Db2 Recovery Expert, submit the members of the data set in the order in which they are displayed on the **Finish Product Customization** panel.

The data set naming convention is *hlq.\$LPAR\_name\$.xyzvrm*, where:

- *hlq* is the value of the **Customization library qualifier** field on the **Tools Customizer Settings** panel (CCQPSET)
- *LPAR\_name* is the four-character LPAR name
- *xyzvrm* is the three-letter product identifier with the version, release, and modification level

For example, the data set name might be DB2TOOL.PRODUCT.CUST.\$MVS1\$.XYZ410.

WRITE access to this data set is required.

Tools Customizer allocates the data sets for the discover output, the data store, and the customization library with the attributes that are shown in the following table:

<i>Table 23. Data set attributes for allocating the Discover output, data store, and customization library data sets</i>					
<b>Data set</b>	<b>Organization</b>	<b>Record format</b>	<b>Record length</b>	<b>Block size</b>	<b>Data set name type</b>
Discover output data set	PO	Variable block	16383	32760	LIBRARY
Data store data set	PO	Variable block	16383	32760	LIBRARY
Product customization library	PO	Fixed block	80	32720	LIBRARY

**Restrictions:**

- Multiple users cannot simultaneously share the discover output data set, data store data set, Tools Customizer metadata library, and metadata library.

---

# Chapter 5. Administering client, server, and agent communications

This section describes several tasks that you might need to perform to setup and maintain Db2 Recovery Expert client, server, and agent communications.

---

## Establishing server, client, and agent communications

The Db2 Recovery Expert server, agents, web interface client, and ISPF interface client communicate with each other using TCP/IP connections.

### Client-server communication

Using Tools Customizer, you as the administrator will configure the Db2 Recovery Expert server to run on a particular host machine. In addition, you will configure the server with two TCP/IP port numbers on which to listen for incoming connection requests from instances of ISPF and Web clients. The port number for ISPF clients is specified in the **ISPF client listener port number** field of the Tools Customizer Product Parameters panel. The port number for Web clients is specified in the **Web client listener port number** field of the Tools Customizer Product Parameters panel.

To start the web interface client, each user will open a browser and enter the IP address on which the server is running, as well as the port number on which that server is configured to listen for client connections.

For the ISPF interface, each user will open the ISPF interface and then select **Administration** from the main menu. From the **Administration** menu the user will select **Specify Server Information** where they will enter the host server name and the port number on which that server is configured to listen for ISPF client connections.

### Agent-server communication

In addition to configuring the server for incoming client requests, using Tools Customizer you specify a different port on which to listen for incoming connection requests from instances of the agent. This value is specified in the **Server agent-listener-port** field of the Tools Customizer Product Parameters panels.

You must configure an instance of the agent to run on every machine hosting a Db2 subsystem that is accessed by end users. When configuring each agent instance, specify the host name or IP address, and the port number on which the server is running. These are the same values that were specified in the **Server address** and **Server-agent-listener-port** of the Tools Customizer Product Parameters panel. When the agent is started, it uses this configuration information to connect to the server.

**Note:** Server and agents can be configured to connect to each other automatically.

---

## Automatic discovery for server agent communication

You can use automatic discovery to enable communication between the Db2 Recovery Expert server and agents.

**Note:** In versions prior to Db2 Recovery Expert V3.1, automatic discovery was frequently used to ease the manual effort required to configure each individual user client to communicate with the server and agents. In V3.1 and later versions, automatic discovery is no longer needed because with the web interface it is no longer necessary to configure each individual user client. Support is still available for automatic discovery between the server and agents.

### Server notifications

When the server starts, it begins sending notifications on the network that it is up and running. These notifications include the port numbers on which it is listening for incoming client and agent connections.

The notifications are sent by using IP multicasting. Briefly, multicasting is similar in concept to broadcasting, where a message is potentially sent to every destination address on a network. With multicasting, however, instead of sending messages to every address on a network, messages are sent only to addresses which register interest in those particular messages. In the case of Db2 Recovery Expert, the client and agent register interest in the messages sent by the server, so the server notifications are routed to them.

There are a wide variety of options related to the use of multicasting in IP network software and hardware. In some cases, it is possible that because of software or hardware configuration, multicast packets are not forwarded from the machine on which the server is running to the machines on which one or more clients or agents are running. You must consult your network administrator and configuration documentation to ensure that appropriate forwarding of multicast packets is enabled.

The exact configuration process to use these server notifications differs between client-server and agent-server connections.

### **Agent-server connections**

You can specify the *server-address* configuration option using Tools Customizer. If you omit the *server-address* configuration option, the agent listens for server notifications on the network. When a notification for a server is received, the agent uses the information in the notification to connect to that server.

If you specify a value for the *server-address* configuration option, the agent attempts to connect to that address, and does not perform any automatic server discovery.

Automatic discovery allows the administrator to change which machine the server runs on without requiring changes in the agent configuration files.

### **Automatic discovery options**

Additional server and agent configuration options are available to fine tune the automatic server discovery process, particularly in the case where a site is running more than one server.

**Note:** To modify the agent and server configuration options, you must manually edit the agent and the server configuration files. The member name of the server configuration file is ARYCFGS. By default, ARYCFGS is a member of Db2TOOL.ARY320.JCLLIB. The member name of the agent configuration file is ARYCFGA. ARYCFGA is a member of Db2TOOL.ARY320.JCLLIB.

### **Description**

In the server configuration file, you can specify a value for the **description** configuration option. This value is a free form text description of that instance of the server. This description value can help provide additional information for choosing between multiple available servers. The description is not used by the agent.

### **Community string**

The function of the community string is similar to that of the description, in that it allows differentiation between multiple instances of the server. The community string, however, is not visible to any users and is used only by the agent. Typically, the community string is a shorter, keyword value, rather than free form text. Although, there are no restrictions on the format of the value specified.

The community string is specified with the **community-string** configuration option in both the server and agent configuration files. When the agent performs automatic server discovery, if the **server-address** configuration option is omitted, it waits until it receives a notification from a server with a matching community string value. The agent ignores any other server notifications.

The community string allows multiple servers and agents to run on a single network with each agent connecting to the desired server.

### **Multicast options**

Several options that are related to multicasting are available in the server and agent configuration files.

The **Multicast IP address** text box specifies the global multicast address to which the server sends its notifications and on which the agent and client register interest. The default value is 236.1.2.3. The default value is for IPv4 and you should not change this default unless there is a conflict with another application on your network or you are using an IPv6 stack.

- If there is a conflict with another application on your network, you can specify a different **Multicast IP address** but you must ensure that you specify the same address in both the server and agent configuration files.
- If you are using an IPv6 stack, you can specify an IPv6 address in the **Multicast IP address** text box for the agent configuration file. You must also specify the same address in the server configuration file using the option **Multicast-address-v6**.
- To disable multicasting on the server, remove or clear the contents of the `<multicast-address></multicast-address>` and/or the `<multicast-address-v6></multicast-address-v6>` parameters.

Similarly, the **Multicast port number** field specifies the port to which the server sends its notifications. The default value is 19845. If a conflict occurs, you can specify a different port, ensuring that the same value is specified everywhere.

**Note:** The Multicast port is a User Datagram Protocol (UDP) port.

Specify the local network interface as follows:

- If you are using an IPv4, you use the **Multicast-interface** option. It is a server-only configuration option and specifies the IPv4 local network interface address on which the server notifications are sent. If this parameter is set to \*, the notifications are sent on all IPv4 interfaces.
- If you are using an IPv6 stack you use the **Multicast-interface-v6** option. It is also a server-only configuration option that specifies the IPv6 local network interface address on which the server notifications are sent. If this parameter is set to \*, notifications are sent on all IPv6 interfaces.

The **multicast-ttl** option is also a server-only configuration option. It specifies how far from the server machine the multicast notifications are propagated over the network. The default value is 5 subnets or routers. Do not specify a value greater than is necessary to reach all interested agents and clients, as it unnecessarily increases network traffic beyond this region.

The **multicast-delay** option is a server-only configuration option and specifies how frequently in seconds the server sends notifications. The smaller this value is, the more responsive clients and agents are. That is, the shorter amount of time they must wait for notifications. The smaller the value is, however, the more network traffic is generated by the server. The default value is 1 second.

## Maintaining the Db2 Recovery Expert server

---

The Db2 Recovery Expert server centrally manages and controls all Db2 Recovery Expert functions that are performed on behalf of user requests.

You must run one instance of the server to manage all of your Db2 subsystems and data sharing groups, and to support all of your Db2 Recovery Expert user clients. The server communicates with these clients and agents in order to perform recovery functions.

### Server environment

The server must be running in order for Db2 Recovery Expert users to perform any functions against Db2 subsystems in your enterprise.

The Db2 Recovery Expert server runs as a batch job under MVS™. You can manually submit this job, schedule it to be run automatically, or run it as an MVS started task. If the server job terminates for any reason, you must restart it, or take steps to have it automatically restarted.

## Server security

The Db2 Recovery Expert server uses RACF security.

The server requires UNIX System Services access. The user ID under which the server job runs must have an OMVS segment in its RACF profile. To check whether the ID has an OMVS segment in its profile, use the following command:

```
LU userid OMVS
```

To add an OMVS segment to an ID's RACF profile, use the following command:

```
ADDUSER ddfluid OMVS(UID(nnn))
```

## SSL support

If your server will utilize SSL, additional permissions must be set. The user ID under which the server job runs must have a read access to CSF\* resources of the CSFSERV class.

**Note:** If a third party utility such as IBM AT-TLS is used to provide a secure connection, enabling SSL in the Db2 Recovery Expert server configuration member is not needed and may cause errors. With SSL disabled on the server, the Web client is able to use the secure connection provided by the third party utility.

## TLS 1.3 support

By default, TLS 1.3 is disabled. To enable, ensure if the following requirements are met:

- Verify if z/OS version 2 release 4 or later is installed.
- Verify if FIPS 140-2 is disabled.
- Certificate must have a key length of at least 2048 bits.

To enable TLS 1.3:

1. In Tool Customizer, set **Enable TLS 1.3** to **true**.
2. Re-generate jobs.
3. Recycle agent and server tasks.

## Importing existing SSL certificate

If you want to utilize an existing SSL certificate, the following parameters must be set in the server configuration member:

```
<ssl-key-db-dir> string </ssl-key-db-dir>  
<ssl-key-db> string </ssl-key-db>  
<ssl-key-db-sth-file> string </ssl-key-db-sth-file>  
<ssl-cert-label> string </ssl-cert-label>
```

<ssl-key-db-dir> should be set to the USS directory of the existing certificate database.

<ssl-key-db> should be set to the name of the existing certificate database.

<ssl-key-db-sth-file> should be set to the name of the existing certificate stash file.

<ssl-cert-label> should be set to the label of the existing certificate.

If SSL is enabled for agent port, the same parameters must be set in the agent configuration member.

Once you have updated server configuration member you must recycle the server to implement the change.

If agent configuration member was updated you must recycle the agent to implement the change.



**Note:** To work with an imported SSL certificate owner of the server/agent must have a read access to the USS directory of the existing certificate database.

## Restricting access to Web UI

By default, Web UI is accessible from any origin. To enable access only for the trusted origins, update the server configuration member as follows:

```
<server-config>
  ...
  <web>
    ...
    <origins>
      <origin>name_1</origin>
      ...
      <origin>name_2</origin>
    </origins>
  </web>
  ...
</server-config>
```

Replace *name\_1* and *name\_2* with the allowed origins. For example: `https://lpar:12345`. To revert to the unrestricted access, remove the `<origins>...</origins>` section from the server configuration member.

## Server output

The primary output of the server job is log messages that provide status information about the ongoing operation of the server.

The log messages are written to the SYSPRINT DD. In addition to providing status information about the operation of the server, these messages record if and when errors occur.

In the event of exceptional conditions, additional messages might be written to the SYSOUT DD. If an abend occurs, dump information might be written to the CEEDUMP and/or SYSUDUMP DDs. This information can be used in diagnosis by product support.

## Stopping the server

You use the following commands to stop and resume the Db2 Recovery Expert server.

The server accepts standard MVS `/MODIFY` and `/STOP` commands. From SDSF, or anywhere else that you can issue commands, you can issue these commands:

**`/MODIFY server-job-name,STOP SERVER`**

**`/MODIFY server-job-name,STOP`**

**`/STOP server-job-name`**

Initiates a graceful server shutdown. This causes the following sequence to occur:

1. The server stops accepting new client connections.
2. The server sends a message to all existing client connections that the server is trying to stop.
3. The server waits for all existing client sessions to end.
4. The server ends its own processing.

Any agents currently connected to the server continue running, attempting to reconnect to the server if or when it is restarted.

**`/MODIFY server-job-name,STOP AGENTS id`**

Stops a particular agent. If no *id* is given, then all agents are stopped. You can determine the ID value by issuing `/MODIFY server-job-name,LIST SESSIONS`.

**`/MODIFY server-job-name,STOP ALL`**

Stops the Db2 Recovery Expert server and any agents that are currently connected to it.

***/MODIFY server-job-name,FORCE***

Initiates a server hard stop. This causes the following sequence to occur:

1. The server immediately drops all client connections.
2. The server initiates a cancel on all running threads.
3. The server exits after the threads exit.

This is not recommended under typical circumstances.

***/MODIFY server-job-name,QUIESCE***

Quiesces the server. The server will continue to service existing client connections, but will not accept any new connections.

***/MODIFY server-job-name,RESUME***

Resumes a quiesced server. The server again starts to accept new client connections.

## Administrative commands (server)

You can use these commands to perform administrative tasks related to the client/server environment for Db2 Recovery Expert.

***/MODIFY server-job-name, DISPLAY MEPL***

Provides Db2 Recovery Expert module maintenance levels, compile dates, APAR numbers, and APAR build dates and times for the server.

***/MODIFY server-job-name,LIST SESSIONS***

Produces a list of active client and agent sessions in the log, including the information for these fields:

- ID
- Type (client or agent)
- Start timestamp
- Local port
- Remote IP address
- Remote port
- Sysplex name (for agent sessions, as reported in agent topology)
- Machine name (for agent sessions, as reported in agent topology)
- Locked specification count (for client sessions)
- Active request count
- State (active or stopping)

***/MODIFY server-job-name,STOP SESSION session-id******/MODIFY server-job-name,FORCE SESSION session-id***

Stops or forces the specified session.

***/MODIFY server-job-name,LIST REQUESTS******/MODIFY server-job-name,LIST REQUESTS session-id***

Produces a list of all active requests in the system or all active requests for the specified session ID, including the information for these fields:

- ID
- Type (request type ID)
- Target location (if any)
- Auth ID (if any)
- Specification ID (if any)
- Session ID
- Session type (client or agent)

***/MODIFY server-job-name,CANCEL REQUEST request-id***

Cancels the specified request, where *request-id* is reported by LIST REQUESTS.

***/MODIFY server-job-name,LIST SPECIFICATIONS***

***/MODIFY server-job-name,LIST SPECIFICATIONS <session-id>***

Produces a list of all locked specifications in the system or locked specifications for the specified session ID, including the information for these fields:

- ID (some unique ID for reference by UNLOCK command)
- Specification ID
- Locked timestamp

***/MODIFY server-job-name,UNLOCK SPEC id***

Forcibly unlocks the specified specification, where the specified ID is one reported by LIST SPECS.

***/MODIFY server-job-name,LIST LOCATIONS***

***/MODIFY server-job-name,LIST LOCATIONS agent-session-id***

Produces a list of all known locations or all locations at a particular agent in the log, including the information for these fields:

- Agent session ID
- Location type
- Location name

***/MODIFY server-job-name, LIST AUTHIDS client-session-id***

Print out all auth IDs associated with a specified client session.

## Maintaining the Db2 Recovery Expert agent

---

The Db2 Recovery Expert agent provides access to database and system services, in support of the Db2 Recovery Expert server and interface clients.

You must run one instance of the agent on every system or LPAR that hosts Db2 Recovery Expert subsystems or data sharing groups that you want to access with Db2 Recovery Expert. Each agent communicates with the Db2 Recovery Expert server to provide services.

### Agent environment

The agent must be running in order for Db2 Recovery Expert users to perform any functions against Db2 subsystems on that LPAR.

The Db2 Recovery Expert agent runs as a batch job under MVS. You can manually submit this job, schedule it to be run automatically, or run it as an MVS started task. If the agent job terminates for any reason, you must restart it, or take steps to have it automatically restarted.

Resource Recovery Services (RRS) must be enabled in order for the agent to communicate with any given Db2 subsystem.

The agent also requires UNIX System Services access. The user ID under which the agent job runs must have an OMVS segment in its RACF profile. To check whether the ID has an OMVS segment in its profile, use the following command:

```
LU userid OMVS
```

To add an OMVS segment to an ID's RACF profile, use the following command:

```
ADDUSER ddfluid OMVS(UID(nnn))
```

## Agent security

The Db2 Recovery Expert agent has several levels of security considerations: APF-authorization, BPX.SERVER access, and package and plan access.

### APF authorization

The Db2 Recovery Expert agent must run APF-authorized. Modify the IEAAPFxx or PROGxx PARMLIB members to define the Db2 Recovery Expert load library ('ARY.IBMTAPE.SARYLOAD') as an APF-authorized library.

### BPX.SERVER access

If the BPX.SERVER FACILITY class profile is not defined within RACF, the user ID under which the agent job runs must be assigned a UID=0. If BPX.SERVER is defined, the user ID must be permitted to it:

```
PERMIT BPX.SERVER CLASS(FACILITY) ID(userID) ACCESS(READ)
```

where *userID* is the user ID under which the agent job runs.

If BPX.SERVER is defined, the agent must also run RACF program controlled. The following RACF commands establish the required definitions for the Db2 Recovery Expert load library and other required load libraries.

For the Db2 Recovery Expert load library:

```
RALTER PROGRAM * ADDMEM('ARY.IBMTAPE.SARYLOAD'//NOPADCHK)
```

For the Language Environment® runtime libraries:

```
RALTER PROGRAM * ADDMEM('xxx.SCEERUN'//NOPADCHK)
```

```
RALTER PROGRAM * ADDMEM('xxx.SCEERUN2'//NOPADCHK)
```

where xxx is the high-level qualifier of the Language Environment data sets, typically CEE.

For each Db2 subsystem that is accessed by Db2 Recovery Expert:

```
RALTER PROGRAM * ADDMEM('DSN.Vxxx.SDSNEXIT'//NOPADCHK)
```

```
RALTER PROGRAM * ADDMEM('DSN.Vxxx.SDSNLOAD'//NOPADCHK)
```

where DSN.Vxxx.SDSNEXIT and DSN.Vxxx.SDSNLOAD name the Db2 load libraries required for accessing that subsystem.

After issuing any of the previous commands, the storage program control tables must be refreshed by issuing the following command:

```
SETROPTS REFRESH WHEN(PROGRAM)
```

**Important:** Some of these definitions might already be in place at your site. All of them are required.

### Package and plan access

Each Db2 Recovery Expert end user must be granted EXECUTE privileges on the Db2 Recovery Expert packages and plans. Db2 Recovery Expert privileges are granted when you run SARYSAMP member ARYGRT1. See "Granting Db2 Recovery Expert privileges".

## Bootstrap data set access

The Db2 Recovery Expert agent needs read access to a bootstrap data set (BSDS) of each Db2 subsystem that is accessed by Db2 Recovery Expert.

## RACF passtickets

If passtickets will not be used for authentication, make sure the `passticket-app-id` and `passticket-app-profile` parameters are removed from the agent configuration file.

Otherwise, verify that you have set up passticket verification correctly. For more information on setting up passtickets, see [“Authenticating the current ISPF user” on page 179](#).

## SSL support

If your agent will utilize SSL, additional permissions must be set. The user ID under which the agent job runs must have a read access to CSF\* resources of the CSFSERV class.

**Note:** If a third party utility such as IBM AT-TLS is used to provide a secure connection, enabling SSL in the Db2 Recovery Expert server configuration member is not needed and may cause errors.

## TLS 1.3 support

By default, TLS 1.3 is disabled. To enable, ensure if the following requirements are met:

- Verify if z/OS version 2 release 4 or later is installed.
- Verify if FIPS 140-2 is disabled.
- Certificate must have a key length of at least 2048 bits.

To enable TLS 1.3:

1. In Tool Customizer, set **Enable TLS 1.3** to **true**.
2. Re-generate jobs.
3. Recycle agent and server tasks.

## Agent output

The primary output of the agent job is log messages that provide status information about the ongoing operation of the agent.

The log messages are written to the SYSPRINT DD. In addition to providing status information about the operation of the agent, these messages record if and when errors occur.

In the event of exceptional conditions, additional messages can be written to the SYSOUT DD. If an abend occurs, dump information might be written to the CEEDUMP and SYSUDUMP DDs. This information can be used in diagnosis by product support.

## Stopping the agent

You use the commands in this section to stop the Db2 Recovery Expert agent.

The agent accepts standard MVS `/MODIFY` and `/STOP` commands. From SDSF (or anywhere else that you can issue commands), you can issue one of these commands:

**`/MODIFY agent-job-name,STOP`**  
**`/STOP agent-job-name`**

This initiates a graceful agent shutdown. This causes the following sequence to occur:

1. The agent stops accepting new server requests.
2. The agent waits for all existing requests to finish.
3. The agent exits.

### **/MODIFY agent-job-name,FORCE**

This initiates an agent hard stop. This causes the following sequence to occur:

1. The agent immediately stops accepting new server requests.
2. The agent initiates hard cancels on all running threads.
3. The agent exits as soon as the threads exit.

This is not recommended under normal circumstances.

## **Administrative commands (agent)**

You can use the following commands to perform administrative tasks related to the client/agent environment for Db2 Recovery Expert.

### **/MODIFY agent-job-name, DISPLAY MEPL**

Provides Db2 Recovery Expert module maintenance levels, compile dates, APAR numbers, and APAR build dates and times for the Agent.

### **/MODIFY server-job-name,STOP SESSION session-id**

### **/MODIFY server-job-name,FORCE SESSION session-id**

Stops or forces the specified session.

### **/MODIFY agent-job-name, REFRESH CONFIG**

Forces the agent to re-read its configuration. Agent will not re-establish a network connection to server, hence the options required for it (for example, port and address) will not be updated.

### **/MODIFY agent-job-name, REFRESH TOPOLOGY**

Forces the agent to refresh the list of subsystems. As an alternative to this command, you may use the "Subsystem Monitoring Delay" installation parameter that allows to refresh the list of subsystems automatically.

For more information, see [“Worksheets: Gathering parameter values for Db2 Recovery Expert”](#) on page 86, in the Db2 Recovery Expert specific product parameters section. The **Subsystem monitoring delay** parameter is used in the **Customize agent configuration** job.

## **RACF keyring and token support**

If your server/agent will utilize RACF key rings or PKCS #11 tokens for authentication, the following configuration parameters must be set in the server/agent configuration member jobs:

```
<ssl-key-parent> string </ssl-key-parent>  
<ssl-key-location> string </ssl-key-location>
```

For SAF key rings:

- <ssl-key-parent> should be set to the owner of the key ring
- <ssl-key-location> should be set to the name of the key ring

For z/OS PKCS #11 tokens:

- <ssl-key-parent> should be set to the fixed value \*TOKEN\*
- <ssl-key-location> should be set to the name of the token

Once you have added the necessary configuration parameters, you must run the jobs to the PDS location used by the server/agent, and recycle the server/agent to implement the change.

**Note:** Key rings and tokens can be generated from the RACF Services Option Menu. To reach this menu, select I. 3 on the ISPF Primary Option Menu Option line and selecting option 7. To work with z/OS PKCS #11 token, the owner of the server/agent must be the owner of the token. Alternatively, the user must be added into the DCERTC and CRYPTOGP groups.

## Authenticating the current ISPF user

Db2 Recovery Expert ISPF client can authenticate the current user by using either RACF passtickets or passwords.

### Using RACF passtickets to authenticate ISPF users

The Db2 Recovery Expert ISPF client can be set up to use RACF passtickets to authenticate the current user of the ISPF client when a request is issued from the ISPF client to the server/agent.

Authentication will occur for every request issued to the server/agent. For full documentation on RACF passtickets, see *Security Server RACF Security Administrator's Guide and Security Server RACF Command Language Reference*.

To set up Db2 Recovery Expert to use RACF passtickets to authenticate ISPF users:

1. From the **TCz Customization Product Parameters** panel accept the default value of the **Authentication mode** parameter in the ISPF CLIST. The default value is PASSTICKET.
2. RACF passtickets are stored in the RACF PTKTDATA class. If the RACF PTKTDATA class is not active, you can activate by issuing a command similar to the following:

```
SETROPTS CLASSACT(PTKTDATA) RACLIST(PTKTDATA)
```

3. For this type of authentication you need to define a RACF profile by issuing a command similar to the following where *securedsignonapplicationkey* is the Secured Signon Application Key applicable to your environment and *ownerid* is the user ID of the owner of the profile:

```
RDEFINE PTKTDATA ARYZOS31 SSIGNON(KEYMASKED(securedsignonapplicationkey)) -  
APPLDATA('NO REPLAY PROTECTION') OWNER(ownerid) -  
DATA('ARY for ')
```

4. Give the server access to the RACF profile by issuing a command similar to the following where *userid* is the user ID that needs access to the profile (to generate passtickets and to authenticate against them). This can also be a group as described in the RACF documentation:

```
PE ARYZOS31 CLASS(PTKTDATA) ID(userid) AC(UPDATE)
```

5. Define a RACF profile by issuing a command similar to the following where *ownerid* is the user ID of the owner of the profile:

```
RDEFINE PTKTDATA IRRPTAUTH.ARYZOS31 OWNER(ownerid)
```

6. Give the server access to the RACF profile by issuing a command similar to the following where *userid* is the user ID that needs access to the profile (to generate passtickets and to authenticate against them). This can also be a group as described in the RACF documentation:

```
PE IRRPTAUTH.ARYZOS31 CLASS(PTKTDATA) ID(userid) AC(UPDATE)
```

7. Refresh the PTKTDATA profiles by issuing a command similar to the following:

```
SETROPTS RACLIST (PTKTDATA) REFRESH
```

### Using passwords to authenticate ISPF users

During customization you can set up the Db2 Recovery Expert V3.2 ISPF client to prompt users for their passwords when authenticating the current user of the ISPF client.

The password entered is used by the ISPF client directly when authenticating the current user against the server. It may also be saved in the user profile to avoid a prompt each time the user starts up the ISPF client.

To set up Db2 Recovery Expert to use passwords when authenticating ISPF users:

1. From the **TCz Customization Product Parameters** panel, set the value of the **Authentication mode** parameter in the ISPF CLIST to PASSWORD. You can set the parameter when you initially customize Db2 Recovery Expert or later, by rerunning the Configure Startup CLIST 2 customization job.

**Note:** When using Multi Factor Authentication (MFA), the PASSWORD parameter should be used with the following configuration parameters:

```
<uppercase-auth><false></uppercase-auth>  
<uppercase-password><false></uppercase-password>
```

Also, please note that the **Remember Password (encrypted)** and **Use for all locations** options do not work with MFA.

2. When **Authentication mode** is set to PASSWORD, the ISPF interface prompts each user for their credentials the first time they launch the ISPF interface and attempt to retrieve any profiles for a given SSID. The following **Enter Password** panel opens when the ISPF interface is started.

```
Enter Password Location  
  
Location                EA1A ON RS27  
User ID USER            99  
Password                XXXXXXXX  
Current SQLID  
Remember Password (encrypted) N  
Use for all locations   N
```

3. Each user can save their password for future use by Db2 Recovery Expert when connecting to the specified location by specifying Y in the **Remember Password** field. An encrypted copy of the password is saved. In future sessions, the display of the Login panel for a location is suppressed if the password for that location is stored.
4. Each user can specify that the same password is used for any SSID to which they want to connect by specifying Y in the **Use for all locations** field. If this option is not selected, the ISPF user interface prompts the user for credentials if an attempt is made to use a different SSID.
5. Each user can use the **Reset ISPF client passwords** option to reset their password information so that it is not saved. To reset an ISPF client password:
  - a) From the Db2 Recovery Expert ISPF interface main menu specify 0 (Administration) in the command line. The **Administration Menu** panel opens.
  - b) Specify 6 (Reset ISPF client password) in the **Option** line. Press Enter. Your password is reset and no longer saved. If reset, you have to enter your password the next time that you access the ISPF client. A message is issued confirming that the ISPF client password is reset.



---

## Chapter 6. The Subsystem Setup facility

In some environments in order for Db2 Recovery Expert to provide the fastest and most effective backups for Db2 subsystems, the Db2 subsystem must be configured on your local DASD according to specific guidelines. These guidelines require the segregation of the active logs and boot strap data sets from the rest of the Db2 subsystem. They also require additional MVS user catalogs that are backed up and restored with the Db2 subsystem. Db2 Recovery Expert's Subsystem Setup facility will help you in getting your Db2 subsystem available for the most efficient and effective backup.

### About configuring a subsystem for the system backup and restore utilities

---

When planning to restore an entire Db2 subsystem, you should ensure that the Db2 subsystem is properly configured before you begin creating backup profiles.

These requirements ensure that your Db2 object and log data are contained on separate sets of volumes. When you restore the volumes, the user catalogs will be restored and will reflect the data and log locations as they were at the time of the backup.

Db2 Recovery Expert performs extensive validity checking for these requirements. If it detects any condition where log data and object data are not separated, Db2 Recovery Expert issues a message containing the volume name(s) that hold both types of data. The backup will still be allowed, but only full system restores will be allowed from the backup (called a “mixed data” backup). You must recover both object and log data from a mixed data backup.

You can use the Db2 Recovery Expert Subsystem Setup facility to get your Db2 subsystem(s) in optimal condition. Db2 Recovery Expert analyzes your subsystem and provides information about the volume location and aliases of user catalogs, boot strap data sets, and active logs. It also provides detailed information about the volumes and the data sets in use by a subsystem.

If your subsystem is not correctly configured, you can use Db2 Recovery Expert to create MVS catalogs and aliases, rename or move boot strap data sets, log data sets, and/or Db2 object data sets to the proper location.

Configuring the Db2 subsystem involves ensuring the following:

- The Db2 subsystem has two separate MVS user catalogs: one for the Db2 data and one for the Db2 log and boot strap data sets.
- Those two MVS user catalogs are on separate volumes.
- There are separate aliases for the Db2 subsystem's object data sets and log/boot strap data sets.
- The MVS user catalogs for the Db2 data and for the log/BSDS each contain the appropriate aliases.
- The Db2 data and log/bootstrap data sets on the volumes associated with the Db2 subsystem are properly separated and do not contain data or catalogs that may be inappropriately back-leveled upon restoration.
- The volumes containing Db2 data do not contain other MVS data that may be inappropriately back-leveled upon restore.

Db2 Recovery Expert Subsystem Setup facility collects and displays information about the Db2 subsystem's user catalogs, boot strap data sets, active logs, and related Db2 object data sets. It allows you to create new catalogs and aliases, move and rename log and BSDS data sets, and move and rename Db2 object data sets.

## Configuration summary for the Subsystem Setup facility

This is the general procedure to configure a Db2 subsystem using the Db2 Recovery Expert Subsystem Setup facility.

Table 24. Subsystem Setup facility configuration summary

Step	Action	For further information
1	Select the Db2 Subsystem Analysis and Configuration option on the Db2 Recovery Expert for z/OS System Operations Menu.	
2	Analyze the SSID (requires the Db2 subsystem to be up).	<a href="#">“Subsystem analysis and the Subsystem Setup Information screen” on page 182</a>
3	On the Subsystem Setup Information screen, check the message area for the results of the analysis.	<a href="#">“Reviewing subsystem setup information” on page 183</a>
4	Separate the MVS user catalogs into two catalogs: one for logs/BSDS data sets and one for Db2 object data sets. You can define new catalogs or modify existing catalogs.	<a href="#">“Separating the MVS user catalogs” on page 184</a>
5	Add or move the aliases for the log and BSDS data sets to the appropriate log/BSDS catalog.	<a href="#">“Separating the MVS user catalogs” on page 184</a> and <a href="#">“Managing aliases in the MVS user catalogs” on page 198</a>
6	Add or move the aliases for Db2 object data sets to the appropriate Db2 object data catalog.	<a href="#">“Separating the MVS user catalogs” on page 184</a> and <a href="#">“Managing aliases in the MVS user catalogs” on page 198</a>
7	Rename/move the BSDS if needed (requires the Db2 subsystem to be down). <b>Note:</b> If you rename the BSDS, you must change the Db2 main address space procedure to reflect the new boot strap names before restarting the subsystem.	<a href="#">“Renaming boot strap data sets” on page 195</a>
8	Rename/move the active logs if necessary (requires the Db2 subsystem to be down).	<a href="#">“Renaming active log data sets” on page 197</a>
9	Reanalyze the subsystem (restart the Db2 subsystem if necessary)	<a href="#">“Subsystem analysis and the Subsystem Setup Information screen” on page 182</a>
10	View the volumes in use by the subsystem (requires Db2 to be up for a new analysis). Resolve any major issues - for example: <ul style="list-style-type: none"><li>• Make sure log and object data sets do not reside the same volume.</li><li>• Move other MVS user catalogs unrelated to the Db2 subsystem to another location.</li><li>• Ensure the volumes to be backed up are on Symmetrix devices.</li></ul>	<a href="#">“Optimizing volumes used by the Db2 subsystem” on page 201</a>

## Subsystem analysis and the Subsystem Setup Information screen

The following section describes the initial analysis of the Db2 subsystem and the Subsystem Setup Information panel.

### Selecting the subsystem

1. From the Db2 Recovery Expert for z/OS Main Menu, specify 1 (System Operations) and press Enter. From the System Operations Menu, specify 1 (Db2 Subsystem Analysis and Configuration) in the Option line and press Enter.
2. A panel is displayed that allows you to enter the desired Db2 subsystem ID and the backup type that will be performed on the SSID. The SSID must have been defined in the Db2 Recovery Expert Setup screens before you can proceed.
3. When you press Enter, the analysis of the subsystem begins. If the subsystem has previously been analyzed, the following window appears:

#### Data Found in Repository

This subsystem has been previously analyzed.  
You may display the stored data from the repository or have this subsystem re-analyzed.

Re-analyze Db2 Subsystem Info N (Yes/No)

This window offers you the option to view the last previous analysis or to re-analyze the subsystem. The previous analysis is saved in the Db2 Recovery Expert repository and can be retrieved for viewing by entering N in the **Re-analyze Db2 Subsystem Info** field and pressing Enter. If you want to re-analyze the subsystem, enter Y in the **Re-analyze Db2 Subsystem Info** field and press Enter.

## Reviewing subsystem setup information

This sections explains the Subsystem Setup Information screen.

When the analysis is complete, the Subsystem Setup Information screen is displayed.

```

RCVYXPRT V3R2  ----- Subsystem Setup Information ----- 2021/02/14 16:36:09
Option ==>                                         Scroll ==> CSR

Commands: ANALYZE  REANALYZE

-----
Subsystem: K72A      Active: Yes      Datasharing: No
Date of Last Analysis: 01/14/2021  Analysis Recommended: N
Message: Other non-Db2 data will be backed up and restored.
-----
                                         Row 1 of 36      +
New MVS User Catalogs to be used by this subsystem
Log/BSDS Cat1  CATALOG.RSPLEX01.K72A.CAT1          Volume  RAD092
Db2 Data Cat1  CATALOG.RSPLEX01.K72A.CAT2          Volume  RAD090
Line Cmds:(C-Create, A-Add Alias, D-Dataset Disp, U-Update, V-View Alias)

Existing MVS User Catalogs used by this subsystem
Log Other      CATALOG.RSPLEX01.K72A.CAT1          Volume  RAD092
Data Other     CATALOG.RSPLEX01.K72A.CAT2          Volume  RAD090
Line Cmds: (D-Dataset Display, V-View Aliases)

Boot Strap Datasets
K72A - BSDS 1  K72ALOG.BSDS01                      Volume  RAD092
K72A - BSDS 2  K72ALOG.BSDS02                      Volume  RAD092
Line Cmds: (R-Rename BSDS, M-Move BSDS)

Active Log Datasets
K72A - Log 1   K72ALOG.LOGCOPY1.DS01              Volume  RAD092
K72A - Log 1   K72ALOG.LOGCOPY1.DS02              Volume  RAD092
K72A - Log 1   K72ALOG.LOGCOPY1.DS03              Volume  RAD092
K72A - Log 2   K72ALOG.LOGCOPY2.DS01              Volume  RAD092
K72A - Log 2   K72ALOG.LOGCOPY2.DS02              Volume  RAD092

```

The fields at the top of the screen describe the status of the subsystem and the analysis data.

### Subsystem

The Db2 subsystem analyzed.

### Active

Whether the Db2 subsystem is currently active.

### Datasharing

Yes in this field indicates the subsystem is a member of a data sharing group.

### Date of Last Analysis

The date that the last analysis was run.

### Analysis Recommended

If Y, Db2 Recovery Expert recommends that you analyze the subsystem to update the information.

### Message

This message is related to the last analysis of the subsystem. The message may be one of the following:

- *Subsystem configuration is optimal.*
- *Subsystem configuration prevents system level backup.* At least some of the Db2 subsystem data sets are not on a supported EMC Symmetrix device.

- *Subsystem configuration allows only full restore (data and logs).* Db2 Recovery Expert can back up and restore the subsystem, but log/BSDS and object data sets are mixed on the same devices. Only a full restore (both log and data volumes) will be available.
- *Other non-Db2 data will be backed up and restored.* The Db2 log and object data is properly segregated, but Db2 Recovery Expert has detected other non-Db2 data sets on one or more subsystem volumes. You can view the other data sets by using the D line command on the affected volumes.

**Note:** If any Db2 data sets detected are empty user catalogs, you should move the catalogs to a volume not being used by the subsystem. If you choose not to move the catalogs, you will have to manually unallocate them before performing a system restore.

## Valid primary commands

You can use the following primary commands on this screen:

### ANALYZE

This command gathers information about the subsystem as in the original analysis, and also removes any catalog names that were entered in the New MVS User catalog fields.

### REANALYZE

This command gathers information about the subsystem as in the original analysis, but does not remove catalog names entered in the New MVS User catalog fields. Use this command when you wish to re-analyze the subsystem without losing your entries in the New MVS User catalog fields.

### Note:

- The Db2 subsystem must be active to perform a subsystem analysis or reanalysis.
- Db2 Recovery Expert does not support alias levels greater than four. If alias levels greater than four are encountered, Db2 Recovery Expert may properly identify ICF catalogs for the alias but it will not be able to properly assess if all files of a system get backed up.

## Separating the MVS user catalogs

The New MVS User Catalogs and Existing MVS User Catalogs sections of the Subsystem Setup Information screen allow you to review the status of your MVS user catalog. You must ensure that the MVS user catalogs are separated into two catalogs: one for logs/BSDS data sets and one for Db2 object data sets. You can define new catalogs or modify existing catalogs to accomplish this.

You can also use this section to view aliases and add new aliases to the user catalogs. You need to ensure that there are separate aliases for the Db2 subsystem's object data sets and log/boot strap data sets, and that each MVS user catalog for the Db2 data and for the log/BSDS contains the appropriate aliases.

## Existing MVS user catalogs

All current MVS catalogs in use by this Db2 subsystem are listed under the **Existing MVS User Catalogs used by this Db2 Subsystem** heading.

```
Existing MVS User Catalogs used by this Db2 Subsystem
- Data          CATALOG.RSPLEX01.K72A.CAT1      Volume  RAD020
- Log           CATALOG.RSPLEX01.K72A.CAT2      Volume  RAD021
- Not imported  CATALOG.RSPLEX01.K72A.CAT3      Volume
Line Cmds: (V-Volume List)
```

The types of data sets (Data/Log/Other) aliased in the catalogs are shown at left. The location of the user catalog is shown in the Volume field on the far right. If the existing MVS catalogs show that Db2 object data sets (Data on the left) and Db2 log/BSDS data sets (Data or Log on the left) are cataloged in the same catalog, you will need to separate them by creating new catalogs or changing the existing catalogs. You also need to ensure that the two catalogs are located on different volumes.

If a catalog has been exported and not imported anymore, for any reason, Not imported is indicated at left. In this case, the Volume field is empty and Line Cmd field is unavailable.

## New MVS user catalogs

If necessary, you can create new MVS user catalogs on this screen using line commands or change the existing catalogs.

**Note:** You must have proper authorizations to create or update MVS user catalogs. Refer to the DFSMS: Managing Catalogs guide for your version of z/OS for information about authorizations.

Initially when you analyze a subsystem, spaces are provided next to each catalog type under the New MVS User Catalogs to be used by this Db2 Subsystem heading. You can type in the name of a new MVS user catalog for each or create them by entering the C line command.

Once the catalogs have been defined and located, the catalog names and their locations are made read-only on this screen. You can only remove them by using the ANALYZE command.

## Creating a new user catalog

Use these steps to create a new user catalog.

You must create two types of user catalogs for the Db2 subsystem:

- The log/BSDS catalog catalogs the Db2 log and boot strap data sets for the Db2 subsystem.
- The Db2 data catalog catalogs the Db2 object data sets for the Db2 subsystem.

1. Enter the catalog name in the appropriate field, as shown:

```
Log/BSDS Cat1 CATALOG.RSPLEX01.T9A1.CAT9           Volume
Db2 Data Cat1 CATALOG.RSPLEX01.T9A1.CAT10          Volume
```

2. Press Enter. If the catalog does not exist, Db2 Recovery Expert will display a message stating it is not found. If it exists, the New MVS User Catalogs to be used by this Db2 Subsystem screen opens.

3. Specify a C next to the catalog type, as shown in the following screen:

```
New MVS User Catalogs to be used by this Db2 Subsystem
c Log/BSDS Cat1 _____ Volume _____
 Db2 Data Cat1 _____ Volume _____
Line Cmds: (C-Create, A-Add Alias, D-Dataset Disp, U-Update, V-View Alias)
```

4. Press Enter. The Update User Catalog Information screen opens.

```
RCVYXPRT V3R2 --- Update User Catalog Information -- 2021/01/14 17:58:13
Option ==>

Subsystem: T9A1

User Catalog Name ==> CATALOG.RSPLEX01.T9A1.CAT9
User Catalog Volume ==>

Data Parameters
Tracks or Cylinders ==> C (Tracks/Cylinders)
Primary Quantity ==> 10
Secondary Quantity ==> 5
Data Buffers ==> 4

Index Parameters
Tracks or Cylinders ==> C (Tracks/Cylinders)
Primary Quantity ==> 1
Secondary Quantity ==> 1
Index Buffers ==> 4

User Catalog Aliases ==>
```

5. Specify the new catalog information in the following fields:

**User Catalog Name**

Specify the name of the user catalog you want to create.

**User Catalog Volume**

Specify the volume location for the user catalog.

**SMS Storage Class**

Specify whether you want the catalog to be managed by SMS, enter the name of the SMS storage class to use for the catalog creation.

- Specify the data and index information for the catalog data set that will be created in the following fields:

**Tracks or Cylinders**

Specify the allocation unit in T(racks) or C(ylinders).

**Primary Quantity**

Specify the primary allocation quantity.

**Secondary Quantity**

Specify the secondary allocation quantity.

**Data Buffers OR Index Buffers**

Specify the number of MVS buffers to be allocated to the user catalog when it is opened.

**User Catalog Aliases**

Optionally, you can specify up to six aliases to be managed by this catalog. You can add additional aliases later using the A line command on the Subsystem Setup Information screen.

- Press PF3 to continue.

The IDCAMS Interface Module screen opens:

```

RCVYXPRT V3R2 ----- IDCAMS Interface Module ----- 2021/01/14 18:00:52
Option ==>                                         Scroll ==> PAGE

Action ==>      (E - EDIT, O - ONLINE SUBMISSION, B - BATCH SUBMISSION)

----- IDCAMS Input Cards -----                      Row 1 of 14  >

  SET MAXCC = 0
  DEFINE USERCATALOG(NAME('CATALOG.RSPLEX01.T9A1.CAT9')) -
    VOLUMES(DEV) -
    CYLINDERS(10 5) -
    ICFCATALOG) -
  DATA -
    (BUFND(4) -
    CYLINDERS(10 5) -
    CONTROLINTERVALSIZE(4096)) -
  INDEX -
    (BUFNI(4) -
    CYLINDERS(1 1) -
    CONTROLINTERVALSIZE(2048)) -
    CAT(CATALOG.RSPLEX01.MAIN)

***** Bottom of Data *****

```

- Specify an **E** in the **Action** field to enter an ISPF edit session and change one or more of the control cards.
- Specify an **O** in the **Action** field to submit the job to create the catalog online. When you press Enter, the job is submitted and the results of the creation will be displayed.
- Specify a **B** in the **Action** field to build a batch job that will create the catalog. The Build Batch Job window is displayed.

```

Build Batch Job
Edit Generated Job      Y      (Yes/No)
Build job in Dataset    TWDEB.RBR.TEST
Member
Job Cards:
==> //JOB CARD JOB TWDEB,CLASS=A,NOTIFY=&SYSUID
==> // *
==> // *
==> // *

```

11. From the Build Batch Job window:

- a) Specify a **Y** in the **Edit Generated Job** field to view the job in an ISPF edit session after the job is generated. If you specify N, after the job is generated you will return to the Subsystem Setup Information window.
- b) Specify the fully qualified data set name (without quotes) where you want to save the generated job in the **Build job in Dataset/Member** field. This data set must exist and can be sequential or a PDS. If the data set is a PDS, enter a member name. If the member does not exist, Db2 Recovery Expert will create it.
- c) Specify a valid job card for your site in the **Job Cards** field.
- d) Press Enter to generate the job. If you specified a **Y** in the **Edit Generated Job** field, an ISPF edit session opens where you can view and edit the job JCL. If you specified an **N** in the **Edit Generated Job** field, control returns to the Subsystem Setup Information window and the **New MVS User Catalogs** field is populated with the new catalog name.

## Viewing the aliases for a user catalog

You can see the aliases in a specific user catalog by entering V next to the catalog. This can be accomplished on both existing and new MVS user catalogs.

1. To see a list of aliases for the catalog type V next to an existing or new MVS catalog as shown in the following screens:

```

_New MVS User Catalogs to be used by this subsystem
_Log/BSDS Cat1 CATALOG.RSPLEX01.K72A.CAT1 Volume RAD092
_Db2 Data Cat1 CATALOG.RSPLEX01.K72A.CAT2 Volume RAD090
Line Cmds:(C-Create, A-Add Alias, D-Dataset Disp, U-Update, V-View Alias)

```

```

Existing MVS User Catalogs used by this subsystem
Log Other CATALOG.RSPLEX01.K72A.CAT1 Volume RAD092
Data Other CATALOG.RSPLEX01.K72A.CAT2 Volume RAD090
Line Cmds: (D-Dataset Display, V-View Aliases)

```

2. Press Enter. The Usercat Alias List Display screen opens. Each of the aliases are listed.

```

RCVYXPRT V3R2 ----- Usercat Alias List Display ----- 2021/01/14 18:11:14
Option ==> Scroll ==> PAGE
-----
Subsystem: E9A1 Usercat: ICF.RSPLEX01.EDS1.CAT1

The following aliases are in this usercat. If the "Db2" column is Yes, the
alias is being used by this Db2 for either Logs or Data. The count is the
number of Db2 datasets using the alias name.
Row 1 of 2
-----
Cmd Alias Db2 Logs Data Count
E9A1LOG Yes Yes No 00000056
E9B1LOG Yes Yes No 00000018
***** Bottom of Data *****

```

## Adding a new catalog alias

You can add a new catalog alias using the A command..

1. Specify an A next to the catalog for which you want to add a new alias.

```

_New MVS User Catalogs to be used by this subsystem
_Log/BSDS Cat1 CATALOG.RSPLEX01.K72A.CAT1 Volume RAD092
_Db2 Data Cat1 CATALOG.RSPLEX01.K72A.CAT2 Volume RAD090
Line Cmds:(C-Create, A-Add Alias, D-Dataset Disp, U-Update, V-View Alias)

```

2. Press Enter. The Add User Catalog Aliases screen is opens.

```

RCVYXPRT V3R2 ----- Add User Catalog Aliases----- 2021/01/14 18:13:10
Option ==>
Subsystem: T9A1
User Catalog Aliases ==> _____
                          _____

```

3. Specify up to 6 new aliases in the **User Catalog Aliases** fields.
4. Press PF3. The IDCAMS Interface Module screen opens.

```

RCVYXPRT ----- IDCAMS Interface Module ----- 2021/01/14 18:13:10
Option ==> Scroll ==> PAGE

Action ==> E - EDIT, O - ONLINE SUBMISSION, B - BATCH SUBMISSION)

----- IDCAMS Input Cards ----- Row 1 of 5 >

SET MAXCC = 0
DEFINE ALIAS -
  (NAME(LSLS) -
  RELATE(CATALOG.RSPLEX01.T9A1.CAT1)) -
  CATALOG(CATALOG.RSPLEX01.MAIN)
***** Bottom of Data *****

```

5. Specify an **E** in the **Action** field to enter an ISPF edit session and change one or more of the control cards.
6. Specify an **O** in the **Action** field to submit the job to create the aliases online. When you press Enter, the job is submitted and the results of the creation will be displayed.



- Specify a **B** in the **Action** field to build a batch job that will create the aliases. The Build Batch Job window is displayed.

```

Build Batch Job

Edit Generated Job      Y      (Yes/No)

Build job in Dataset    TWDEB.RBR.TEST
Member

Job Cards:
==> //JOB CARD JOB TWDEB,CLASS=A,NOTIFY=&SYSUID
==> // *
==> // *
==> // *

```

- From the Build Batch Job window:
  - Specify a **Y** in the **Edit Generated Job** field to view the job in an ISPF edit session after the job is generated. If you specify N, after the job is generated you will return to the Subsystem Setup Information window.
  - Specify the fully qualified data set name (without quotes) where you want to save the generated job in the **Build job in Dataset/Member** field. This data set must exist and can be sequential or a PDS. If the data set is a PDS, enter a member name. If the member does not exist, Db2 Recovery Expert will create it.
  - Specify a valid job card for your site in the **Job Cards** field.
  - Press Enter to generate the job. If you specified a **Y** in the **Edit Generated Job** field, an ISPF edit session opens where you can view and edit the job JCL. If you specified an **N** in the **Edit Generated Job** field, control returns to the Subsystem Setup Information window and the **New MVS User Catalogs** field is populated with the new catalog name.

## Displaying the data sets currently cataloged by the MVS catalog

You can see a list of data sets that are cataloged in the user catalog.

- To see a list of data sets type D next to an existing or new MVS catalog to see a list of data sets that are cataloged in the user catalog.

```

_New MVS User Catalogs to be used by this subsystem
_Log/BSDS Cat1 CATALOG.RSPLEX01.K72A.CAT1 Volume RAD092
_Data Cat1 CATALOG.RSPLEX01.K72A.CAT2 Volume RAD090
Line Cmds:(C-Create, A-Add Alias, D-Dataset Disp, U-Update, V-View Alias)

```

```

Existing MVS User Catalogs used by this subsystem
Log Other CATALOG.RSPLEX01.K72A.CAT1 Volume RAD092
Data Other CATALOG.RSPLEX01.K72A.CAT2 Volume RAD090
Line Cmds: (D-Dataset Display, V-View Aliases)

```

- Because Db2 Recovery Expert does not save individual data set information in its repository, this command may require you to reanalyze the subsystem if you have not performed a recent analysis. You are not required to perform the analysis, however, Db2 Recovery Expert will not be able to display information about the data sets' tracks, volume, or data type. If analysis is needed, the following window is displayed after you enter D next to the catalog:

```

Re-Analyze Subsystem?

This command requires a current analysis to show which data sets are in use by
this Db2. If you do not perform the analysis, all data sets will still be shown
but will have a status of "N/A". Do you wish to perform the analysis now? N

```

- After analysis (or if you are viewing a previously saved analysis), the **Usercat Dataset Display** screen is displayed. Db2 data sets related to the selected subsystem are shown in ISPF default color blue. Non-Db2 data sets are highlighted in the ISPF default color turquoise. Your colors may appear different if you have changed your ISPF default colors.

```

RCVYXPRT V3R2 ----- Usercat Dataset Display ----- 2021/01/14 18:16:10
Option ==> Scroll ==> CSR
-----
Subsystem: K72A Usercat: CATALOG.RSPLEX01.K72A.CAT2

The following datasets are cataloged in the above usercat.
                                         Row 1 of 30  +
-----
Cmd Dataset Name                               Tracks Volume Db2 Logs Data
K72ALOG.ARCHLOG1.D07158.T1506493.A0000112    720 DIP102 Yes Yes No
K72ALOG.ARCHLOG1.D07158.T1506493.B0000112     8 DIP10B Yes Yes No
K72ALOG.ARCHLOG1.D07158.T1513235.A0000113    720 DIP10A Yes Yes No
K72ALOG.ARCHLOG1.D07158.T1513235.B0000113     8 DIP10D Yes Yes No
K72ALOG.ARCHLOG1.D07158.T1638047.A0000114    720 DIP109 Yes Yes No
K72ALOG.ARCHLOG1.D07158.T1638047.B0000114     8 DIP10B Yes Yes No
K72ALOG.ARCHLOG1.D07159.T1714416.A0000115    720 DIP109 Yes Yes No
K72ALOG.ARCHLOG1.D07159.T1714416.B0000115     8 DIP10B Yes Yes No
K72ALOG.ARCHLOG1.D07162.T1546446.A0000116    560 DIP10C Yes Yes No
K72ALOG.ARCHLOG1.D07162.T1546446.B0000116     8 DIP102 Yes Yes No
K72ALOG.ARCHLOG1.D07162.T1654034.A0000117     67 DIP116 Yes Yes No
K72ALOG.ARCHLOG1.D07162.T1654034.B0000117     8 DIP118 Yes Yes No
K72ALOG.BSDS01                                *VSAM* Yes Yes No
K72ALOG.BSDS01.DATA                          16 RAD021 Yes Yes No

```

- The user catalog which you are viewing data sets for is listed at the top of the screen. The following information is provided:

#### Dataset Name

The fully qualified name of the data set.

#### Tracks

The number of tracks allocated for the data set.

#### Volume

The volume on which the data set is located, or the data set type if the data set is not physically allocated on the volume.

#### Db2

Yes in this column means that the data set is a Db2 data set for the selected Db2 subsystem.

#### Logs

Yes in this column means the data set is a Db2 active or archive log data set or a boot strap data set for the selected Db2 subsystem.

#### Data

Yes in this column means the data set is a Db2 object data set for the selected Db2 subsystem.

## Updating the new MVS user catalog

You can change the name of the catalog and also create the catalog if it does not exist.

- Type U next to a new main catalog to change the name of the catalog and also create the catalog if it does not exist.

```

_New MVS User Catalogs to be used by this subsystem
_Log/BSDS Cat1 CATALOG.RSPLEX01.K72A.CAT1 Volume RAD092
_Db2 Data Cat1 CATALOG.RSPLEX01.K72A.CAT2 Volume RAD090
Line Cmds:(C>Create, A>Add Alias, D-Dataset Disp, U-Update, V-View Alias)

```

- Press Enter. The Change Name of MVS User Catalog window opens.

```
Change name of MVS User Catalog
```

```
Enter an MVS User Catalog to be used for  
cataloging Db2 log/bsds datasets.
```

```
CATALOG.RSPLEX01.B71D.CAT2
```

3. Press Enter.

If the catalog does not exist, the following window appears:

```
Confirm Create of MVS User Catalog
```

```
The dataset entered for an MVS catalog does  
not exists. Press enter to Create this catalog.
```

```
CATALOG.RSPLEX01.B71D.CAT3
```

4. To confirm creating the new catalog, press Enter.

The Update User Catalog Information screen appears. This process is the same as creating a new main catalog.

## Reviewing the storage copy pools for Db2 system backups

The Storage Copy Pools section is displayed if the analysis was done for a Db2 type backup. The Db2 BACKUP SYSTEM utility requires that you have defined copy pools for your data using Db2 naming conventions.

**Note:** Refer to the IBM Db2 Utility Guide and Reference for information about system requirements for the BACKUP SYSTEM utility.

Copy pools are listed under the Storage Copy Pools heading.

```
Storage Copy Pools  
Data Copy Pool DSN$RS47BDS2$DB  
Log Copy Pool DSN$RS47BDS2$LG  
Backup Pool SGBDS2D2  
Backup Pool SGBDS2L2  
Line Cmds: (V-Volume List)
```

**Note:** Your colors may be different if you have changed your ISPF default colors.

### Data Copy Pool

The name of the copy pool that contains the Db2 data.

### Log Copy Pool

The name of the copy pool that contains the Db2 logs.

### Backup Pool

The names of the backup pools that are used by the Db2 subsystem as backup targets.

If any of the listed entries are shown in red, Db2 Recovery Expert could not find the associated pool. This error must be corrected before a backup job can be successfully run.

## Viewing a volume list for a copy pool

You can view a list of volumes in use by a copy pool.

1. To view the list of volumes type a V next to the copy pool on the Subsystem Setup Information display panel.

Because Db2 Recovery Expert does not save individual data set information in its repository, this command may require you to reanalyze the subsystem if you have not performed a recent analysis.

You are not required to perform the analysis, however, Db2 Recovery Expert will not be able to display

information about the data sets' tracks, volume, or data type. If analysis is needed, the following window appears after you enter V next to the alias:

```

Re-Analyze Subsystem?

This command requires a current analysis to show
which datasets are in use by this Db2.  If you do
not perform the analysis, all datasets will still
be shown but will have a status of "N/A".  Do you
wish to perform the analysis now?  N

```

2. After analysis (or if you are not viewing a previously saved analysis), the Volume Display screen opens. The subsystem that you are viewing volumes for is listed at the top of the screen.

```

RCVYXPRT V3R2 ----- Volume Display ----- 2021/01/14 18:21:19
Option ==> Scroll ==> CSR

Line Commands: D - View data sets on the volume

-----
Subsystem: B8E1

-----
Row 1 of 33+
Cmd Volume      Data  DataCat  ActLog ActCat  ArcLog ArcCat  Other
BDS0A      Yes   No       No     No     No     No     No
BDS0B      Yes   No       No     No     No     No     No
BDS0C      Yes   No       No     No     No     No     Yes
BDS0D      Yes   No       No     No     No     No     No
BDS0E      Yes   No       No     No     No     No     No
BDS0F      Yes   No       No     No     No     No     Yes
BDS00      Yes   No       No     No     No     No     No
BDS01      Yes   No       No     No     No     No     No
BDS02      Yes   No       No     No     No     No     No
BDS03      Yes   No       No     No     No     No     No
BDS04      Yes   No       No     No     No     No     No
BDS05      Yes   No       No     No     No     No     No
BDS06      Yes   No       No     No     No     No     No
BDS07      Yes   No       No     No     No     No     No
BDS08      Yes   No       No     No     No     No     Yes
BDS09      Yes   No       No     No     No     No     No
BDS1A      Yes   No       No     No     No     No     Yes

```

3. From this screen you can view the following information:

**Volume**

Specifies the volume name.

**Data**

A value of **Yes** in this field indicates that the volume contains object data.

**DataCat**

A value of **Yes** in this field indicates that the volume contains a user catalog that in turn contains the z/OS catalog information for object data sets.

**ActLog**

A value of **Yes** in this field indicates that the volume contains one or more active log data set(s).

**ActCat**

A value of **Yes** in this field indicates that the volume contains a user catalog that in turn contains z/OS catalog information for an active log data set.

**ArcLog**

A value of **Yes** in this field indicates that the volume contains one or more archive log data set(s).

**ArcCat**

A value of **Yes** in this field indicates that the volume contains a user catalog that in turn contains z/OS catalog information for an archive log data set.

**Other**

A value of **Yes** in this field indicates that the volume contains other non-Db2 data.

## Viewing the data sets allocated on a volume

You can view the data sets allocated on the volume.

1. Type a D next to a volume.

Because Db2 Recovery Expert does not save individual data set information in its repository, this command may require you to reanalyze the subsystem if you have not performed a recent analysis. You are not required to perform the analysis, however, Db2 Recovery Expert will not be able to display information about the data sets' tracks, volume, or data type. If analysis is needed, the following window appears after you enter D next to the volume:

### Re-Analyze Subsystem?

This command requires a current analysis to show which datasets are in use by this Db2. If you do not perform the analysis, all datasets will still be shown but will have a status of "N/A". Do you wish to perform the analysis now? N

2. After analysis (or if the data was sufficiently up to date), the following screen appears:

```
RCVYXPRT V3R2 ----- Volume Dataset List Display ----- 2021/01/14 18:25:27
Option ==> Scroll ==> CSR
```

```
Command: Newvol
```

```
-----
Subsystem: K82C          Volume Serial: NSP105
Free Trks: 5,921        Db2 Data Trks: 0          Db2 Log Trks: 8
-----
Cmd Dataset Name          Tracks  Volume  Db2  Logs  Data  Row 1 of 188
K82CLOG.ARCHLOG1.D06144.T1029507.B0000204  8      -----  Yes  Yes  No
ARY32.D040606.SARYSAMP.XMIT  55     No      No  No
ASPP.ICECOM.DHHAP211        14     -----  No  No  No
AWBSERV.VCACHE.MAIN        1      -----  No  No  No
K72ALOG.ARCHLOG1.D05313.T1200395.B0000004  8      -----  No  No  No
K72ALOG.ARCHLOG1.D05355.T1449457.A0000006  141    -----  No  No  No
K72ALOG.ARCHLOG1.D05356.T1159492.A0000006  700    -----  No  No  No
K72ALOG.ARCHLOG1.D05357.T1234375.A0000006  141    -----  No  No  No
K72ALOG.ARCHLOG1.D05357.T1556360.A0000008  1      -----  No  No  No
K85CLOG.ARCHLOG1.D05322.T1206550.A0000022  379    -----  No  No  No
K85CLOG.ARCHLOG1.D05347.T1215480.A0000023  720    -----  No  No  No
K85CLOG.ARCHLOG1.D06033.T0527241.B0000025  64     -----  No  No  No
K85CLOG.ARCHLOG1.D06123.T1438231.B0000515  64     -----  No  No  No
K85CLOG.ARCHLOG1.D06123.T1447331.B0000565  64     -----  No  No  No
K85CLOG.ARCHLOG1.D06123.T1448215.A0000567  720    -----  No  No  No
K85CLOG.ARCHLOG1.D06123.T1449435.A0000569  720    -----  No  No  No
K85CLOG.ARCHLOG1.D06123.T1451495.A0000572  720    -----  No  No  No
-----
```

3. The information at the top of the Volume Dataset List Display lists the Db2 subsystem ID and volume serial that you are viewing. In addition, the following fields are shown:

#### Free Trks

Specifies the number of free tracks on the volume.

#### Db2 Data Trks

Specifies the number of tracks being used by Db2 object data sets for the specified subsystem.

#### Db2 Log Trks

Specifies the number of tracks being used by Db2 log and BSDS data sets for the specified subsystem.

4. The remainder of the screen lists the data sets on the volume. Db2 data sets related to the selected subsystem are shown in ISPF default color blue. Non- Db2 data sets are highlighted in the ISPF default color turquoise. Your colors may appear different if you have changed your ISPF default colors.

#### Dataset Name

Specifies the data set name.

### Tracks

Specifies the number of tracks allocated by the data set on the displayed volume.

### Volume

If a data set can be moved to another volume, the **Volume** field contains an input line where you can enter another volume. You can move Db2 object data sets to another volume. You cannot move Db2 log or boot strap data sets or MVS user catalogs.

### Db2

Yes in this column means that the data set is a Db2Db2 data set for the selected Db2 subsystem.

### Logs

Yes in this column means the data set is a Db2 active or archive log data set or a boot strap data set for the selected Db2 subsystem.

### Data

Yes in this column means the data set is a Db2 object data set for the selected Db2 subsystem.

## Renaming and moving the boot strap data sets

The Boot Strap Data Sets (BSDS) section allows you to rename and/or move the Db2 subsystem's boot strap data sets, if needed. You can rename and/or move the boot strap data sets using line commands. The location of the BSDS is shown in the **Volume** field on the far right.

### Moving boot strap data sets

When separating your Db2 object and log/BSDS data, you can move the boot strap data sets (BSDS) to a new volume or a new SMS storage class by using the M line command.

The Db2 subsystem must be down to rename or move active log data sets.

1. The M line command can be entered in one of two places:

- To move all the BSDS that are listed, specify M on the **Boot Strap Datasets** heading area line command as shown in the following example:

```
m Boot Strap Datasets
_ K82C - BSDS 1 K82CLOG.BSDS01 Volume EBR900
_ K82C - BSDS 2 K82CLOG.BSDS02 Volume EBR900
Line Cnds: (R-Rename BSDS, M-Move BSDS)
```

- To move a specific BSDS, specify M in the line command next to the BSDS that you want to move as shown in the following example:

```
_ Boot Strap Datasets
m K82C - BSDS 1 K82CLOG.BSDS01 Volume EBR900
_ K82C - BSDS 2 K82CLOG.BSDS02 Volume EBR900
Line Cnds: (R-Rename BSDS, M-Move BSDS)
```

2. Press Enter. The Boot Strap Dataset Move screen opens. The Db2 subsystem for which you are moving the BSDS is listed at the top of the screen.

```
RCVYXPRT V3R2 ----- Boot Strap Dataset Move ----- 2021/01/14 18:32:35
Option ==>
-----
Subsystem: K82C
You have selected the Move Boot Strap Dataset Function. You have
entered this command on a header line which will move all listed
BSDS datasets to the specified volume. If the datasets are SMS managed,
you will need make sure your ACS rules allow the dataset to be placed
on the correct volume.
New Volume: -----
New SMS Storage Class: -----
Press Enter to process move. Press Cancel to cancel request.
```

- To move the BSDS, provide a new location in the **New Volume** or **New SMS Storage class** field. Db2 Recovery Expert validates volumes to ensure that they are valid volumes for your site, however, SMS storage classes are not validated. If your boot strap data sets are SMS managed, you must ensure that your automatic class selection (ACS) rules allow BSDS placement on the volumes to which you want to move the data sets.
- Press Enter to complete the move process.

## Renaming boot strap data sets

When separating your Db2 object and log/BSDS data, you can rename the BSDS by using the R line command.

The Db2 subsystem must be down to rename or move active log data sets.

- The R line command can be entered in one of two places:

- To rename all the boot strap data sets that are listed, specify R in the **Boot Strap Datasets** heading area line command as shown in the following example:

```
r Boot Strap Datasets
_ B81D - BSDS 1 B81DLOG.BSDS01 Volume EBR900
_ B81D - BSDS 2 B81DLOG.BSDS02 Volume EBR900
Line Cmds: (R-Rename BSDS, M-Move BSDS)
```

- To rename a specific boot strap data set, specify R in the line command next to an individual BSDS as shown in the following example:

```
_ Boot Strap Datasets
i B81D - BSDS 1 B81DLOG.BSDS01 Volume EBR900
_ B81D - BSDS 2 B81DLOG.BSDS02 Volume EBR900
Line Cmds: (R-Rename BSDS, M-Move BSDS)
```

- Press Enter. The Boot Strap Dataset Rename screen opens. The Db2 subsystem for which you are renaming the BSDS is listed at the top of the screen.

```
RCVYXPRT V3R2 ----- Boot Strap Dataset Rename ----- 2021/01/14 18:32:35
Option ==>
-----
Subsystem: B81D
You have selected the Rename Boot Strap Dataset Function. You have
entered this command on a detail line which update the alias for
B81DLOG.BSDS01.
The New Boot Strap Alias will be substituted for the first node of
the existing dataset name. You may use a symbolic of &SSID for
substituting the Db2 subsystem name.
New Boot Strap Alias: _____ Ex: Db2&SSID or &SSID.Db2
You may optionally specify the following:
New Volume: _____
New SMS Storage Class: _____
Press Enter to process rename. Press Cancel to cancel request.
```

- To rename the BSDS, enter an alias in the **New Boot Strap Alias** field. The new alias must exist in the new user catalog to be used for the log/BSDS data sets. For data sharing subsystems, you may want to use the symbolic &SSID in the new alias name. This variable will resolve to the data sharing group member SSID.
- You can optionally move the BSDS during the rename by providing a new location in the **New Volume** or **New SMS Storage** class field. Db2 Recovery Expert validates volumes to ensure that they are valid volumes for your site; however, SMS storage classes are not validated. If your boot strap data sets are SMS managed, you must ensure that your automatic class selection (ACS) rules allow BSDS placement on the volumes to which you want to move the data sets.
- Press Enter to complete the rename process.

## Renaming or moving active log data sets

The **Active Log Datasets** section allows you to rename and/or move the subsystem's active log data sets. The location of the active logs is shown in the **Volume** field on the far right. You can rename and/or move the active logs using line commands.

### Moving active logs

When separating your Db2 object and log/BSDS data, you can move the active logs to a new volume or new storage class by using the M line command. .

The Db2 subsystem must be down to rename or move active log data sets.

1. The M line command can be entered in one of two places.

- To move all the active logs that are listed enter M on the **Active Logs Datasets** heading area as shown in the following example:

```
m Active Log Datasets
_ K82C - Log 1 K82CLOG.LOGCOPY1.DS01 Volume EBR900
_ K82C - Log 1 K82CLOG.LOGCOPY1.DS02 Volume EBR900
_ K82C - Log 1 K82CLOG.LOGCOPY1.DS03 Volume EBR900
_ K82C - Log 2 K82CLOG.LOGCOPY2.DS01 Volume EBR900
_ K82C - Log 2 K82CLOG.LOGCOPY2.DS02 Volume EBR900
_ K82C - Log 2 K82CLOG.LOGCOPY2.DS03 Volume EBR900
Line Cnds: (R-Rename Log, M-Move Log)
```

- To move a specific active log specify M next to the active log in the line command as shown in the following example:

```
_ Active Log Datasets
m K82C - Log 1 K82CLOG.LOGCOPY1.DS01 Volume EBR900
_ K82C - Log 1 K82CLOG.LOGCOPY1.DS02 Volume EBR900
_ K82C - Log 1 K82CLOG.LOGCOPY1.DS03 Volume EBR900
_ K82C - Log 2 K82CLOG.LOGCOPY2.DS01 Volume EBR900
_ K82C - Log 2 K82CLOG.LOGCOPY2.DS02 Volume EBR900
_ K82C - Log 2 K82CLOG.LOGCOPY2.DS03 Volume EBR900
Line Cnds: (R-Rename Log, M-Move Log)
```

2. Press Enter.

The Active Log Dataset Move screen opens. The Db2 subsystem for which you are moving the active logs is listed at the top of the screen.

```
RCVYXPRT V3R2 ----- Active Log Dataset Move ----- 2021/01/14 18:37:11
Option ==>
-----
Subsystem: K82C
You have selected the Move Active Log Dataset Function. You have
entered this command on a header line which will move all listed active
log data sets to the specified volume. If the data sets are SMS managed,
you will need make sure your ACS rules allow the dataset to be placed
on the correct volume.
New Volume: -----
New SMS Storage Class: -----
Press Enter to process move. Press Cancel to cancel request.
```

3. To move the active logs, provide a new location in the **New Volume** or **New SMS Storage class** field. Db2 Recovery Expert validates volumes to ensure that they are valid volumes for your site, however, SMS storage classes are not validated. If your active logs are SMS managed, you must ensure that your automatic class selection (ACS) rules allow active log data set placement on the volumes to which you want to move the active logs.
4. Press Enter to complete the move process.



## Renaming active log data sets

When separating your Db2 object and log/BSDS data, you can rename all the active logs or a single active log by using the R line command.

The Db2 subsystem must be down to rename or move active log data sets.

1. The R line command can be entered in one of two places:

- To rename all the active logs that are listed, specify an R in the **Active Log Datasets** heading area as shown in the following example:

```
r Active Log Datasets
- K82C - Log 1 K82CLOG.LOGCOPY1.DS01 Volume EBR900
- K82C - Log 1 K82CLOG.LOGCOPY1.DS02 Volume EBR900
- K82C - Log 1 K82CLOG.LOGCOPY1.DS03 Volume EBR900
- K82C - Log 2 K82CLOG.LOGCOPY2.DS01 Volume EBR900
- K82C - Log 2 K82CLOG.LOGCOPY2.DS02 Volume EBR900
- K82C - Log 2 K82CLOG.LOGCOPY2.DS03 Volume EBR900
Line Cmds: (R-Rename Log, M-Move Log)
```

- To rename a specific active log, specify an R in the line command next to an individual active log as shown in the following example:

```
- Active Log Datasets
r K82C - Log 1 K82CLOG.LOGCOPY1.DS01 Volume EBR900
- K82C - Log 1 K82CLOG.LOGCOPY1.DS02 Volume EBR900
- K82C - Log 1 K82CLOG.LOGCOPY1.DS03 Volume EBR900
- K82C - Log 2 K82CLOG.LOGCOPY2.DS01 Volume EBR900
- K82C - Log 2 K82CLOG.LOGCOPY2.DS02 Volume EBR900
- K82C - Log 2 K82CLOG.LOGCOPY2.DS03 Volume EBR900
Line Cmds: (R-Rename Log, M-Move Log)
```

2. Press Enter. The Active Log Dataset Rename screen opens. The Db2 subsystem for which you are renaming the active logs is listed at the top of the screen.

```
RCVYXPRT V3R2 ----- Active Log Dataset Rename ----- 2021/01/14 18:37:11
Option ==>
-----
Subsystem: K82C
You have selected the Rename Active Log Dataset Function. You have
entered this command on a header line which update the alias for
all Active Log datasets in the list.
The New Active Log Alias will be substituted for the first node of the
the existing dataset names. You may use a symbolic of &SSID for
substituting the Db2 subsystem name.
New Active Log Alias: _____ Ex: Db2&SSID or &SSID.Db2
You may optionally specify the following:
New Volume: _____
New SMS Storage Class: _____
Press Enter to process rename. Press Cancel to cancel request.
```

3. To rename the active logs, enter an alias in the **New Active Log Alias** field. The new alias must exist in the new user catalog to be used for the log/BSDS data sets. For data sharing subsystems, you may want to use the symbolic &SSID in the new alias name. This variable will resolve to the data sharing group member SSID.
4. You can optionally move the active logs during the rename by providing a new location in the New Volume or New SMS Storage class field. Db2 Recovery Expert validates volumes to ensure that they are valid volumes for your site; however, SMS storage classes are not validated. If your active log data sets are SMS managed, you must ensure that your automatic class selection (ACS) rules allow active log data set placement on the volumes to which you want to move the active logs.
5. Press Enter to complete the rename process.

## Managing aliases in the MVS user catalogs

The Alias used with associated MVS User Catalogs section shows the aliases currently defined in the existing MVS catalogs. You can view the data sets currently defined to an alias, merge aliases from two catalogs, or rename aliases using this section.

### Single- and multi-level aliases

Db2 Subsystem Analysis will determine whether the subsystem is using multi-level or only single-level aliases. If multi-level aliases are being used, the standard algorithm must be used. If the subsystem uses only single-level aliases, you can use a faster alias processing algorithm. The PARMLIB parameter ALIAS\_PROCESS\_METHOD tells Db2 Recovery Expert which algorithm to use. For more information, see [Single- and multi-level aliases](#).

For details on the aliases currently in use, see [Viewing the data sets for an alias](#).

### Viewing the data sets for an alias

You can view the data sets that are using a particular alias.

1. To view the data sets specify a D next to the alias.
2. Because Db2 Recovery Expert does not save individual data set information in its repository, this command may require you to reanalyze the subsystem if you have not performed a recent analysis. You are not required to perform the analysis, however, Db2 Recovery Expert will not be able to display information about the data sets' tracks, volume, or data type. If analysis is needed, the following window appears after you enter D next to the alias:

#### Re-Analyze Subsystem?

```
This command requires a current analysis to show
which data sets are in use by this Db2.  If you do
not perform the analysis, all data sets will still
be shown but will have a status of "N/A".  Do you
wish to perform the analysis now?  N
```

3. After analysis (or if you are not viewing a previously saved analysis), the following screen appears:

```
RCVYXPRT V3R2 ----- Alias Dataset Display ----- 2021/01/14 19:22:35
Option ====>                                     Scroll ==> CSR
-----
Subsystem: K72A   Alias: K72A

The following datasets are using the above alias.

-----
Cmd Dataset Name                               Tracks Volume Db2 Logs Data
-----
K72A.DSNDBC.ARYRTOOL.ARYBKIX0.I0001.A001      *VSAM*   Yes No   Yes
K72A.DSNDBC.ARYRTOOL.ARYBPIX0.I0001.A001      *VSAM*   Yes No   Yes
K72A.DSNDBC.ARYRTOOL.ARYCAIX0.I0001.A001      *VSAM*   Yes No   Yes
K72A.DSNDBC.ARYRTOOL.ARYDAIX0.I0001.A001      *VSAM*   Yes No   Yes
K72A.DSNDBC.ARYRTOOL.ARYDBIX0.I0001.A001      *VSAM*   Yes No   Yes
K72A.DSNDBC.ARYRTOOL.ARYDRCPY.I0001.A001      *VSAM*   Yes No   Yes
K72A.DSNDBC.ARYRTOOL.ARYDTIX0.I0001.A001      *VSAM*   Yes No   Yes
K72A.DSNDBC.ARYRTOOL.ARYFKIX0.I0001.A001      *VSAM*   Yes No   Yes
K72A.DSNDBC.ARYRTOOL.ARYIPIX0.I0001.A001      *VSAM*   Yes No   Yes
K72A.DSNDBC.ARYRTOOL.ARYYIXIX0.I0001.A001     *VSAM*   Yes No   Yes
K72A.DSNDBC.ARYRTOOL.ARYIXIX1.I0001.A001      *VSAM*   Yes No   Yes
K72A.DSNDBC.ARYRTOOL.ARYKAIX0.I0001.A001      *VSAM*   Yes No   Yes
K72A.DSNDBC.ARYRTOOL.ARYKLIX0.I0001.A001      *VSAM*   Yes No   Yes
```

4. Db2 data sets related to the selected subsystem are shown in ISPF default color blue. Non-Db2 data sets are highlighted in the ISPF default color turquoise. Your colors may appear different if you have changed your ISPF default colors.
5. The subsystem and alias that you are viewing data sets for are listed at the top of the screen:

**Dataset Name**

The fully qualified name of the data set.

**Tracks**

The number of tracks allocated for the data set.

**Volume**

The volume on which the data set is located, or the data set type if the data set is not physically allocated on the volume.

**Db2**

Yes in this column means that the data set is a Db2 data set for the selected Db2 subsystem.

**Logs**

Yes in this column means the data set is a Db2 active or archive log data set or a boot strap data set for the selected Db2 subsystem.

**Data**

Yes in this column means the data set is a Db2 object data set for the selected Db2 subsystem.

## Renaming aliases

You can rename aliases in the existing main catalog for Db2 object data using the R line command.

Aliases for log and boot strap data sets cannot be renamed. You can rename the boot strap and log data sets themselves using the Bootstrap Datasets and Active Log Datasets sections of the Subsystem Setup Information screen.

**Note:** The Db2 subsystem must be down to rename catalog data sets.

1. To rename an alias for a Db2 object data set, specify R next to the alias, as shown in the following example:

	Alias used	with associated MVS User Catalogs		Data
R	K72A	CATALOG.RSPLEX01.K72A.CAT1		
	K72ALOG	CATALOG.RSPLEX01.K72A.CAT2		Log

2. Press Enter.

The Db2 Alias (Dataset) Rename screen opens. The Db2 subsystem for which you are renaming aliases is identified in the **Subsystem** field.

```

RCVYXPRT V3R2 ----- Db2 Alias (Dataset) Rename ----- 2021/01/14 19:24:50
Option ==>> Scroll ==>> CSR

Line Commands: I - Insert D - Delete

-----

Subsystem: K72A

You have selected to Rename all Db2 object datasets that start with alias
K72A. The new alias will be substituted for the first node of the
existing dataset names. You can optionally move data to new volumes using
the list below. To rename Db2 catalog datasets, Db2 must be down.

New Data Alias : (Required)
New SMS Storclas: (Optional)
Rename Catalog : N (Optional - Renames Db2 catalog datasets only)

-----

Cmd Old Volser New Volser Free Space
RBR020
RBR022
RBR023

```

3. To rename the alias, provide a new alias in the **New Data Alias** field. The alias must exist in the new user catalog before you can rename it.
4. Optionally, you can move data to new volumes or a new SMS storage class. Enter the new storage class in the **New SMS Storclas** field, or new volumes in the area at the bottom of the screen. You can add or delete volumes by entering the I or D line commands.
5. To rename the Db2 catalog data sets only, specify Y in the **Rename Catalog** field.

## Merging catalog entries

After creating the new user catalogs, you can move an alias from one catalog to another by following these steps.

In the following example, the alias K82C will be moved from the existing MVS user catalog to the new catalog defined for Db2 data. Db2 Recovery Expert moves the entries related to that alias, defines the alias in the new catalog and deletes the alias from the old catalog. The mergecat stops the Db2 subsystem, performs the mergecat, and then restarts the subsystem.

1. Type the M(ergecat) command next to the alias, as shown:

```
Alias used with associated MVS User Catalogs
m K82C CATALOG.RSPLEX01.K82C.CAT2 Data
_ K82CLOG CATALOG.RSPLEX01.K82C.CAT1 Log
_ K82CT CATALOG.RSPLEX01.K82C.CAT1 Data
```

2. Press Enter.

The Build Batch Job window appears. (This job cannot be submitted online).

```

                                Build Batch Job

Edit Generated Job      Y      (Yes/No)

Build job in Dataset   TWUSR.DAH.TEST
Member                 MERGE

Job Cards:
==> //JOB CARD JOB TWUSR,CLASS=A,NOTIFY=&SYSUID
==> // *
==> // *
==> // *
```

### Edit Generated Job

Enter Y to view the job in an ISPF edit session after generation. If you enter N, after the job is generated you will return to the Subsystem Setup Information screen.

### Build job in Dataset/Member

Enter the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, enter a member name. If the member does not exist, Db2 Recovery Expert will create it.

### Job Cards

Enter a valid job card for your site. If you submit the job from the edit session, when the job completes the Subsystem Setup Information screen reappears.

3. From the Build Batch Job window:
  - a) Specify a **Y** in the **Edit Generated Job** field to view the job in an ISPF edit session after the job is generated. If you specify N, after the job is generated you will return to the Subsystem Setup Information window.
  - b) Specify the fully qualified data set name (without quotes) where you want to save the generated job in the **Build job in Dataset/Member** field. This data set must exist and can be sequential or a PDS.

If the data set is a PDS, enter a member name. If the member does not exist, Db2 Recovery Expert will create it.

- c) Specify a valid job card for your site in the **Job Cards** field.
- d) Press Enter to generate the job. If you specified a **Y** in the **Edit Generated Job** field, an ISPF edit session opens where you can view and edit the job JCL. If you specified an **N** in the **Edit Generated Job** field, control returns to the Subsystem Setup Information window.

## Optimizing volumes used by the Db2 subsystem

---

The Volumes used by this Db2 Subsystem section lists all the volumes used by the specified subsystem. You can use this section to address issues such as data sets other than Db2 data sets residing on a volume.

The volumes appear in various ISPF default colors, depending on the status of the volume:

**Note:** Your colors may be different if you have changed your ISPF default colors.

### Dark blue

Volume is optimal.

### Light blue

The volume contains data other than Db2 data.

### Pink

Both log and object data reside on the volume.

### Red

The volume cannot be backed up by Db2 Recovery Expert.

## Viewing the data sets allocated on a volume

You can view the data sets allocated on the volume.

1. Type a D next to a volume.

Because Db2 Recovery Expert does not save individual data set information in its repository, this command may require you to reanalyze the subsystem if you have not performed a recent analysis. You are not required to perform the analysis, however, Db2 Recovery Expert will not be able to display information about the data sets' tracks, volume, or data type. If analysis is needed, the following window appears after you enter D next to the volume:

#### Re-Analyze Subsystem?

```
This command requires a current analysis to show
which datasets are in use by this Db2.  If you do
not perform the analysis, all datasets will still
be shown but will have a status of "N/A".  Do you
wish to perform the analysis now?  N
```

2. After analysis (or if the data was sufficiently up to date), the following screen appears:

RCVYXPRT V3R2 ----- Volume Dataset List Display ----- 2021/01/14 18:25:27  
Option ==> Scroll ==> CSR

Command: Newvol

```
-----
Subsystem: K82C          Volume Serial: NSP105
Free Trks: 5,921       Db2 Data Trks: 0          Db2 Log Trks: 8
-----
```

Cmd Dataset Name	Tracks	Volume	Row 1 of 188	Db2	Logs	Data
K82CLOG.ARCHLOG1.D06144.T1029507.B0000204	8		Yes	Yes	No	
ARY32.D040606.SARYSAMP.XMIT	55	No	No	No		
ASPP.ICECOM.DHHAP211	14		No	No	No	
AWBSERV.VCACHE.MAIN	1		No	No	No	
K72ALOG.ARCHLOG1.D05313.T1200395.B0000004	8		No	No	No	
K72ALOG.ARCHLOG1.D05355.T1449457.A0000006	141		No	No	No	
K72ALOG.ARCHLOG1.D05356.T1159492.A0000006	700		No	No	No	
K72ALOG.ARCHLOG1.D05357.T1234375.A0000006	141		No	No	No	
K72ALOG.ARCHLOG1.D05357.T1556360.A0000008	1		No	No	No	
K85CLOG.ARCHLOG1.D05322.T1206550.A0000022	379		No	No	No	
K85CLOG.ARCHLOG1.D05347.T1215480.A0000023	720		No	No	No	
K85CLOG.ARCHLOG1.D06033.T0527241.B0000025	64		No	No	No	
K85CLOG.ARCHLOG1.D06123.T1438231.B0000515	64		No	No	No	
K85CLOG.ARCHLOG1.D06123.T1447331.B0000565	64		No	No	No	
K85CLOG.ARCHLOG1.D06123.T1448215.A0000567	720		No	No	No	
K85CLOG.ARCHLOG1.D06123.T1449435.A0000569	720		No	No	No	
K85CLOG.ARCHLOG1.D06123.T1451495.A0000572	720		No	No	No	

- The information at the top of the Volume Dataset List Display lists the Db2 subsystem ID and volume serial that you are viewing. In addition, the following fields are shown:

**Free Trks**

Specifies the number of free tracks on the volume.

**Db2 Data Trks**

Specifies the number of tracks being used by Db2 object data sets for the specified subsystem.

**Db2 Log Trks**

Specifies the number of tracks being used by Db2 log and BSDS data sets for the specified subsystem.

- The remainder of the screen lists the data sets on the volume. Db2 data sets related to the selected subsystem are shown in ISPF default color blue. Non- Db2 data sets are highlighted in the ISPF default color turquoise. Your colors may appear different if you have changed your ISPF default colors.

**Dataset Name**

Specifies the data set name.

**Tracks**

Specifies the number of tracks allocated by the data set on the displayed volume.

**Volume**

If a data set can be moved to another volume, the **Volume** field contains an input line where you can enter another volume. You can move Db2 object data sets to another volume. You cannot move Db2 log or boot strap data sets or MVS user catalogs.

**Db2**

Yes in this column means that the data set is a Db2Db2 data set for the selected Db2 subsystem.

**Logs**

Yes in this column means the data set is a Db2 active or archive log data set or a boot strap data set for the selected Db2 subsystem.

**Data**

Yes in this column means the data set is a Db2 object data set for the selected Db2 subsystem.

## Moving data sets on a volume

You can move all data sets to different volumes by using the M line command. After you identify which data sets you wish to move and the new location, Db2 Recovery Expert builds a batch job to move the data sets.

1. Type M in the line command area next to the volume, as shown:

```
Volumes used by this subsystem
Volume Data DataCat ActLog ActCat ArcLog ArcCat Other Sym
m EBR700 Yes Yes No No No No No Yes
_ EBR701 Yes No No No No No Yes Yes
_ EBR900 No No Yes Yes Yes No No Yes
_ NSP105 No No No No Yes No Yes No
_ NSP106 No No No No Yes No Yes Yes
_ NSP107 No No No No Yes No Yes No

Line Cmds: (D-Dataset Display, M-Move all Datasets on Volume)
```

2. Press Enter.

The Db2 Dataset Move panel opens. The Db2 subsystem for which you are moving data sets is listed at the top of the screen.

```
RCVYXPRT V3R2 ----- Db2 Dataset Move ----- 2021/01/14 19:42:02
Option ==>
-----

Subsystem: S89X

You have selected to move all Db2 object datasets and/or other datasets
that reside on volume EBR700 to a new set of volumes. Db2 Log data cannot
be moved through this interface. Specifying "Other Data" will generate
moves for all datasets not associated with this Db2 (will not move other
Db2 vsam or MVS usercat datasets).

New Volumes      :
SMS Storage Class :
Db2 Object Data  : Y
Other Data       : N
```

3. To move the data sets, provide a new location in the **New Volumes** or **SMS Storage class** field. Db2 Recovery Expert validates volumes to ensure that they are valid volumes for your site, however, SMS storage classes are not validated. If your data sets are SMS managed, you must ensure that your automatic class selection (ACS) rules allow placement on the volumes to which you want to move the data sets.
4. To move Db2 object data sets for the selected subsystem, enter Y in the **Db2 Object Data** field.
5. To move other data sets not associated with the selected Db2 subsystem, enter Y in the **Other Data** field.
6. To build the batch job, press PF3.

The Build Batch Job window opens:

```
Build Batch Job

Edit Generated Job      Y      (Yes/No)

Build job in Dataset   TUSER.DAH.TEST
Member

Job Cards:
==> //JOB CARD JOB TUSER,CLASS=A,NOTIFY=&SYSUID
==> // *
==> // *
==> // *
```

7. From the Build Batch Job window:

- a) Specify a **Y** in the **Edit Generated Job** field to view the job in an ISPF edit session after the job is generated. If you specify N, after the job is generated you will return to the Subsystem Setup Information window.
- b) Specify the fully qualified data set name (without quotes) where you want to save the generated job in the **Build job in Dataset/Member** field. This data set must exist and can be sequential or a PDS. If the data set is a PDS, enter a member name. If the member does not exist, Db2 Recovery Expert will create it.
- c) Specify a valid job card for your site in the **Job Cards** field.
- d) Press Enter to generate the job. If you specified a **Y** in the **Edit Generated Job** field, an ISPF edit session opens where you can view and edit the job JCL. If you specified an **N** in the **Edit Generated Job** field, control returns to the Subsystem Setup Information window.



---

# Chapter 7. Configuring Db2 Recovery Expert session settings and defaults

This section describes the tasks that can be performed from the ISPF **Administration** menu.

The tasks that can be performed include the following;

- Specifying System Backup Profile defaults
- Registering Db2 subsystems
- Specifying LPAR recovery execution details
- Specifying Server information
- Specifying IMS CLIST Information
- Resetting ISPF client passwords
- Defining Combined system level backup groups
- Removing Records from the Db2 Recovery Expert Schema Level Repository (SLR)

**Note:** The option to define **Combined system level backup groups** is not included in the **Administration** menu if the combined system level backup feature is not installed. This feature is installed by specifying a data set for the Tools Customizer IMS/Db2 Combined SLB VSAM repository file field.

---

## Specifying System Backup Profile defaults

From the Backup Profile Defaults panel you can edit the default values that are used when creating system backup profiles and performing system level backup operations. Any changes that you make to these default values apply only for your user ID.

1. From the Db2 Recovery Expert main menu select **Administration** by entering a **0** in the command line. The **Administration** menu opens. Select **Backup Profile Defaults** by entering a **1** in the command line.
2. In the **Backup Scope** field specify whether the backup type defaults to full (backup both data and logs) or data only (no logs). Specify **F** for Full or **D** for Data
3. In the **Backup Generations** field specify the default number of backup generations to be kept on disk. Valid values are from 1 - 99 for SNAP, FlashCopy, and DFSMSdss backups. Valid values are from 1 - 8 for BCV backups.
4. In the **Offline Generations** field enter the default number of offline generations you want to keep in addition to backup generations. Valid values are from 0 – 99.
5. In the **Backup Method** field specify the default method that will be used for all backups. You can specify one of the following methods:
  - Specify **B** to perform a backup to a BCV device using EMC TimeFinder/Mirror copy processing.
  - Specify **S** to perform a backup to any device using EMC TimeFinder Clone copy processing.
  - Specify **F** to perform a backup to any device using FlashCopy processing.
  - Specify **D** to perform a backup to any device using Db2 Backup System Utilities.
  - Specify **L** to perform a backup to any device using DFSMSdss copy processing.
6. In the **Issue Log Suspend** field specify the default value for suspending the log while performing a system backup. Specify **Y** to suspend the log. Specify an **N** to keep the log active.
7. In the **Validate Volumes** field specify whether the volumes in the backup profiles are validated against current Db2 volumes. Specify **Y** to indicate that all volumes will be validated. Specify **N** to indicate that the volumes will not be validated.

8. In the **Backup Repository** field indicate whether the Db2 Recovery Expert schema level repository (SLR) will be backed up when a job to create a system backup is built. Specify Y to indicate that the SLR will be backed up or N to indicate that the SLR is not backed up as part of the job.
9. In the **Work File Unit Device** field specify the default work file unit device that will be used when generating utility JCL. Valid values are any tape or esoteric unit.
10. Press the PF3 key to return to the **Administration** menu.

## Registering Db2 subsystems

---

From the Register Db2 Subsystems panel you can edit the Db2 subsystem information that is configured for each Db2 subsystem ID on which you plan to use Db2 Recovery Expert.

The Db2 subsystem information that you can edit from this panel:

- Includes the ZPARM member name, the names of the bootstrap data sets, the data sets that comprise the current load library concatenation for Db2, the Db2 Recovery Expert plan names, and the Redirected Recovery Defaults.
  - Is contained in the Db2 Recovery Expert Product Control File (PCF). The PCF is populated during Tools Customization. Changing the defaults in the PCF applies to all users of the specific Db2 subsystem for which you are changing the defaults.
1. From the Db2 Recovery Expert main menu select **Administration** by entering a **0** in the command line. The **Administration** menu opens. Select **Register Db2 Subsystems** by entering a **2** in the command line.
  2. The **Control File Information** fields are read only. The **Current User Ind** field displays a user indicator that is specified in the CLIST used to start up the product. The **Db2 Control Dataset** field displays the name of the control data set that holds setup information.
  3. Enter the subsystem ID in the **Db2 Subsystem ID** field.
  4. To edit the ZPARM, BSDS, or Load Library information, specify a 1 in the command line. The Parameters for Db2 Subsystem panel opens. From this panel you can edit one or more of the following parameters that are specific to the Db2 subsystem you are configuring:
    - In the Db2 ZPARMs Member field specify the eight-character parameter module member name generated for this Db2 subsystem.
    - In the field **Db2 Bootstrap DSN #01 and #02** specify the fully qualified names of the bootstrap data sets for this Db2 subsystem.
    - In the **Db2 Loadlib1 to Loadlib5 fields** specify the names of the data sets that comprise the current load library concatenation for Db2. This concatenation is usually a subsystem-specific DSNEXIT library, the base DSNEXIT library for the current Db2 version, and the base DSNLOAD library.
  5. To edit the Db2 Plans information, specify a 2 in the command line. The Db2 Plans for Db2 Subsystem panel opens. From this panel you can edit the plan names that were specified for each of the specific functions:
    - In the **Plan #1 Name** field specify the name of the plan that allows users to view and create backup profiles.
    - In the **Plan #2 Name** field enter the name of the plan that allows users to execute backup jobs.
    - In the **Plan #3 Name** field enter the name of the plan that allows users to run jobs that will generate recovery plans.
    - In the **Plan #4 Name** field enter the name of the plan that allows users to run jobs that will execute the selected recovery plan.
    - In the **Plan #5 Name** field enter the name of the plan that allows users to execute Log Analysis jobs.
    - In the **Plan #6 Name** field enter the name of the plan that allows users to execute Redirected Recovery jobs.

6. To edit the default values that are used when performing Redirected Recovery or Advanced Recover, specify a 3 in the command line. The **Log Read and Log Apply Defaults** panel opens. From this panel, you can edit one or more of the following parameters:

```

ARYGGGCD V3R2 ----- Log Read and Log Apply Defaults ----- 2023/07/18 13:01:13
Command ==>

More:      +
Allow to use RECOVER for redirected recovery ==> N (Yes/No)
Use RECOVER for redirected recovery of indexes ==> N (Yes/No)

Enter sort parameters below.
Use DB2 Sort when possible ==> N (Yes/No)
Sort program installed ==> D (Dfsort/Syncsort)

File allocation parameters:
  Number of buffers ==> 5 (1-99 buffers)
  Channel programs ==> 2 (0-99 channel programs)

Enter data sets parameters below.

          Work Files  SYSPRINT  Mini Logs
Device type ==> SYSALLDA  SYSALLDA  SYSALLDA (DISK, CART, or etc.)
Data set type ==> B      B      B      (Basic/Large, disk only)
Track or cylinder ==> C      C      T      (Trk/Cyl, disk only)
Primary quantity ==> 100    50    50    (1-16777215, disk only)
Secondary quantity ==> 100    50    50    (1-16777215, disk only)
Maximum volumes ==> 5      5      5      (1-255 or blank)
SMS data class ==>          5      5      (0-8 characters)
SMS storage class ==>          5      5      (0-8 characters)
SMS management class ==>          5      5      (0-8 characters)

Sort Work parameters:
Unit device ==> SYSALLDA (DISK, SYSALLDA, or etc.)
Number of DDs ==> 3      (1-99 for disk, or 3-99 for tape)
Primary space ==> 20     (1-99999) C (Cylinders)
Secondary space ==> 1     (1-99999) C (Cylinders)

Utility REGION size ==> 0      (0-2047 MB)

XML translate options:
XML jobs data set ==> RSQA.ARY0320.XML.JCL
XML jobs member prefix ==> ARYX
XML template data set ==> RSQA.ARY0320.XML.TEMP
XML template member ==> ARYXTEMP

```

- In the **Allow to use RECOVER for redirected recovery** field, specify Y to enable use of the IBM RECOVER utility for redirected recovery. If this option is enabled (Y), the **Recovery Method** profile option for redirected recovery can be set to use the RECOVER utility, Change Accumulation, or both. If this option is disabled, the RECOVER utility will not be available, and only the Change Accumulation method may be used. This option should only be enabled after applying the corresponding Db2 APAR, PH27043.
- In the **Use RECOVER for redirected recovery of indexes**, specify Y to enable use of the IBM RECOVER utility for redirected recovery of COPY YES indexes.  
**Note:** This option is ignored if **Allow to use RECOVER for redirected recovery** is set to N.
- In the **Use Db2 Sort when possible** field specify Y to use the Db2 Sort or N to use another sort program.
- In the **Sort program installed** field specify D if Dfsort is installed or S if Syncsort is installed.
- In the **Number of buffers** field specify the number of buffers from 1 - 99 that can be used for the Redirected Recovery jobs.
- In the **Channel programs** field specify the number of channel programs from 0 - 99 that can be used for the Redirected Recovery jobs.
- In the **Device type** field specify the device type that is used for work, SYSPRINT, and mini log files. A device type value of tape or disk is valid for work files and SYSPRINT but is not valid for mini logs, which must be a disk type (for example, DISK or SYSALLDA).

- In the **Data set type** field specify the type of data set files that are included in the work, SYSPRINT, and mini log files. Specify B for Basic or L for Large.
  - In the **Track or cylinder** field specify whether the work, SYSPRINT, and mini log files are on tracks or cylinders. Specify T for tracks or C for cylinders.
  - In the **Primary quantity** field specify the number of primary cylinders that are used for the work, SYSPRINT, and mini log files. This parameter only applies if the files will be on disk.
  - In the **Secondary quantity** field specify the number of secondary cylinders that are used for the work, SYSPRINT, and mini log files. This parameter only applies if the files will be on disk.
  - In the **Maximum volumes** field specify the number of volumes that are used for the work, SYSPRINT, and mini log files. You may specify from 1 to 255 volumes.
  - In the **SMS data class** field specify the SMS data class for the work, SYSPRINT, and mini log files.
  - In the **SMS storage class** field specify the SMS storage class for the work, SYSPRINT, and mini log files.
  - In the **SMS management class** field specify the SMS management class for the work, SYSPRINT, and mini log files.
  - In the **Unit device** field specify the device type for the sort work files.
  - In the **Numbers of DDs** field specify the DD statements that are available for the sort work files.
  - In the **Primary space** field specify the number of primary cylinders that are used for the sort work files. This parameter only applies if the files will be on disk. You can specify from 1 to 99999 cylinders.
  - In the **Secondary space** field specify the number of secondary cylinders that are used for the sort work files. This parameter only applies if the files will be on disk. You can specify from 1 to 99999 cylinders.
  - In the **Utility REGION size** field specify the region size that is used when running the Redirected Recovery jobs.
7. To specify the subsystem parameters, enter **4** in the command line. The **Subsystem parameters** panel opens.

From the **Subsystem parameters** panel, you can specify settings that control subsystem-specific behavior. These settings will apply to the entire Db2 subsystem or data sharing group, not to individual profiles and specifications.

The following options are available on the **Subsystem parameters** panel:

- General options: **Use Db2 System Catalog Only**. Specify **Y** to ignore any information about recovered objects stored in Db2 Recovery Expert SLRs. This is similar to the option formerly located on the **Redirected Recovery Defaults** panel, but this new option works for any recovery plans, not just for Redirected Recovery. The old option could be overridden at the profile level, but this option is global and cannot be overridden. If you Specify **N**, information stored in SLRs will not be ignored.
- Template options. **Template Data Set Name** and **Template Member Name** allow you to specify a data set name and member where statements for Db2 TEMPLATE are stored. The default data set name and member were specified when Db2 Recovery Expert was installed. If you want to override the defaults, you can do so with the **Template Options**. See below for an example of the JCL code that results from specifying the data set and member.
- Template names. This allows you to specify template names for the Local Primary, Local Backup, Remote Primary, and Remote Backup image copies; the names will be generated as COPYDDN and RDECOVERYDDN for the COPY utility (see example below). For more information, see [“Specifying recovery options” on page 335](#)

The following illustration shows how the **Template Options** and **Template Names** settings generate JCL for the COPY utility.

This is an example of how you might populate the settings:

```
Template options:
Template Data Set Name ==> ARY.TEMPLATE.LIBRARY
```

```

Template Member Name ==> MEMBER
Template names:
Local Primary IC     ==> COPYLP
Local Backup IC      ==> COPYLB
Remote Primary IC    ==> COPYRP
Remote Backup IC     ==> COPYRB

```

This is the JCL that would result from the settings:

```

//COPY      EXEC PGM=DSNUTILB...
//SYSTEMPL DD  DISP=SHR,DSN=ARY.TEMPLATE.LIBRARY(MEMBER)
//SYSIN     DD  *
COPY
TABLESPACE ...
COPYDDN(COPYLP,COPYLB)
RECOVERYDDN(COPYRP,COPYRB)

```

If you leave the **Template Options** and **Template Names** settings blank, the JCL will look like this, from the installation defaults:

```

//COPY      EXEC PGM=DSNUTILB...
//CPY00010 DD  DSN=DSNAME.INSTALL.DEFAULT.LP,UNIT=...,SPACE=...,
//              DISP=(NEW,CATLG,DELETE)
//CPY00011 DD  DSN=DSNAME.INSTALL.DEFAULT.LB,UNIT=...,SPACE=...,
//              DISP=(NEW,CATLG,DELETE)
//CPY00012 DD  DSN=DSNAME.INSTALL.DEFAULT.RP,UNIT=...,SPACE=...,
//              DISP=(NEW,CATLG,DELETE)
//CPY00013 DD  DSN=DSNAME.INSTALL.DEFAULT.RB,UNIT=...,SPACE=...,
//              DISP=(NEW,CATLG,DELETE)
//SYSIN     DD  *
COPY
TABLESPACE ...
COPYDDN(CPY00010,CPY00011)
RECOVERYDDN(CPY00012,CPY00013)

```

8. Repeat steps 3 through 7 for each Db2 subsystem for which you want to change parameter information. If your Db2 subsystems are members of a data sharing group, you must enter information for each individual member of the data sharing group.
9. When you have finished editing the parameter information for each Db2 subsystem, press the PF3 key to return to the Administration menu.

## Reducing recovery time by using multiple LPARs

From the **LPAR recovery execution details** panel, you can specify job card parameters for LPARs, when a recovery is being spread across multiple LPARs in a z/OS sysplex. This reduces the time required for a recovery, and it allows you to recover the most important objects first.

As a Database Administrator, you may want to spread a recovery across multiple LPARs, so that you can recover the data more quickly.

Parallel recovery on multiple LPARs is available only for profiles that are created at the data sharing group level, and not for individual subsystems. You can spread the recovery across the LPARs of a z/OS sysplex where a member of the data sharing group is running.

The data sharing group name will be used in all JCL steps that perform SQL connections, use Db2 utilities, etc. Db2 Recovery Expert will automatically route individual jobs to different LPARs by specifying additional control cards such as SYSAFF in the job header. Detailed recovery progress monitoring will be unavailable for cross-LPAR recoveries; only the job status will be shown. All jobs will be submitted and monitored by one agent (performed the plan and JCL generation), not different agents running on LPARs used for recovery. Parallel recovery on multiple LPARs is not available via the Web interface. Additionally, it is not available for redirected recovery to a different Db2 subsystem.

For more information on how to perform a parallel recovery across multiple LPARs, see [Specifying recovery options](#).

## Specifying Server information

---

From the Server Information panel you can edit the name and port number of the Db2 Recovery Expert server to which you want to connect. Changing this value applies only to the current ISPF session (and will be returned to the default value when you log off).

1. From the Db2 Recovery Expert main menu select **Administration** by entering a **0** in the command line. The **Administration** menu opens. Select **Server Information** by entering a **3** in the command line.
2. In the **Server** field specify the host name or IP address (in dotted-decimal notation, e.g., 1.2.3.4) of the Db2 Recovery Expert server to which you want to connect.
3. In the **Port Number** field specify the IP port number of the Db2 Recovery Expert server to which you want to connect. Valid values are integers between 1 and 65535.
4. Press the PF3 key to return to the **Administration** menu.

## Specifying IMS CLIST Information

---

Using the IMS CLIST Information panel you can change the IMS CLIST connection information that was setup during customization and access a different version of IMS Recovery Expert during the current session.

The default CLIST information that Db2 Recovery Expert uses to connect to IMS Recovery Expert is specified during customization. Changing this value applies only to the current ISPF session (and will be returned to the default value when you log off).

1. From the Db2 Recovery Expert main menu select **Administration** by entering a 0 in the command line. The **Administration** menu opens. Select **IMS Recovery Expert for z/OS connection** by entering a 4 in the command line.
2. In the **CLIST library name** field specify the library name where the CLIST member for the version of IMS Recovery Expert to which you want to connect resides.
3. In the **CLIST member name** field specify the member name of the IMS Recovery Expert CLIST.
4. Press the PF3 key to return to the **Administration** menu.

## Resetting ISPF client password

---

You can reset the ISPF client passwords using Option 6 from the **Administration** menu.

1. From the Db2 Recovery Expert main menu select **Administration** by entering a 0 in the command line. The **Administration** menu opens.
2. Select **Reset ISPF client passwords** by entering a 6 in the command line.
3. A message displays informing you that the ISPF client passwords were reset.
4. Press the PF3 key to return to the **Administration** menu.

## Defining Combined system level backup groups

---

The **Combined SLB Group Display** panel lists the Combined System Level Backup (SLB) Groups that have been created. You use a Combined SLB Group to specify one or more Db2 and IMS subsystems that will be processed as a single unit for backup and recovery.

From **Combined SLB Group Display** you can create, delete, update, and view the Combined SLB Groups.

### Note:

- The option to define system level backup groups is not included in the **Administration** menu if the system level backup feature is not installed. This feature is installed by specifying a data set for the Tools Customizer **IMS/Db2 Combined SLB VSAM repository file** field
- For more information on working with combined SLB groups see the section *Creating Combined SLB Groups* in *Chapter 13. Performing a combined system level backup*.

1. From the Db2 Recovery Expert main menu select **Administration** by entering a 0 in the command line. The **Administration** menu opens. Select **Define Combined SLB Groups** by entering a 6 in the command line.
2. Specify **C** on any **Cmd** line to create a new Combined SLB Group. The Add Combined SLB Group panel opens. Enter the Combined SLB group information. Press Enter to return to the Combined SLB Group Display panel. For more information on creating Combined SLB Groups *Creating Combined SLB Groups*.
3. Specify **D** on the **Cmd** line next to the Combined SLB Group that you want to delete. A confirmation panel displays. Confirm that you want to delete the group. Press Enter to return to the Combined SLB Group Display panel.
4. Specify **U** on any **Cmd** line next to the Combined SLB Group that you want to update. The Update Combined SLB Group panel opens. Enter the changes that you want to make to the group. Press Enter to return to the Combined SLB Group Display panel.
5. Specify **V** on any **Cmd** line next to the Combined SLB Group that you want to view. The View Combined SLB Group panel opens. All fields displayed on this panel are read only. Press Enter to return to the Combined SLB Group Display panel.
6. Press the PF3 key to return to the **Administration** menu.

## Removing Records from the Db2 Recovery Expert Schema Level Repository (SLR)

---

From the Build SLR Cleanup Job panel you can build a job that will remove records from the Db2 Recovery Expert Schema Level Repository (SLR) based on a specific time or a time range.

SLR records contain the information that is necessary to recover objects to a specific point in time. Once these records are removed from the SLR, they are no longer available for use in the recovery process.

**Note:** Db2 V12 FL508 introduces a new SQL statement: ALTER TABLESPACE MOVE TABLE. This allows you to move individual tables from multi-table tablespace to separate UTS spaces. With PTF PH30785, Db2 Recovery Expert handles this new SQL statement, with certain limitations; see [Using moved tables](#).

1. From the Db2 Recovery Expert main menu select **Administration** by entering a **0** in the command line. The **Administration** menu opens. Select **SLR Cleanup** by entering a **7** in the command line.
 

**Note:** If the combined system level backup feature is not installed, you select the **SLR Cleanup** option by entering a **6** in the command line.
2. In the **Db2 Subsystem ID** field specify the Db2 subsystem where the SLR that you want to clean resides. You can enter a question mark to see a list of all the active Db2 subsystems.
3. In the **GMT or Local time** field indicate whether time in the SLR records is specified using GMT or as the local time based on the Db2 database location. Specify **G** for GMT time or **L** for Local time.
4. Specify one of the following types in the **Time Range Type** field:
  - Specify a **P** for **Period** to delete records from the SLR using a time range that precedes the current time. If you select this option, you must specify the time span details in the **Period Options** fields. By default the time range is set to 60 days preceding the current date using the local database time.
  - Specify a **T** for **Timestamp** to delete records from the SLR using a specific time value. All records older than the specified time value will be deleted from the SLR. If you select this option, you specify the time in the **Timestamp Options** field.
5. If you specified a **P** in the **Time Range Type** field then you must specify the following **Period Options** parameters to set the range:
  - In the **Period Type** field, specify whether the preceding time span will be in years, months, weeks, days, or hours. Specify Y for years, M for months, W for weeks, D for Days, or H for hours.
  - In the **Period Value** field, specify the number of years, months, weeks, days, or hours. You can specify a value from 1 to 999
6. If you specified a **T** in the **Time Range Type** field then you must specify the following timestamp parameter:



- In the **Timestamp** field specify a time in the format YYYY - MM - DD - HH - MM - SS. All records that occur prior to this time will be deleted from the SLR.
7. In the **Enforce Delete** field, specify **Y** to enforce delete on all records within the specified period of time. This might delete obsolete SLR records as well as SLR records with undefined deleted timestamp. Specify **N** otherwise.
  8. In the **Build job in Data Set Member** field specify the data set name and the member name where the generated build job will be stored.
  9. In the **Job Cards** field enter a valid job card for your site.
  10. Press Enter to generate the JCL for cleanup job.

## Using moved tables

---

Db2 V12 FL508 introduces a new SQL statement: ALTER TABLESPACE MOVE TABLE. This allows you to move individual tables from multi-table tablespace to separate UTS spaces. With PTF PH30785, Db2 Recovery Expert, handles this new SQL statement, with certain limitations.

### Using moved tables: current limitations

The Db2 Recovery Expert SLR repository cannot simultaneously store information about both the last instance of a moved table before the move and the first instance after the move. Only one of these two instances can be active at a time.

If you want to keep the table recoverable during the migration, follow these steps:

1. Create a full image copy of the tablespace containing the table planned to move
2. Perform an SLR update to record all necessary table information before the move
3. Run ALTER TABLESPACE MOVE TABLE and the following REORG

Check to ensure that the table has been moved correctly. If you see something wrong and want to recover the table back to the source tablespace, you can do so using the SLR record as usual; the source tablespace will be dropped/recreated with all tables as before the MOVE operation. Make sure that the moved table itself is dropped before the recovery to avoid "duplicate name" errors.

If the moved table looks correct and you want to switch to the updated configuration permanently, run the SLR update again; TSNAME and other related fields of the SLR record for the moved table will be updated to reflect the updated configuration. You will now be able to work with the moved table as usual, for example, to perform altered/dropped object recovery to any point in time after the second SLR update. For LBDR recovery: LBDR allows you to recover only dropped objects, not altered objects. ALTER TABLESPACE MOVE TABLE is not an exception: after the ALTER with the following REORG is performed, you cannot use LBDR to recover to any point in time before the MOVE/REORG.



---

## Chapter 8. Creating system backup profiles and system backups

This section explains how to create and maintain system backup profiles and system backups using the Db2 Recovery Expert ISPF interface.

System backup profiles contain information that is passed to Db2 Recovery Expert and incorporated into the backup job when it is built. Using Db2 Recovery Expert's ISPF interface, you can create a system backup profile to specify the source volumes to be backed up for a subsystem and their associated target units. In addition, you set other backup options such as the backup type and the number of generations to keep in the profile. Backup profiles are reusable and editable, and are created on a per subsystem basis. You can easily rename and delete backup profiles using line commands.

If you are planning to use Db2 Recovery Expert to restore your entire system through system restore and log apply, you should ensure the subsystem is configured for the most complete and accurate restoration before you create backup profiles. Refer to the topic [“About configuring a subsystem for the system backup and restore utilities”](#) on page 181 for more information.

---

### Profile setup

Profile setup is a validation process performed by Db2 Recovery Expert before a backup of a subsystem can be taken. This process authenticates the volumes for the subsystem, checks the locations of the user data, logs, and user catalogs, and performs other validations to ensure the backup can proceed and that the resulting backup will be usable.

A backup profile must successfully complete profile setup before a system level backup can be generated. Once a backup profile has been set up, it does not need to be set up again unless changes are made to the source or target volume configuration or unless Db2 Recovery Expert detects certain errors while building a backup job. In this case, the profile is flagged as “Setup Needed” on the **Update Backup Profile** panel. When building a backup job, if profile setup is needed, it is included as the first job step in the JCL.

Profile setup includes the following validations:

- Ensures all volumes in use by the Db2 subsystem are included in the backup.
- If the backup is a full backup, ensures all Db2 log volumes are also included in the backup.
- Ensures that the user catalogs in use by the Db2 subsystem are included in the backup.
- Ensures the log data sets and user data sets are on separate volumes. This includes the user catalogs for log data sets and for object data sets. If log and object data are not separated, the backup can continue but only a full restore will be allowed.
- Ensures that all source volumes are valid, online, and available for backup.
- Ensures all target volumes are valid and available for backup.
- For IBM FlashCopy backup profiles, verifies that the source and target volume are both FlashCopy capable, and reside within the same logical subsystem.
- Ensures that all source and target volumes are of the correct device type.
- Verifies that target units of a backup are not in use by any other backup profile; if so, a warning message is issued. Otherwise, the backup may destroy the data sets for another subsystem.
- Ensures that Db2 Recovery Expert control information does not reside on any volume being backed up.
- Checks that all source and target volumes are at a minimum microcode and patch level for backup.
- For EMC TimeFinder/Clone BCV backup profiles:
  - Verifies that the source volumes do not have established BCVs that are not part of the backup profile.
  - Verifies the target BCVs are not established to any volumes that are not listed as source volumes in the profile.

- Establishes the first generation of BCVs to the source volumes and puts all other generations on hold. When those BCVs are synchronized with the source volumes, the profile is ready to be built.
- For EMC Snap and BCV backups, Db2 Recovery Expert can detect if the volumes are online to either the local or a remote system and will wait until they go offline before completing the backup. If you wish to bypass this check, add the NO-OFFLINE-CHECK control card to the job. For other backup types, Db2 Recovery Expert cannot detect if the volumes are online to other z/OS systems.

After profile setup has been successfully completed, the SSID and backup type are made read-only in the profile and cannot be changed.

Profile setup must be re-run under the following circumstances:

- If the number of backup generations changes.
- If you add, change, or delete the source or target units.
- If the backup type is changed from full to data or from data to full.
- If you specify a one-generation BCV backup, when the backup job is executed the BCVs are split, but Db2 Recovery Expert does not establish another generation because only one generation can exist. In order to use this profile to create another backup, you must re-run profile setup. This will re-establish the one and only generation and start the mirroring process so the BCVs can be split to create the next backup.
- If Db2 Recovery Expert detects certain errors while executing a backup, the profile will be flagged as “Setup Needed”. These include but are not limited to:
  - If any errors occur during the split phase of a BCV backup, the backup process will end and the profile will be flagged “Setup Needed”.
  - If any errors occur while establishing the next generation of BCVs, the profile will be marked “Setup Needed.” In this case, the backup is still valid because the split processing completed successfully. However, profile setup is needed because the next generation has not been established and therefore is not mirroring the volumes.

## Accessing the backup profile list

Use these steps to access the list of backup profiles.

1. Specify 1 (System Operations) on the Db2 Recovery Expert for z/OS main menu and press Enter. From the **System Operations Menu** panel specify 2 (System Backup Profiles) to display the **Enter Backup Profile Selection Criteria** window, shown in the following example:

```

Enter Backup Profile Selection Criteria
Profile Like *
Creator Like *
SSID Like *
```

You can limit the profiles that are listed on the next panel by entering a profile name, profile creator name, or SSID in this window. You can use the asterisk (\*) wildcard character in one or all fields to view all the profiles, all the profiles for a creator, or all the profiles for a SSID.

2. Press Enter to continue.

The **Backup Profile Display** opens. The first time you access this panel, it will display as in the following:

```
RCVYXPRT V3R2 ----- Backup Profile Display ----- 2021/01/07 18:18:00
Option ==> Scroll ==> PAGE
```

```
Line Commands: B - Build U - Update C - Create V - View D - Delete
                R - Rename G - Group
```

```
-----
Profile Like *                               SSID Like *
Creator Like *                               Row 1 of 1 >
-----
```

```
Cmd Name Creator SSID Updt
C Press Enter to Create Profile
***** Bottom of Data *****
```

```
-----
| ARYR031I - No Profiles were found that match your selection criteria. |
| Press enter to create a new profile or change the selection criteria. |
-----
```

You can use the RIGHT and LEFT scroll commands (PF10 and PF11) to see all the available columns. You can use the UP and DOWN commands (PF7 and PF8) to scroll through the list when there are more profiles than can be displayed on one panel. The following fields are displayed on the panel:

#### Cmd

You use the **Cmd** field next to each profile enter line commands that can be used to build, update, create, view, delete and rename system backup profiles.

#### Profile Like

The profile name or mask you entered on the Enter Backup Profile Selection Criteria window appears here. You can change the name or mask to see different profiles on this panel.

#### Creator Like

The profile creator name or mask you entered on the Enter Backup Profile Selection Criteria window appears here. You can change the name or mask to see different profiles on this panel.

#### SSID Like

The Db2 subsystem ID or mask you entered on the Enter Backup Profile Selection Criteria window appears here. You can change the name or mask to see different profiles on this panel.

#### Row x of y

Displays the current row and the total number of rows in the profile list. Adjacent to this field is a scroll indicator: > indicates scroll right for more data; < > indicates scroll left or right for data; < indicates scroll left for more data. A plus sign (+) indicates scroll down for more data; a minus sign (-) indicates scroll up for more data.

#### Name

The name of the profile.

#### Creator

The profile creator.

#### SSID

The Db2 subsystem ID for which the profile was created.

#### Updt

This column indicates how users other than the profile creator may use the profile.

#### U(pdate)

Allows other users to update the profile.

#### V(iew)

Allows other users to view but not update the profile.

#### N(o access)

Prevents other users from viewing or updating the profile.

**Description**

The profile description, if included.

**Last Updated: Userid**

The user ID of the last user to update the profile.

**Last Updated: Timestamp**

The date and time that the profile was last updated.

**Created: Userid**

The user ID of the creator of the profile.

**Created: Timestamp**

The date and time that the profile was created.

3. The **Cmd** line next to each profile allows you to use line commands to perform updates, build jobs, and other profile management tasks.

## Creating IBM FlashCopy and EMC TimeFinder/Clone backup profiles

---

Db2 Recovery Expert makes IBM FlashCopy backups using the FlashCopy function, a copy service available for IBM Enterprise Storage Systems (ESS) devices. Db2 Recovery Expert makes EMC TimeFinder/Clone Volume Snap (SNAP) backups using the EMC SNAP VOLUME utility. Db2 Recovery Expert can maintain up to 99 generations of SNAP or FlashCopy backups.

When using the FlashCopy and SNAP backup methods, Db2 Recovery Expert automatically varies all target units offline when the backup is taken. These target units are exact copies of the source units they are paired with. It is not necessary or recommended to vary the target volumes back online in preparation for the next backup.

**Note:** When performing a system backup using IBM FlashCopy or EMC TimeFinder/Clone backup profiles that use UCB numbers as targets, Db2 Recovery Expert issues an error message (ARYS118E) if the UCB volumes are online during the backup. This is done to prevent you from accidentally overwriting target volumes. If you want Db2 Recovery Expert to overwrite the target volumes you need to vary the volumes offline and then run the backup.

1. From the **Backup Profile Display** panel, specify C in the **Cmd** line and press Enter.

The **Enter Backup Profile Type** panel opens.

```

Enter Backup Profile Type
ARY$BPPTP
Backup Profile Type  C  (S=System, C=Combined SLB)

```

2. Specify **S** in the **Backup Profile Type** field. Press Enter.

The **Enter New Backup Profile Options** panel opens.

```

Enter New Backup Profile Options

Creator          TUSERDH

Profile Name

Description

Db2 SSID         E9A1  (? for system list)

Backup Method    S  (Bcv/Snap/Flash/Db2/dfsmsdss(L))

Source/Target Mapping  A  (Auto discover/pool mapping,
                               Stogroup discover/pool mapping,
                               Manual)

Update Option    U  (Update, View only, No access)

Press ENTER to process or PF3 to Cancel

```

3. Specify the fields on this panel as follows:

**Creator**

This field is automatically filled with your user ID as the profile creator. To create the profile with a different user ID, type the new ID in this field.

**Profile name**

Specify a name for the profile, up to 30 characters.

**Description**

(Optional) Specify a description of the profile.

**Db2 SSID**

Specify the Db2 subsystem for the profile. To view and select from a list of subsystems, specify a question mark (?) in the field and press Enter. The **SSID Selection** panel is displayed. This panel lists the available subsystems and indicates whether they are active or inactive. Select a subsystem by specifying S next to the subsystem and pressing Enter.

**Backup Method**

Specify F for FlashCopy or S for SNAP backup.

**Source/Target Mapping**

This field specifies how the source volumes are determined and how they are mapped to the target volumes. Users can specify one of the following:

- Specify A to select **Auto discover/pool mapping**. If you select this option, the source volumes are automatically discovered at run time and mapped to target volumes using a pool of target volumes (either units or SMS storage groups).
- Specify S to select **Stogroup discover/pool mapping**. If you select this option, the source volumes are discovered using SMS storage groups that are specifically entered for a Db2 system and these source volumes are mapped to target volumes using a pool of target volumes (either units or SMS storage groups).
- Specify M to select **Manual mapping**. If you select this option you manually enter the source volumes and map them to target volumes.

**Update Option**

This option controls how other users can use your profile.

- U allows others to update the profile.
- V allows others to view but not update the profile.
- N prevents others from viewing or updating the profile.

4. Press Enter.

The **Update Backup Profile** panel is displayed.

```

RCVYXPRT V3R2 ----- Update Backup Profile ----- 2021/01/08 11:58:16
Option ==> Scroll ==> PAGE

  Commands: ? - Show all commands
Line Commands: I - Insert D - Delete X - Exclude U - Undo from exclude

-----
Creator: TUSERDH      Name: SS9Z SNAP BACKUP          SSID: E9A1
Share Option: U      (Upd,View,No)      Description:
----- Backup Options -----
Backup Method      ==> S (B/S/F/D/L)      Current Generation==> 00
Backup Scope       ==> F (Full/Data)      Setup Needed       ==> Y
Backup Generations==> 01(01 - 99)      Issue Log Suspend ==> N (Yes/No)
Offload Options    ==> N (Yes/No/Update)  Validate Db2 Vols ==> Y (Yes/No)
Source Stogroups   ==> Y (Yes/No/Update)  Enable Obj Restore==> N (Yes/No)
Target Pool        ==> Y (Yes/No/Update)  Incremental Generation ==> N
Override PARMLIB   ==> Y (Yes/No/Update)
----- Volume Mappings ----- Row 1 of 1
  Source  Dev   Src  Target
Cmd Volumes Type Unit Units      Message Area
I  PRESS ENTER FOR NEW LINE
***** Bottom of Data *****

```

The following fields will be read-only upon profile creation:

### Backup Method

The **Backup Method** used for this profile. This field contains **S** for SNAP backup or **F** for FlashCopy backup.

### Current generation

When you first create a profile, this field is set to zero (0). After the profile has been built and submitted, this field contains the generation that is currently mirroring Db2.

### Setup Needed

When you create a profile, this field is set to Y. The profile setup process must be run the first time a profile is built and the resulting job submitted. Once profile setup is performed, this field will contain N when you update the profile. If you update a profile and change the volume configuration, number of generations, or backup scope, you must run the profile setup again and this field is reset to Y.

### Incremental Generation

This field contains the generation status of the backup that will be produced on the next execution of the profile. The value Y indicates that the backup is incremental. A value of N indicates that the backup is not incremental. When you first create a profile, this field is set to N. You can set this value to Y using the START-INCREMENTAL keyword in the system backup job. The START-INCREMENTAL keyword can only be used for FlashCopy, DFSMSdss, and Db2 type backups. This value is always set to N for SNAP backups.

5. Specify one or more of the following fields:

### Backup Scope

Indicate if you want a full backup taken (both data and logs) or to back up data only. Note that if you specify data only and Db2 Recovery Expert detects log data on the volumes during the backup, the backup will proceed without error only if all Db2 log and data volumes have been included in the profile. In this case, the backup will be flagged as a “mixed data” backup and you will only be able to restore both the data and the logs.

### Backup Generations

Enter the number of generations of backups you want to keep. Valid values are 1 to 99.

### Offload Options

Enter Y in this field if you want to retain more backups than the number specified in the **Backup Generations** field. If you specify this option, Db2 Recovery Expert will offload older backups to another device (such as tape or other volumes). When you initially select this option, the **Offload**

**Options** panel will be displayed. If you edit the profile at a later time and wish to update the offload options, type U in this field.

**Note:** If you are planning on using a system level backup to recover a Db2 subsystem at a remote site using the Db2 Recovery Expert disaster recovery feature, you must set the **Offload Options** field for the system level backup to Y. This will offload the system level backup to tape so that it can be transported to the remote disaster recovery site.

### Source Stogroups

This field only appears on this panel if the **Stogroup discover/pool mapping** option was selected when the profile was created (specify **S** in the **Source/Target Mapping** field from the **Enter New Backup Profile Options** panel.) Enter **Y** in this field to open the **Source Stogroup Selection** panel where you will enter each source SMS storage group associated with the Db2 subsystem. Enter **U** in this field to open the **Source Stogroup Selection** panel where you can edit the source SMS storage groups that have been associated with the Db2 subsystem.

### Target Pool

This field only appears on this panel if one of the auto mapping options was selected when the profile was created (specify **S** for **Stogroup discover/pool mapping** or **A** for **Auto discover/pool mapping** in the **Target Mapping** field from the **Enter New Backup Profile Options** panel.) Enter **Y** in this field to open the Target Pool Selection panel where you will enter a range of target volumes or a list of storage groups to use for backup volumes. The target volumes that you enter will be selected from at the time of the backup. You can enter a **U** to open the Target Pool Selection window and edit the target volumes or storage groups that have been specified.

### Issue Log Suspend

Specify whether you want Db2 Recovery Expert to stop all logging activity on the subsystem while the backup is made. For Flash backups, log suspension is required; Db2 Recovery Expert automatically sets this field to Y. For SNAP backups, enter Y to suspend logging activity; logging will resume after the backup has completed. If the Symmetrix arrays are equipped with ECA (Engenuity Consistency Assist), you can enter N in this field to allow ECA to manage the log suspension. Note that if any of the Symmetrix devices do not support ECA, Db2 Recovery Expert will automatically suspend the log.

### Validate Db2 volumes

If you enter Y in this field, every time the backup job is run Db2 Recovery Expert will determine what volumes the subsystem is using and ensure the volumes are included in the backup. The profile setup process will always validate volumes, among other profile setup procedures.

### Enable Obj Restore

If you want to enable Db2 Recovery Expert's object level recovery from backups created by this profile, type Y in this field. During backup, Db2 Recovery Expert saves information about object data sets that allows objects to be individually restored later. Refer to [Chapter 9, "Recovering database objects,"](#) on page 299" for more information about object level recovery.

### Override PARMLIB

If you want to override default settings defined in the Db2 Recovery Expert PARMLIB member, enter Y in this field. For more information about the Override PARMLIB Options, see ["Specifying PARMLIB override options"](#) on page 258.

## 6. Create the source and target volume mappings.

The procedure depends on whether you selected the auto mapping or manual mapping method.

## Discovering source volumes using SMS storage groups

When creating an IBM FlashCopy, EMC SNAP, or DFSMSdss backup profile, you can specify that the source volumes will be discovered automatically using SMS storage groups that are specifically entered for the Db2 system.

You will use the **Source Stogroup Selection** panel to enter each SMS storage group associated with the Db2 system for which you are creating a system backup.

1. Specify S to select the auto mapping option **Stogroup discover/pool mapping** from the **Enter New Backup Profile Options** panel. Press Enter.

The **Source Stogroups** field is displayed on the **Update Backup Profile** panel.

2. Enter **Y** or **U** in the **Source Stogroups** field. The **Update Backup Profile** panel opens. The **Target Pool Selection** panel is displayed.

```
RCVYXPRT V3R2 ----- Source Stogroup Selection ----- 2021/01/08 12:38:31
Option ==> Scroll ==> PAGE

Line Commands: I - Enter D - Delete

-----
Creator: TUSER      Name: AUTOMAP SOURCE STOGROUP      SSID: S99Z
Share Option: U    (Upd,View,No)  Description:
-----
----- Enter Storage Groups -----

Cmd  Stogroup
--  -----
--  -----
--  -----

***** Bottom of Data *****
```

3. To specify a new storage group type the **I** line command in the blank **Cmd** line.
4. Specify the name of the SMS storage group in the **Stogroup** field.
5. When you have entered all SMS storage groups for the Db2 system, press PF3. The **Update Backup Profile** panel is displayed. The **Source Stogroups** field contains a **Y**.
6. You can update the SMS source storage groups at any time by entering **U** in the **Source Stogroups** field of the **Update Backup Profile** panel and pressing Enter. The **Source Stogroup Selection** panel opens. In the **Cmd** field you can type the **I** line command to add a new storage group or the **D** line command to delete a storage group.
7. You can delete SMS storage groups that you have specified using the **D** line command in the **Source Stogroup Selection** panel. Type the **D** line command in the **Cmd** field next to the storage group that you want to delete.

## Bypassing vary processing during system backup and restore

You can bypass the VARY command processing that occurs when performing a system backup using FlashCopy or EMC Snap where the target volumes are in SMS storage groups.

When performing a system backup using FlashCopy or EMC Snap where the target volumes are in SMS storage groups, Db2 Recovery Expert varies the volumes offline, performs the fast replication, re-labels the volumes, then varies the volumes back online. At system restore time, Db2 Recovery Expert varies the Db2 source volumes offline then back online before performing the volume restores.

You can bypass the VARY command processing by setting the ARY#PARM option BYPASS\_VARY to **Y** during customization.

During a system backup, when BYPASS\_VARY is set to **Y**, you will not see VARY commands being issued when the target volumes are in an SMS storage group. If the target volumes are in an SMS storage group then they are online to z/OS with a unique volume serial number. When performing a system restore, you will not see the VARY commands that are issued to vary the volumes offline and back online before performing the system restore.

In addition, during a system backup, Db2 Recovery Expert will make sure no z/OS processes have any allocations on the target volumes. During a system restore, Db2 Recovery Expert will make sure no z/OS processes are accessing any of the Db2 source volumes that are being restored.

**Note:** In some cases when a SLB is created using Flashcopy and offload processing is requested, the offload job will fail because the job cannot find the volume(s). This is because z/OS is not aware that the



VTOC has moved as result of the Flashcopy. Either of the following scenarios can be used to correct this situation:

- If BYPASS\_VARY is set to Y, after the backup and before the offloads either manually vary the target volumes offline and then online; or vary them online again while they are already online. By doing this, z/OS will detect the new location of the VTOC.
- Change BYPASS\_VARY to N and Db2 Recovery Expert will manually vary the volumes offline and then online after a backup to detect the new location of the VTOC.

## Using auto mapping for target volumes

When creating an IBM FlashCopy, EMC SNAP, or DFSMSdss backup profile, you can provide a target range of volumes and then allow Db2 Recovery Expert to automatically map the target volumes to source volumes during profile setup.

Once a profile is created using one of the auto mapping options, you cannot change the profile to manual mapping; you must recreate the profile and specify manual mapping.

1. Select one of the auto mapping options (specify A for **Auto discover/pool mapping** or S for **Stogroup discover/pool mapping**) from the **Enter New Backup Profile Options** panel. Press Enter.  
The **Target Pool** field is displayed on the **Update Backup Profile** panel.
2. Enter **Y** or **U** in the **Target Pool** field and press Enter.  
The **Target Pool Selection** panel is displayed.

```
RCVYXPRT V3R2 ----- Target Pool Selection ----- 2021/01/08 12:38:31
Option ==>                                         Scroll ==> PAGE

Line Commands: I - Enter  D - Delete

-----
Creator: TUSER      Name: S99Z SNAP BACKUP      SSID: S99Z
Share Option: U    (Upd,View,No)  Description:
----- Target Range Options -----

Enter by Unit or Stogroup ==> U (Unit/Stogroup)

----- Enter Target Ranges ----- Row 1 of 1
   Start  End
  Cmd Unit  Unit

***** Bottom of Data *****
```

3. Specify how you will enter the target ranges.

Enter **S** to enter by SMS storage group. Note that if you specify storage groups, all volumes that are in the storage group must be online, both during profile setup and when the backup is run. Enter **U** to enter the ranges by unit (unit control block). Either **U** or **S** must be selected; a combination is not allowed. If you change this field, target information entered previously will be deleted.

### Note:

- For SNAP and FlashCopy profiles, if you enter target ranges by unit, the target units are required to be offline during profile setup and execution. For DFSMSdss profiles, target units must be online during profile setup and backup execution.
  - Once profile setup has been successfully run on the profile, the **Enter by Unit or Stogroup** field in the profile will become read-only and cannot be changed.
4. Enter the target units or storage groups in the **Enter Target Ranges** area. You can delete and insert target ranges by using the D and I line commands.

- If entering by units, the **Start Unit** is the starting UCB address that will be used as a target and the **End Unit** is the ending UCB address that will be used as a target. These fields can only contain valid hexadecimal characters.

**Note:** Db2 Recovery Expert will attempt to make use of all devices in the specified range. If there are specific devices that you do not want included in the target pool, you must enter multiple ranges that omit the volumes you want to exclude.

- If entering by SMS storage groups, enter the SMS storage groups. Each SMS storage group will be checked to see if it exists. If it does not exist, a message will be displayed. If after the message is displayed you press Enter again, the SMS storage group will be accepted, but you must make sure that the SMS storage group is created before the backup is executed.

5. When you have entered all target ranges, press PF3.

The Update Backup Profile panel is displayed. The **Target Pool** field now contains Y. To update target ranges, enter U in the **Target Pool** field and press Enter. You can also include or exclude source volumes using the line commands on the **Update Backup Profile** panel.

6. When you have completed volume mapping, press PF3 to save your profile and exit.

## Using manual mapping for target volumes

If you specify manual mapping, you match each source volume with a specific target volume in the profile.

When manual mapping has been specified, you must enter each source and target volume on the **Update Backup Profile** panel. Once a profile is created using manual mapping, you cannot change the profile to auto mapping; you must recreate the profile and specify auto mapping.

**Note:** For SNAP and FlashCopy profiles, if you enter target ranges by unit, the target units are required to be offline during profile setup and execution. For DFSMSdss profiles, target units must be online during profile setup and backup execution.

1. Determine the source volumes for the specified subsystem. You can do this in several ways:

- To build a list of all Db2 source volumes for the SSID, enter **VOLUME** in the **Option** line on the **Update Backup Profile** panel. When you press Enter, Db2 Recovery Expert determines the volumes that are being used by the specified Db2 subsystem. When the scan is complete, the comprehensive list of volumes is displayed in the scrollable **Volume Mappings** area.

```

RCVYXPRT V3R2 ----- Update Backup Profile ----- 2021/01/08 12:01:18
Option ==>                                           Scroll ==> PAGE

          Commands: ? - Show all commands
Line Commands: I - Insert  D - Delete  X - Exclude  U - Undo from exclude

-----
Creator: TUSER          Name: SS9Z SNAP BACKUP          SSID: SS9Z
Share Option: U (Upd,View,No)  Description:
----- Backup Options -----
Backup Method    ==> S (B/S/F/D/L)    Current Generation==> 00
Backup Scope     ==> F (Full/Data)      Setup Needed      ==> Y
Backup Generations==> 01 (01 - 99)   Issue Log Suspend==> N (Yes/No)
Offload Options  ==> N (Yes/No/Update)  Validate Db2 Vols==> Y (Yes/No)
                                           Enable Obj Restore==> N (Yes/No)
----- Volume Mappings ----- Row 1 of 16  +
  Source  Dev   Src  Target
Cmd  Volumes Type Unit  Units  Message Area
ARQ160 3390-1 7760
ARQ161 3390-1 7761
ARQ162 3390-1 7762
ARQ163 3390-1 7763
ARQ164 3390-1 7764

```

Each volume listed was detected by Db2 Recovery Expert to be in use by the specified Db2 subsystem. Use the **UP** and **DOWN** commands (PF7 and PF8) to scroll through the list when there are more volumes than can be displayed on one panel. You should review any messages that appear in the **Message Area**.

- To enter a range of Db2 source volumes, enter **SOURCE** in the **Option** line. When you press Enter, the **Enter a Source Range** window is displayed.

```

Enter a Source Range
Beginning Source Range  7500
Ending Source Range    7800

```

Enter a beginning and ending range of source units. When you press Enter, Db2 Recovery Expert scans the source volumes in the supplied range and determines if the volumes can be used. A volume list appears on the **Update Backup Profile** panel if the source scan is successful. If an error occurs, review the error message. You should also review any informational messages that appear in the **Message Area**. Use the **UP** and **DOWN** commands (PF7 and PF8) to scroll through the list when there are more volumes than can be displayed on one panel.

- You can manually input source volumes using the **I** line command and entering the source volume in the **Source Volumes** column.

To clear all source (and target) mappings from the profile, enter the **CLEAR** command in the **Option** line.

2. Enter one or more target volume(s) for each source volume.

You can enter target units for each source volume in several ways:

- Next to each source volume, enter corresponding target unit(s) in the **Target Units** area. The target units must reside on the same array as the paired source volumes.
- You can enter **TGTSEL** in the **Option** line. The **Enter Target Selection Range** window is displayed.

```

Enter Target Selection Range
Beginning Target Range  7700
Ending Target Range    7800

```

Enter a beginning and ending range of target units. When you press Enter, a list of target volumes in the specified range is displayed:

```

RCVYXPRT V3R2 ----- Target Selection ----- 2021/01/08 12:12:24
Option  ==>                               Scroll ==> PAGE

Line Commands: S - Select  B - Block select

----- Selection Criteria -----
CUU: *          SYM#: *          BCV Only: N          Volser: *
Enter by Generation      N

----- Row 1 of 257  +>
Cmd  CUU  SYM#  BCV  Volser  DevType  Status  Paired Relationships
7700 0962  No   ARQ100 3390-1
7701 0963  No   ARQ101 3390-1
7702 0964  No   ARQ102 3390-1
7703 0965  No   ARQ103 3390-1
7704 0966  No   ARQ104 3390-1
7705 0967  No   ARQ105 3390-1
7706 0968  No   ARQ106 3390-1
7707 0969  No   ARQ107 3390-1
7708 096A  No   ARQ108 3390-1
7709 096B  No   ARQ109 3390-1
770A 096C  No   ARQ10A 3390-1

```

The selection fields at the top of the panel allow you to limit the list of volumes displayed.

**CUU**

Enter a UCB name or mask to further limit the displayed list.

**SYM#**

If the volumes are on a Symmetrix array, you can enter a Symmetrix name or mask to further limit the displayed list.

**BCV Only**

Enter Y in this field to limit the list to only BCVs.

**Volser**

Enter a volume serial name or mask to further limit the displayed list.

**Enter by generation**

The **Enter by Generation** field determines how the target unit fields are populated once you have made your target selections. If you enter N in the **Enter by Generation** field, volumes are assigned sequentially as follows:

```
Volume 1 - target unit 1
           target unit 2
Volume 2 - target unit 3
           target unit 4
```

If you enter Y in the **Enter by Generation** field, volumes are assigned as follows:

```
Volume 1 - target unit 1
           target unit 3
Volume 2 - target unit 2
           target unit 4
```

The following fields are on this panel:

**CUU**

The UCB of the target unit.

**SYM#**

The Symmetrix number of the target unit.

**BCV**

This column contains Y if the unit is a BCV, and N if the target unit is not a BCV.

**Volser**

The volume serial number associated with this target unit, if any.

**DevType**

The volume's device type.

**Status**

If the unit is a BCV, this field may contain the status of the target unit. NEVER indicates the target unit has never been paired in a BCV relationship. ESTAB indicates the target unit is currently established to a source unit.

**Paired Relationships**

This field contains information on any pairings that may be established for this target unit. If this target unit is paired with any source volume, the pairings are displayed in a comma separated list as AAAA-BBBB-CCCCC, where AAAA is the CUU number, BBBB is the SYM number, and CCCCC is the volume serial number, if one exists; if not \*\*\*\*\* is displayed.

To select a target unit, enter **S** in the line command area next to the target. To block select, place a **B** in the first target unit and the last target unit to be selected. When you have finished selecting target units, press PF3.

- You can enter **TARGET** in the **Option** line. The **Enter a Target Range** window is displayed.

```
Enter a Target Range
Beginning Target Range 7500
Ending Target Range    7600
Enter by Generation     N
```

Enter a beginning and ending range of target units. The **Enter by Generation** field determines how the target unit fields are populated. If you enter **N** in the **Enter by Generation** field, Db2 Recovery Expert assigns volumes sequentially as follows:

```
Volume 1 - target unit 1
           target unit 2
Volume 2 - target unit 3
           target unit 4
```

If you enter **Y** in the **Enter by Generation** field, Db2 Recovery Expert assigns volumes as follows:

```
Volume 1 - target unit 1
           target unit 3
Volume 2 - target unit 2
           target unit 4
```

When you press Enter, the target units are mapped. If an error occurs, review the message in the **Message Area**. If no target appears in the **Target Units** field, no target unit in the specified range could be matched to a source volume. The target and source cannot be matched if the target and source are on different Symmetrix arrays.

Successful results of the **TARGET** command are shown in the following example:

```
RCVYXPRT V3R2 ----- Update Backup Profile ----- 2021/01/08 12:23:02
Option ==>                                           Scroll ==> PAGE

      Commands: ? - Show all commands
Line Commands: I - Insert D - Delete X - Exclude U - Undo from exclude

-----
Creator: TUSER          Name: SS9Z SNAP BACKUP          SSID: SS9Z
Share Option: U (Upd,View,No)  Description:
----- Backup Options -----
Backup Method    => S (B/S/F/D/L)    Current Generation=> 00
Backup Scope     => F (Full/Data)     Setup Needed      => Y
Backup Generations=> 01(01 - 99)     Issue Log Suspend=> N (Yes/No)
Offload Options  => N (Yes/No/Update)  Validate Db2 Vols=> Y (Yes/No)
                                           Enable Obj Restore=> N (Yes/No)
----- Volume Mappings ----- Row 1 of 16 +
  Source  Dev   Src  Target
Cmd Volumes Type Unit Units  Message Area
  ARQ160 3390-1 7760 7700
  ARQ161 3390-1 7761 7701
  ARQ162 3390-1 7762 7702
  ARQ163 3390-1 7763 7703
  ARQ164 3390-1 7764 7704
```

3. You can modify the source/target volume mappings by doing any of the following:

- If you want to enter additional mappings (a source volume and its related target units), enter **I** in the line command area. To delete a mapping, enter **D** in the line command area.
- To exclude a volume, enter **X** in the line command area next to a volume. If you exclude a volume, Db2 Recovery Expert will not include the volume in the backup. The resulting backup will be tagged as a partial backup, which cannot be used for a system restore. However, a partial backup may be used to restore individual objects if you have enabled the object restore function. To undo an excluded volume, enter **U** in the line command area.
- To clear all target units from the mappings in the profile, enter the **TGTCLR** command in the **Option** line. To clear all source and target mappings from the profile, enter the **CLEAR** command in the **Option** line.
- To display more volume mappings, you can toggle the header fields on and off by entering the **HEADER** command in the **Option** line.
- To save the information you entered without ending your edit session, enter the **SAVE** command in the **Option** line.

4. When you have completed volume mapping, press PF3 to save your profile and exit.

## Creating an EMC BCV backup profile

When using BCV devices for backups, Db2 Recovery Expert establishes a BCV device to each Db2 source volume during profile setup. When a backup is requested, the BCV mirror is split from the Db2 source volume. If multiple generations are being maintained, the next generation BCV mirror is then established. The split BCV device can be used as a point-in-time backup for restore operations. Db2 Recovery Expert can maintain up to seven generations of backups using the BCV methodology.

When using the BCV backup methods, Db2 Recovery Expert will automatically vary all target units offline when the backup is taken. These target units will be exact copies of the source units they are paired with. It is not necessary or recommended to vary the target volumes back online in preparation for the next backup.

1. From the **Backup Profile Display** panel specify **C** in the **Cmd** line and press Enter.

The **Enter Backup Profile Type** panel opens.

```
Enter Backup Profile Type
ARY$BPTP
Backup Profile Type  C  (S=System, C=Combined SLB)
```

2. Specify **S** in the **Backup Profile Type** field. Press Enter.

The **Enter New Backup Profile Options** window is displayed.

```
Enter New Backup Profile Options

Creator           TUSERDH
Profile Name
Description
Db2 SSID          S89Z  (? for system list)
Backup Method     B  (Bcv/Snap/Flash/Db2/dfsmsdss(L))
Source/Target Mapping  M  (Auto discover/pool mapping,
                               Stogroup discover/pool mapping,
                               Manual)
Update Option     U  (Update, View only, No access)
Press ENTER to process or PF3 to Cancel
```

3. Specify the fields on this window as follows:

### Creator

This field is automatically filled in with your user ID as the profile creator. To create the profile with a different user ID, type the new ID in this field.

### Profile name

Type a name for the profile, up to 30 characters.

### Description

(Optional) Type in a profile description.

### Db2 SSID

Specify the Db2 subsystem for the profile in this field. To view and select from a list of subsystems, enter a question mark (?) in the field and press Enter. The **SSID Selection** panel is displayed. This panel lists the available subsystems and indicates whether they are active or inactive. Select a subsystem by entering S next to the subsystem and pressing Enter.

### Backup Method

Enter B for BCV backup.

### Source/Target Mapping

Enter M to manually enter each source to target volume mapping. M is the only valid value for BCV profiles.

## Update Option

This option controls how other users can use your profile. U allows others to update the profile. V allows others to view but not update the profile. N prevents others from viewing or updating the profile.

### 4. Press Enter.

The Update Backup Profile panel is displayed.

```
RCVYXPRT V3R2 ----- Update Backup Profile ----- 2021/01/07 18:24:43
Option ==> Scroll ==> PAGE

      Commands: ? - Show all commands
Line Commands: I - Insert D - Delete X - Exclude U - Undo from exclude

-----
Creator: TUSER      Name: E81A BCV      SSID: S89Z
Share Option: U    (Upd,View,No)  Description:
----- Backup Options -----
Backup Method      ==> B (B/S/F/D/L)    Current Generation==> 00
Backup Scope       ==> F (Full/Data)    Setup Needed       ==> Y
Backup Generations==> 01(01 - 08)    Issue Log Suspend ==> N (Yes/No)
Offload Options    ==> N (Yes/No/Update)  Validate Db2 Vols ==> Y (Yes/No)
Source Stogroups   ==> Y (Yes/No/Update)  Enable Obj Restore==> N (Yes/No)
Target Pool        ==> Y (Yes/No/Update)  Incremental Generation ==> N
Override PARMLIB   ==> Y (Yes/No/Update)
----- Volume Mappings ----- Row 1 of 1
      Source Dev   Src   Target
Cmd Volumes Type Unit Units  Message Area
I  PRESS ENTER FOR NEW LINE
***** Bottom of Data *****
```

The following fields will be read-only upon profile creation:

### Backup Method

Specifies the backup method used for this profile. This field will contain B for BCV backup.

### Current generation

When you first create a profile, this field will be set to 00 and will be read only. After the profile has been built and submitted, this field will contain the generation that is currently mirroring Db2.

### Setup Needed

When you create a profile, this field will be set to Y and will be read only. The profile setup process must be executed the first time a profile is built and the resulting job submitted. Once profile setup has been performed, this field will contain N when you update the profile. If you update a profile and change the volume configuration, number of generations, or backup type, re-running profile setup will be required and this field will be reset to Y.

### Incremental Generation

This field contains the generation status of the backup that will be produced on the next execution of the profile. The value Y indicates that the backup is incremental. A value of N indicates that the backup is not incremental. This value is always set to N for BCV backups.

### 5. Specify the following fields:

#### Backup Scope

Indicate if you want a full backup taken (both data and logs) or to back up data only. Note that if you specify data only and Db2 Recovery Expert detects log data on the volumes during the backup, the backup will proceed without error only if all Db2 log and data volumes have been included in the profile. In this case, the backup will be flagged as a “mixed data” backup and you will only be able to restore both the data and the logs.

#### Backup Generations

Enter the number of generations of backups you want to keep. Valid values are 1 to 8. The number of backup generations that will be available for restoration will be one less than the value you enter here, because one generation is always established to mirror the Db2 source volumes.

**Note:** If you specify a single (1) generation, when the backup job is executed the BCVs are split, but Db2 Recovery Expert does not establish another generation because only one generation can exist. Instead, the backup profile is marked as “Setup Needed”. In order to use this profile to create another backup, you must run profile setup. This will re-establish the one and only generation and start the mirroring process so the BCVs can be split to create the next backup.

Note that running profile setup again will destroy the backup represented by this one generation of BCVs, because the BCVs will begin mirroring the current set of Db2 source volumes once they are re-established.

### **Offload Options**

Enter Y in this field if you want to retain more backups than the number specified in the **Backup Generations** field. If you specify this option, older backups will be offloaded to another device (such as tape or other volumes). When you initially select this option, the **Offload Options** window will be displayed. If you edit the profile at a later time and wish to update the offload options, type U in this field.

**Note:** If you are planning on using a system level backup to recover a Db2 subsystem at a remote site using the Db2 Recovery Expert disaster recovery feature, you must set the **Offload Options** field for the system level backup to Y. This will offload the system level backup to tape so that it can be transported to the remote disaster recovery site.

### **Issue Log Suspend**

Specify whether you want Db2 Recovery Expert to stop all logging activity on the subsystem while the backup is made. Enter Y to suspend logging activity; logging will resume after the backup has completed. If the Symmetrix arrays are equipped with ECA (Engenuity Consistency Assist), you can enter N in this field to allow ECA to manage the log suspension. Note that if any of the Symmetrix devices do not support ECA, the log is automatically suspended.

### **Validate Db2 Vols**

If you enter Y in this field, every time the backup job is run Db2 Recovery Expert will determine what volumes the subsystem is using and ensure the volumes are included in the backup. The profile setup process will always validate volumes, among other profile setup procedures.

### **Enable Obj Restore**

If you want to enable Db2 Recovery Expert's object level recovery from backups created by this profile, type Y in this field. During backup, information is saved about object data sets that allows objects to be individually restored later. See Chapter 9, “Recovering database objects,” on page 299 for more information on recovery objects.

### **Source Stogroups**

This field only appears on this panel if the **Stogroup discover/pool mapping** option was selected when the profile was created (specify **S** in the **Source/Target Mapping** field from the **Enter New Backup Profile Options** panel.) Enter **Y** in this field to open the **Source Stogroup Selection** panel where you will enter each source SMS storage group associated with the Db2 subsystem. Enter **U** in this field to open the **Source Stogroup Selection** panel where you can edit the source SMS storage groups that have been associated with the Db2 subsystem.

### **Target Pool**

This field only appears on this panel if one of the auto mapping options was selected when the profile was created (specify **S** for **Stogroup discover/pool mapping** or **A** for **Auto discover/pool mapping** in the **Target Mapping** field from the **Enter New Backup Profile Options** panel.) Enter Y in this field to open the Target Pool Selection panel where you will enter a range of target volumes or a list of storage groups to use for backup volumes. The target volumes that you enter will be selected from at the time of the backup. You can enter a **U** to open the Target Pool Selection window and edit the target volumes or storage groups that have been specified.

### **Override PARMLIB**

If you want to override default settings defined in the Db2 Recovery Expert PARMLIB member, enter Y in this field. For more information about the Override PARMLIB Options, see “Specifying PARMLIB override options” on page 258.

6. Specify source and target volumes.



## Specifying source volumes for an EMC BCV backup profile

You can select the source volumes to be included in the BCV backup profile in one of several ways. You can select from a list, specify a range, or enter each manually.

1. On the **Update Backup Profile** panel, you can specify source volumes in several ways:

- To build a list of all Db2 source volumes for the SSID, enter **VOLUME** in the **Option** line. When you press Enter, Db2 Recovery Expert determines the volumes that are being used by the specified Db2 subsystem. When the scan is complete, the comprehensive list of volumes appears in the scrollable display area.

```
RCVYXPRT V3R2 ----- Update Backup Profile ----- 2021/01/07 18:29:27
Option ==>                                           Scroll ==> PAGE

      Commands: ? - Show all commands
Line Commands: I - Insert D - Delete X - Exclude U - Undo from exclude

-----
Creator: TUSERDH      Name: S89Z BCV                      SSID: S89Z
Share Option: U (Upd,View,No)  Description:
----- Backup Options -----
Backup Method      ==> B (B/S/F/D/L)      Current Generation==> 00
Backup Scope       ==> F (Full/Data)      Setup Needed       ==> Y
Backup Generations==> 01(01 - 08)      Issue Log Suspend ==> N(Yes/No)
Offload Options    ==> N (Yes/No/Update)  Validate Db2 Vols ==> Y(Yes/No)
                                           Enable Obj Restore==> N(Yes/No)
----- Volume Mappings ----- Row 1 of 16
  Source  Dev   Src  Target
Cmd Volumes Type  Unit  Units  Message Area
  ARQ100  3390-1  7700
  ARQ101  3390-1  7701
  ARQ102  3390-1  7702
  ARQ103  3390-1  7703
  ARQ104  3390-1  7704
```

Each volume listed was detected by Db2 Recovery Expert to be in use by the specified Db2 subsystem. Use the **UP** and **DOWN** commands (PF7 and PF8) to scroll through the list when there are more volumes than can be displayed on one panel. You should review any messages that appear in the **Message Area**.

- To specify a range of source volumes to back up, enter **SOURCE** in the **Option** line. When you press Enter, the **Enter a Source Range** window is displayed.

```
Enter a Source Range

Beginning Source Range  AB4D
Ending Source Range    1BCF
```

Enter a beginning and ending range of source units. When you press Enter, Db2 Recovery Expert retrieves a list of source volumes in the supplied range that are online and that are capable of fast replication. This list may include volumes that do not contain data or logs for the specified SSID. If an error occurs, review the error message. Use the UP and DOWN commands (PF7 and PF8) to scroll through the list when there are more volumes than can be displayed on one panel. You should also review any informational messages that appear in the **Message Area**.

- You can manually input source volumes using the **I** line command and entering the source volume in the **Source Volumes** column.

2. You can modify the source volume mappings by doing any of the following:

- If you want to enter additional mappings (a source volume and its related target units), enter **I** in the line command area. To delete a mapping, enter **D** in the line command area.

- To exclude a volume, enter **X** in the line command area next to a volume. If you exclude a volume, Db2 Recovery Expert will not include the volume in the backup. The resulting backup will be tagged as a partial backup, which cannot be used for a system restore. However, a partial backup may be used to restore individual objects if you have enabled the object restore function. To undo an excluded volume, enter **U** in the line command area.
  - To clear all source (and target) mappings from the profile, enter the **CLEAR** command in the **Option** line.
  - To display more volume mappings, you can toggle the header fields on and off by entering the **HEADER** command in the **Option** line.
  - To save the information you entered without ending your edit session, enter the **SAVE** command in the **Option** line.
3. When you have completed volume mapping, press PF3 to save your profile and exit.

## Specifying target volumes for an EMC BCV backup profile

You can select the target volumes to be included in the EMC BCV backup profile in one of several ways. You can select from a list, specify a range, or enter each manually.

For BCV backup profiles, the target units to be selected must be offline.

1. On the **Update Backup Profile** panel, you can enter target units for each source volume in one of several ways:
  - Next to each source volume, enter corresponding target unit(s) in the Target Units area. The target units must be the same device type and reside on the same Symmetrix arrays as the paired source volumes.
  - You can enter **AUTOTGT** in the **Option** line. This command automatically fills in target BCVs that have a relationship with the source volume. If no relationship(s) exist, the **Target Units** field will remain blank.
  - You can enter **TGTSEL** in the **Option** line. The **Enter Target Selection Range** window is displayed.

```

Enter Target Selection Range
Beginning Target Range  7800
Ending Target Range    7900

```

Enter a beginning and ending range of target units. When you press Enter, a list of target volumes in the specified range is displayed:

```
RCVYXPRT V3R2 ----- Target Selection ----- 2021/01/07 18:37:15
Option ==>                                     Scroll ==> PAGE
```

```
Line Commands: S - Select B - Block select
```

```
----- Selection Criteria -----
```

```
CUU: *          SYM#: *          BCV Only: N          Volser: *
Enter by Generation      N
```

```
----- Row 1 of 257 +>
Cmd  CUU  SYM#  BCV  Volser  DevType  Status  Paired Relationships
7800 0A62  Yes   3390-1  NEVER
7801 0A63  Yes   3390-1  NEVER
7802 0A64  Yes   3390-1  NEVER
7803 0A65  Yes   3390-1  NEVER
7804 0A66  Yes   3390-1  NEVER
7805 0A67  Yes   3390-1  NEVER
7806 0A68  Yes   3390-1  NEVER
7807 0A69  Yes   3390-1  NEVER
7808 0A6A  Yes   3390-1  NEVER
7809 0A6B  Yes   3390-1  NEVER
780A 0A6C  Yes   3390-1  NEVER
```

The selection fields at the top of the panel allow you to limit the list of volumes displayed.

### CUU

Enter a UCB name or mask to further limit the displayed list.

### SYM#

Enter a Symmetrix name or mask to further limit the displayed list.

### BCV Only

Enter Y in this field to limit the list to only BCVs.

### Volser

Enter a volume serial name or mask to further limit the displayed list.

### Enter by generation

The **Enter by Generation** field determines how the target unit fields are populated once you have made your target selections. If you enter N in the **Enter by Generation** field, volumes are assigned sequentially as follows:

```
Volume 1 - target unit 1
           target unit 2
Volume 2 - target unit 3
           target unit 4
```

If you enter Y in the **Enter by Generation** field, volumes are assigned as follows:

```
Volume 1 - target unit 1
           target unit 3
Volume 2 - target unit 2
           target unit 4
```

The following fields are on this panel:

### CUU

The UCB of the target unit.

### SYM#

The Symmetrix number of the target unit.

### BCV

This column contains Y if the unit is a BCV, and N if the target unit is not a BCV.

### Volser

The volume serial number associated with this target unit, if any.

### DevType

The volume's device type.

## Status

If the unit is a BCV, this field may contain the status of the target unit. NEVER indicates the target unit has never been paired in a BCV relationship. ESTAB indicates the target unit is currently established to a source unit.

## Paired Relationships

This field contains information on any pairings that may be established for this target unit.

If this target unit is paired with any source volume, the pairings are displayed in a comma separated list as AAAA-BBBB-CCCCC, where AAAA is the CUU number, BBBB is the SYM number, and CCCCC is the volume serial number, if one exists; if not \*\*\*\*\* is displayed.

To select a target unit, enter S in the line command area next to the target. To select several target units as a block, place a B in the first target unit and the last target unit to be selected. When you have finished selecting target units, press PF3 (END).

- You can enter **TARGET** in the **Option** line. The **Enter a Target Range** window is displayed.

```
Enter a Target Range
Beginning Target Range  7800
Ending Target Range    7900
Enter by Generation     N
```

Enter a beginning and ending range of target units. The **Enter by Generation** field determines how the target unit fields are populated. If you enter N in the **Enter by Generation** field, Db2 Recovery Expert assigns volumes sequentially as follows:

```
Volume 1 - target unit 1
           target unit 2
Volume 2 - target unit 3
           target unit 4
```

If you enter Y in the **Enter by Generation** field, Db2 Recovery Expert assigns volumes as follows:

```
Volume 1 - target unit 1
           target unit 3
Volume 2 - target unit 2
           target unit 4
```

When you press Enter, the target units are mapped to the source volumes. If an error occurs, review the message in the **Message Area**. If no target appears in the **Target Units** field, no target unit in the specified range could be matched to a source volume. The target and source cannot be matched if the device types do not match or the target and source are on different Symmetrix arrays.

Successful results of the **TARGET** command are shown in the following example. The **TARGET** command was entered with the range 7800 to 7900.

```

RCVYXPRT V3R2 ----- Update Backup Profile ----- 2021/01/07 18:41:04
Option ==>                                           Scroll ==> PAGE

      Commands: ? - Show all commands
Line Commands: I - Insert D - Delete X - Exclude U - Undo from exclude

-----
Creator: TUSER      Name: S89Z BCV                      SSID: S89Z
Share Option: U    (Upd,View,No)      Description:
----- Backup Options -----
Backup Method      ==> B (B/S/F/D/L)      Current Generation=> 00
Backup Scope       ==> F (Full/Data)      Setup Needed      => Y
Backup Generations==> 01(01 - 08)      Issue Log Suspend=> N (Yes/No)
Offload Options   ==> N (Yes/No/Update)  Validate Db2 Vols=> Y (Yes/No)
                                           Enable Obj Restore=> N (Yes/No)
----- Volume Mappings ----- Row 1 of 16  +
      Source  Dev   Src  Target
      Volumes Type  Unit Units   Message Area
      ARQ100  3390-1  7700 7800
      ARQ101  3390-1  7701 7801
      ARQ102  3390-1  7702 7802
      ARQ103  3390-1  7703 7803
      ARQ104  3390-1  7704 7804

```

2. You can modify the target volume mappings by doing any of the following:

- If you want to enter additional mappings (a source volume and its related target units), enter **I** in the line command area. To delete a mapping, enter **D** in the line command area.
- To exclude a volume, enter **X** in the line command area next to a volume. If you exclude a volume, Db2 Recovery Expert will not include the volume in the backup. The resulting backup will be tagged as a partial backup, which cannot be used for a system restore. However, a partial backup may be used to restore individual objects if you have enabled the object restore function. To undo an excluded volume, enter **U** in the line command area.
- To clear all target units from the mappings in the profile, enter the **TGTCLR** command in the **Option** line. To clear all source and target mappings from the profile, enter the **CLEAR** command in the **Option** line.
- To display more volume mappings, you can toggle the header fields on and off by entering the **HEADER** command in the **Option** line.
- To save the information you entered without ending your edit session, enter the **SAVE** command in the **Option** line.

3. When you have completed volume mapping, press PF3 to save your profile and exit.

## Creating a backup profile using the Db2 backup method

The Db2 Recovery Expert Db2 backup method uses the BACKUP SYSTEM utility to create the backup, but provides additional functionality over the standard utility. Db2 Recovery Expert validates the proper DASD configuration and can provide object recovery from the system backup, even if the underlying object data sets have moved or have been deleted. Db2 Recovery Expert also supports a full system restore from a backup (both data and logs).

Only one Db2 backup profile can be created per subsystem.

1. From the **Backup Profile Display** panel, specify **C** in the **Cmd** line and press Enter.

The **Enter Backup Profile Type** panel opens.

```

Enter Backup Profile Type
ARY$BPTP
Backup Profile Type  C  (S=System, C=Combined SLB)

```

2. Specify **S** in the **Backup Profile Type** field. Press Enter.

The **Enter New Backup Profile Options** panel opens.

```
Enter New Backup Profile Options

Creator          TUSER
Profile Name     T9B1 - Db2
Description
Db2 SSID        T9B1 (? for system list)
Backup Method    D (Bcv/Snap/Flash/Db2/dfsmsdss(L))
Source/Target Mapping M (Auto discover/pool mapping,
                        Stogroup discover/pool mapping,
                        Manual)
Update Option    U (Update, View only, No access)
```

3. Specify the fields on this window as follows:

**Creator**

This field is automatically filled in with your user ID as the profile creator. To create the profile with a different user ID, type the new ID in this field.

**Profile name**

Type a name for the profile, up to 30 characters.

**Description**

(Optional) Type in a profile description.

**Db2 SSID**

Specify the Db2 subsystem for the profile in this field. To view and select from a list of subsystems, enter a question mark (?) in the field and press Enter. The **SSID Selection** panel is displayed. This panel lists the available subsystems and indicates whether they are active or inactive. Select a subsystem by entering S next to the subsystem and pressing Enter.

**Backup Method**

Enter D for Db2 backup.

**Target Mapping**

Specify M in this field. It is the only valid value for Db2 backup profiles. Volume mapping is handled by DFSMSHsm.

**Update Option**

This option controls how other users can use your profile. The value U allows others to update the profile. The value V allows others to view but not update the profile. The value N prevents others from viewing or updating the profile.

4. Press Enter.

The **Update Backup Profile** panel is displayed.

```
RCVYXPRT V3R2 ----- Update Backup Profile ----- 2021/01/13 00:11:56
Option ==> Scroll ==> CSR
```

```
Commands: ? - Show all commands
Line Commands: I - Insert D - Delete X - Exclude U - Undo from exclude
```

```
-----
Creator: TUSER      Name: T9B1 - Db2      SSID: T9B1
Share Option: U    (Upd,View,No)  Description:
----- Backup Options -----
Backup Method      ==> D (B/S/F/D/L)      Current Generation==> 00
Backup Scope       ==> F (Full/Data)      Setup Needed       ==> Y
Backup Generations==> 03 (01 - 99)      Issue Log Suspend ==> N (Yes/No)
Offload Options    ==> N (Yes/No/Update)  Validate Db2 Vols ==> Y (Yes/No)
Source Stogroups   ==> N (Yes/No/Update)  Enable Obj Restore==> N (Yes/No)
Target Pool        ==> N (Yes/No/Update)  Incremental Generation ==> Y
Override PARMLIB   ==> N (Yes/No/Update)  Multiple Incremental ==> N
Alt. Copy Pool     ==> Y (Yes/No/Update)
----- Volume Mappings ----- Row 1 of 48 +
  Source  Dev   Src  Target
Cmd  Volumes Type Unit Volumes  Message Area
  ARQ160  3390-1  7760 ARQ16A
      ARQ17A
      ARQ172
  ARQ161  3390-1  7761 ARQ16B
      ARQ17B
      ARQ173
  ARQ162  3390-1  7762 ARQ16C
      ARQ17C
      ARQ174
  ARQ163  3390-1  7763 ARQ16D
      ARQ17D
      ARQ175
  ARQ164  3390-1  7764 ARQ16E
```

The following fields will be read-only upon profile creation:

### Backup Method

The backup method used for this profile. This field will contain a D for Db2 backup.

### Current generation

When you first create a profile, this field will be set to 00. After the profile has been built and submitted, this field will contain the generation that is currently mirroring Db2.

### Backup Generations

This number is determined by the number of backup versions defined in the DFSMSHsm backup storage group copy pool.

**Note:** If you have configured the SMS Copy Pool(s) for the Db2 data and logs to have a value of zero (0) in the **Replicate Backup Versions** option, Db2 Recovery Expert will also automatically set the **Backup Generations** field to zero (0). With this setting, a savable system backup copy is not created on disk. In order to have a copy of the system backup, you must offload the system backup copy to tape using the **Offload Options** field. The **Offload Options** field is described in the following step.

### Setup Needed

When you create a profile, this field will be set to Y. The profile setup process must be executed the first time a profile is built and the resulting job submitted. Once profile setup has been performed, this field will contain N when you update the profile. If you update a profile and change the volume configuration, number of generations, or backup scope, you must run the profile setup again and this field will be reset to Y.

### Issue Log Suspend

For Db2 backups, Db2 Recovery Expert automatically sets this field to N. The Db2 BACKUP SYSTEM utility ensures that the system backup is at a consistent recoverable point; log suspension is not needed.

### Incremental Generation

This field contains the generation status of the backup that will be produced on the next execution of the profile. The value Y indicates that the backup is incremental. A value of N indicates that the

backup is not incremental. When you first create a profile, this field is set to N. You can set this value to Y using the START-INCREMENTAL control card in the system backup job.

### Multiple Incremental

This field contains the generation status of the backup that will be produced on the next execution of the profile. The value Y indicates that the backup is multiple-incremental. A value of N indicates that multiple incremental backup has not been started. A value of E indicates that multiple incremental backup is in the process of completion. The current backup is non-incremental, but there is still at least one copy pool generation with incremental status. The value will remain E until all backup generations become non-incremental. When you first create a profile, this field is set to N. You can set this value to Y using the START-MULTI-INCREMENTAL control card in the system backup job. When you use the END-MULTI-INCREMENTAL control card, the status will change to E, and eventually N.

5. Specify the following fields:

### Backup Scope

Indicate if you want a full backup taken (both data and logs) or to back up data only. Note that if you specify data only and Db2 Recovery Expert detects log data on the volumes during the backup, the backup will proceed without error only if all Db2 log and data volumes have been included in the profile. In this case, the backup will be flagged as a “mixed data” backup and you will only be able to restore both the data and the logs.

### Offload Options

Enter Y in this field if you want to retain more backups than the number specified in the **Backup Generations** field. If you specify this option, Db2 Recovery Expert will offload older backups to another device (such as tape or other volumes). When you initially set this option to Y, the **Offload Options** screen will be displayed. You will use the **Offload Options** screen to set the options that will be used to offload the system backup. If you edit the profile at a later time and wish to update the offload options, type U in this field.

### Note:

- If Db2 Recovery Expert has set the **Backup Generations** field to zero (0) based on the value defined in the storage group copy pool, and you need to create a system backup on tape, you must set the **Offload Options** to Y.
- If you are planning on using a system level backup to recover a Db2 subsystem at a remote site using the Db2 Recovery Expert disaster recovery feature, you must set the **Offload Options** field for the system level backup to Y. This will offload the system level backup to tape so that it can be transported to the remote disaster recovery site.

### Validate Db2 volumes

If you enter Y in this field, every time the backup job is run Db2 Recovery Expert will determine what volumes the subsystem is using and ensure the volumes are included in the backup. The profile setup process will always validate volumes, among other profile setup procedures.

### Alt. Copy Pool

Specifies whether alternate copy pool options have been specified for this profile. In Db2 V12 and above, an alternate copy pool allows you to create system-level backups on different target volumes. A value of **Y** in this field specifies that alternate copy pool options have been specified. A value of **N** specifies that alternate copy pool options have not been specified. Type a **Y** or a **U** and press Enter to specify or update the alternate copy pool options. The **Specify Alternative Copy Pool Option** panel opens.

### Enable Obj Restore

If you want to enable Db2 Recovery Expert object level recovery from backups created by this profile, type Y in this field. During backup, Db2 Recovery Expert saves information about object data sets that allows objects to be individually restored later. See [Chapter 9, “Recovering database objects,”](#) on page 299 for more information of recovering objects.



## Override PARMLIB

If you want to override default settings defined in the Db2 Recovery Expert PARMLIB member, enter Y in this field. For more information about the Override PARMLIB Options, see [“Specifying PARMLIB override options”](#) on page 258.

6. Examine the source volume list that was created for the specified subsystem. Each source volume listed was detected by Db2 Recovery Expert to be in use by the specified Db2 subsystem. Db2 Recovery Expert obtains the volume mappings from your HSM configuration. All volumes associated with the SMS storage groups in use by Db2 will be listed. The target volumes from all the backup copy pool storage groups will also be listed and paired to source volumes. This panel shows what volumes will be backed up to which target volumes when the backup is executed. Volume mappings cannot be changed for this type of profile. Use the UP and DOWN commands (PF7 and PF8) to scroll through the list when there are more volumes than can be displayed on one panel. You should review any messages that appear in the **Message Area**.
7. When you have completed editing the profile, press PF3 to save your profile and exit.

## Specifying alternate copy pool options

You can specify alternate copy pool and backup storage groups to use when creating a system level backup.

**Note:** Alternate copy pool options must be defined to DFSMS and can only be used for Db2 V12 and above.

If you choose to use alternate copy pool options, Db2 Recovery Expert system backup and restore using the Db2 backup method is impacted as follows:

- For a system backup job operation, the BACKUP SYSTEM command is generated with the keywords ALTERNATE\_CP, DBBSG, and LGBSG using the values specified in the **Specify Alternative Copy Pool Option** panel and included in the system backup profile.
- During a system restore job, Db2 Recovery Expert will validate that the backup exists in the primary copy pool. If the backup cannot be found in the primary copy pool and an alternate copy pool has been specified in the System Backup Profile, then Db2 Recovery Expert will validate that the backup exists in the alternate copy pool.
- For a HSM OFFLOAD job, Db2 Recovery Expert will validate that the backup exists in the primary copy pool. If the backup cannot be found in the primary copy pool and an alternate copy pool has been specified in the System Backup Profile, then Db2 Recovery Expert will validate that the backup exists in the alternate copy pool. If the backup is found, then the FRBACKUP CP command is generated using the copy pool name where the backup was found.

1. Using SMS, create an alternate copy pool, a database copy pool backup, and the log copy pool backup.
2. From the **Update Backup Profile**, type a **Y** or a **U** in the **Alt. Copy Pool** field and press Enter. The **Specify Alternative Copy Pool Option** panel opens.

```
Specify Alternative Copy Pool Options
ARY$BPAC
Specify an alternate copy pool and backup storage groups.
Note: These values will only be used for Db2 V12 and about.

Alternate Copy Pool Name ==> _____ (1-14 characters)
Database Copy Pool Backup ==> _____ (1-8 characters)
Log Copy Pool Backup ==> _____ (1-8 characters)
```

3. Specify the name of the alternate copy pool that you created using SMS in the **Alternate Copy Pool Name** field.
4. Specify the database copy pool backup storage group that you created using SMS in the **Database Copy Pool Backup** field.
5. Specify the log copy pool backup storage group that you created using SMS in the **Log Copy Pool Backup** field.

6. Press PF3 to return to the **Update Backup Profile** panel.

## Creating a DFSMSdss backup profile

Db2 Recovery Expert can make backups using DFSMSdss. You might want to use DFSMSdss profiles if your site does not have fast replication hardware, or if your site's hardware does not support Snap or FlashCopy but supports other fast replication through DFSMSdss.

For DFSMSdss backups, the target volumes must be online when profile setup is run and when the backup is taken. In addition, all target volumes must have their own unique volume serial.

### Note:

- If fast replication is not used, the backup process may be lengthy depending on the number of volumes copied.
- If the storage array offers a fast replication utility, Db2 Recovery Expert can use the utility to create backups.

1. From the **Backup Profile Display** panel, specify C in the **Cmd** line and press Enter.

The **Enter Backup Profile Type** panel opens.

```
Enter Backup Profile Type
ARY$BPTP
Backup Profile Type   C  (S=System, C=Combined SLB)
```

2. Specify **S** in the **Backup Profile Type** field. Press Enter.

The **Enter New Backup Profile Options** window is displayed.

```
Enter New Backup Profile Options

Creator           TUSER
Profile Name      T9B1 - DFSMSDSS
Description
Db2 SSID          T9B1  (? for system list)
Backup Method     L  (Bcv/Snap/Flash/Db2/dfsmsdss(L))
Source/Target Mapping  A  (Auto discover/pool mapping,
                               Stogroup discover/pool mapping,
                               Manual)
Update Option     U  (Update, View only, No access)
```

3. Specify the fields on this window as follows:

#### Creator

This field is automatically filled with your user ID as the profile creator. To create the profile with a different user ID, type the new ID in this field.

#### Profile name

Type a name for the profile, up to 30 characters.

#### Description

*Optional:* Type in a profile description.

#### Db2 SSID

Specify the Db2 subsystem for the profile in this field. To view and select from a list of subsystems, enter a question mark (?) in the field and press Enter. The **SSID Selection** panel is displayed. This panel lists the available subsystems and indicates whether they are active or inactive. Select a subsystem by entering S next to the subsystem and pressing Enter.

## Backup Method

Enter L to specify DFSMSdss backup.

## Source/Target Mapping

This field specifies how the source volumes will be determined and how they will be mapped to the target volumes. Users can specify one of the following:

- Type A to specify **Auto discover/pool mapping**. If you select this option, the source volumes will be automatically discovered at run time and mapped to target volumes using a pool of target volumes (either units or SMS storage groups).
- Type S to specify **Stogroup discover/pool mapping**. If you select this option, the source volumes will be discovered using SMS storage groups that you specifically enter for a Db2 system and these source volumes will be mapped to target volumes using a pool of target volumes (either units or SMS storage groups).
- Type M to specify **Manual mapping**. If you select this option you will manually enter the source volumes and map them to target volumes.

## Update Option

This option controls how other users can use your profile. Specify the value U to allow others to update the profile. Specify the value V to allow others to view but not update the profile. Specify the value N to prevent others from viewing or updating the profile.

4. Press Enter.

The **Update Backup Profile** panel is displayed.

```
RCVYXPRT V3R2 ----- Update Backup Profile ----- 2021/01/13 00:21:31
Option ==> Scroll ==> CSR

      Commands: ? - Show all commands
Line Commands: I - Insert  D - Delete  X - Exclude  U - Undo from exclude

-----
Creator: TUSER      Name: T9B1 - DFSMSDSS      SSID: T9B1
Share Option: U (Upd,View,No)  Description:
----- Backup Options -----
Backup Method      ==> L (B/S/F/D/L)      Current Generation==> 00
Backup Scope       ==> F (Full/Data)      Setup Needed       ==> Y
Backup Generations==> 01 (01 - 99)      Issue Log Suspend ==> Y (Yes/No)
Offload Options    ==> N (Yes/No/Update)  Validate Db2 Vols ==> Y (Yes/No)
Source Stogroups   ==> N (Yes/No/Update)  Enable Obj Restore==> N (Yes/No)
Target Pool        ==> N (Yes/No/Update)  Incremental Generation ==> Y
Override PARMLIB   ==> N (Yes/No/Update)

----- Volume Inclusions/Exclusions ----- Row 1 of 1
      Source Dev   Src   Target
Cmd  Volumes Type  Unit Volumes  Message Area
I   PRESS ENTER FOR NEW LINE

***** Bottom of Data *****
```

The following fields will be read-only upon profile creation:

## Backup Method

The backup method used for this profile. This field will contain L for DFSMSdss backup.

## Current generation

When you first create a profile, this field will be set to 00. After the profile has been built and submitted, this field will contain the generation that is currently mirroring Db2.

## Setup Needed

When you create a profile, this field will be set to Y. The profile setup process must be executed the first time a profile is built and the resulting job submitted. Once profile setup has been performed, this field will contain N when you update the profile. If you update a profile and change the volume

configuration, number of generations, or backup scope, you must run the profile setup again and this field will be reset to Y.

### **Incremental Generation**

This field contains the generation status of the backup that will be produced on the next execution of the profile. The value Y indicates that the backup is incremental. A value of N indicates that the backup is not incremental. When you first create a profile, this field is set to N. You can set this value to Y using the START-INCREMENTAL keyword in the system backup job.

## 5. Specify the following fields:

### **Backup Scope**

Indicate if you want a full backup taken (both data and logs) or to back up data only. Note that if you specify data only and Db2 Recovery Expert detects log data on the volumes during the backup, the backup will proceed without error only if all Db2 log and data volumes have been included in the profile. In this case, the backup will be flagged as a “mixed data” backup and you will only be able to restore both the data and the logs.

### **Backup Generations**

Enter the number of generations of backups you want to keep. Valid values are 1 to 99.

### **Offload Options**

Enter Y in this field if you want to retain more backups than the number specified in the **Backup Generations** field. If you specify this option, Db2 Recovery Expert will offload older backups to another device (such as tape or other volumes). When you initially select this option, the Offload Options screen will be displayed. If you edit the profile at a later time and wish to update the offload options, type U in this field.

**Note:** If you are planning on using a system level backup to recover a Db2 subsystem at a remote site using the Db2 Recovery Expert disaster recovery feature, you must set the **Offload Options** field for the system level backup to Y. This will offload the system level backup to tape so that it can be transported to the remote disaster recovery site.

### **Source Stogroups**

This field only appears on this panel if the **Stogroup discover/pool mapping** option was selected when the profile was created (specify **S** in the **Source/Target Mapping** field from the **Enter New Backup Profile Options** panel.) Enter **Y** in this field to open the **Source Stogroup Selection** panel where you will enter all the source SMS storage groups associated with the Db2 subsystem. Enter **U** in this field to open the **Source Stogroup Selection** panel where you can edit the source SMS storage groups that have been associated with the Db2 subsystem.

### **Target Pool**

This field only appears on this panel if one of the auto mapping options was selected when the profile was created (specify **S** for **Stogroup discover/pool mapping** or **A** for **Auto discover/pool mapping** in the **Target Mapping** field from the **Enter New Backup Profile Options** panel.) Enter **Y** in this field to open the Target Pool Selection panel where you will enter a range of target volumes or a list of storage groups to use for backup volumes. The target volumes that you enter will be selected from at the time of the backup. You can enter a **U** to open the Target Pool Selection window and edit the target volumes or storage groups that have been specified.

### **Issue Log Suspend**

Specify whether you want Db2 Recovery Expert to stop all logging activity on the subsystem while the backup is made. For DFSMSdss backups, log suspension is required; Db2 Recovery Expert automatically sets this field to Y.

### **Validate Db2 volumes**

If you enter Y in this field, every time the backup job is run Db2 Recovery Expert will determine what volumes the subsystem is using and ensure the volumes are included in the backup. The profile setup process will always validate volumes, among other profile setup procedures.

### **Enable Obj Restore**

If you want to enable Db2 Recovery Expert's object level recovery from backups created by this profile, type Y in this field. During backup, Db2 Recovery Expert saves information about object data sets that allows objects to be individually restored later. For more information about object level recovery, see [Chapter 9, “Recovering database objects ,” on page 299.](#)

### Override PARMLIB

If you want to override default settings defined in the Db2 Recovery Expert PARMLIB member, enter Y in this field. For more information about the Override PARMLIB Options, see [“Specifying PARMLIB override options”](#) on page 258.

6. Create the source and target volume mappings.

The procedure depends on whether you selected the auto mapping or manual mapping method.

## Discovering source volumes using SMS storage groups

When creating an IBM FlashCopy, EMC SNAP, or DFSMSdss backup profile, you can specify that the source volumes will be discovered automatically using SMS storage groups that are specifically entered for the Db2 system.

You will use the **Source Stogroup Selection** panel to enter each SMS storage group associated with the Db2 system for which you are creating a system backup.

1. Specify S to select the auto mapping option **Stogroup discover/pool mapping** from the **Enter New Backup Profile Options** panel. Press Enter.

The **Source Stogroups** field is displayed on the **Update Backup Profile** panel.

2. Enter **Y** or **U** in the **Source Stogroups** field. The **Update Backup Profile** panel opens.

The **Target Pool Selection** panel is displayed.

```
RCVYXPRT V3R2 ----- Source Stogroup Selection ----- 2021/01/08 12:38:31
Option ==>
                                     Scroll ==> PAGE

Line Commands: I - Enter  D - Delete

-----
Creator: TUSER      Name: AUTOMAP SOURCE STOGRUP      SSID: S99Z
Share Option: U    (Upd,View,No)  Description:

----- Enter Storage Groups -----

Cmd  Stogroup
--  -----
--  -----
--  -----

***** Bottom of Data *****
```

3. To specify a new storage group type the **I** line command in the blank **Cmd** line.

4. Specify the name of the SMS storage group in the **Stogroup** field.

5. When you have entered all SMS storage groups for the Db2 system, press PF3.

The **Update Backup Profile** panel is displayed. The **Source Stogroups** field contains a Y.

6. You can update the SMS source storage groups at any time by entering U in the **Source Stogroups** field of the **Update Backup Profile** panel and pressing Enter. The **Source Stogroup Selection** panel opens. In the **Cmd** field you can type the I line command to add a new storage group or the D line command to delete a storage group.

7. You can delete SMS storage groups that you have specified using the **D** line command in the **Source Stogroup Selection** panel. Type the **D** line command in the **Cmd** field next to the storage group that you want to delete.

## Using auto mapping for target volumes

When creating an IBM FlashCopy, EMC SNAP, or DFSMSdss backup profile, you can provide a target range of volumes and then allow Db2 Recovery Expert to automatically map the target volumes to source volumes during profile setup.

Once a profile is created using one of the auto mapping options, you cannot change the profile to manual mapping; you must recreate the profile and specify manual mapping.

1. Select one of the auto mapping options (specify **A** for **Auto discover/pool mapping** or **S** for **Stogroup discover/pool mapping**) from the **Enter New Backup Profile Options** panel. Press Enter.

The **Target Pool** field is displayed on the **Update Backup Profile** panel.

2. Enter **Y** or **U** in the **Target Pool** field and press Enter.

The **Target Pool Selection** panel is displayed.

```
RCVYXPRT V3R2 ----- Target Pool Selection ----- 2021/01/08 12:38:31
Option ==>                                         Scroll ==> PAGE

Line Commands: I - Enter  D - Delete

-----
Creator: TUSER      Name: S99Z SNAP BACKUP          SSID: S99Z
Share Option: U    (Upd,View,No)  Description:
-----
----- Target Range Options -----

Enter by Unit or Stogroup ==> U (Unit/Stogroup)

----- Enter Target Ranges ----- Row 1 of 1
  Start  End
Cmd Unit  Unit

***** Bottom of Data *****
```

3. Specify how you will enter the target ranges.

Enter **S** to enter by SMS storage group. Note that if you specify storage groups, all volumes that are in the storage group must be online, both during profile setup and when the backup is run. Enter **U** to enter the ranges by unit (unit control block). Either **U** or **S** must be selected; a combination is not allowed. If you change this field, target information entered previously will be deleted.

### Note:

- For SNAP and FlashCopy profiles, if you enter target ranges by unit, the target units are required to be offline during profile setup and execution. For DFSMSdss profiles, target units must be online during profile setup and backup execution.
- Once profile setup has been successfully run on the profile, the **Enter by Unit or Stogroup** field in the profile will become read-only and cannot be changed.

4. Enter the target units or storage groups in the **Enter Target Ranges** area. You can delete and insert target ranges by using the D and I line commands.

- If entering by units, the **Start Unit** is the starting UCB address that will be used as a target and the **End Unit** is the ending UCB address that will be used as a target. These fields can only contain valid hexadecimal characters.

**Note:** Db2 Recovery Expert will attempt to make use of all devices in the specified range. If there are specific devices that you do not want included in the target pool, you must enter multiple ranges that omit the volumes you want to exclude.

- If entering by SMS storage groups, enter the SMS storage groups. Each SMS storage group will be checked to see if it exists. If it does not exist, a message will be displayed. If after the message is displayed you press Enter again, the SMS storage group will be accepted, but you must make sure that the SMS storage group is created before the backup is executed.

5. When you have entered all target ranges, press PF3.

The Update Backup Profile panel is displayed. The **Target Pool** field now contains Y. To update target ranges, enter U in the **Target Pool** field and press Enter. You can also include or exclude source volumes using the line commands on the **Update Backup Profile** panel.

6. When you have completed volume mapping, press PF3 to save your profile and exit.

## Using manual mapping for target volumes

If you specify manual mapping, you match each source volume with a specific target volume in the profile.

When manual mapping has been specified, you must enter each source and target volume on the **Update Backup Profile** panel. Once a profile is created using manual mapping, you cannot change the profile to auto mapping; you must recreate the profile and specify auto mapping.

**Note:** For SNAP and FlashCopy profiles, if you enter target ranges by unit, the target units are required to be offline during profile setup and execution. For DFSMSDss profiles, target units must be online during profile setup and backup execution.

1. Determine the source volumes for the specified subsystem. You can do this in several ways:

- To build a list of all Db2 source volumes for the SSID, enter **VOLUME** in the **Option** line on the **Update Backup Profile** panel. When you press Enter, Db2 Recovery Expert determines the volumes that are being used by the specified Db2 subsystem. When the scan is complete, the comprehensive list of volumes is displayed in the scrollable **Volume Mappings** area.

```
RCVYXPRT V3R2 ----- Update Backup Profile ----- 2021/01/08 12:01:18
Option ==>                                           Scroll ==> PAGE

      Commands: ? - Show all commands
Line Commands: I - Insert  D - Delete  X - Exclude  U - Undo from exclude

-----
Creator: TUSER      Name: SS9Z SNAP BACKUP      SSID: SS9Z
Share Option: U (Upd,View,No)  Description:
----- Backup Options -----
Backup Method      ==> S (B/S/F/D/L)      Current Generation==> 00
Backup Scope       ==> F (Full/Data)      Setup Needed      ==> Y
Backup Generations==> 01 (01 - 99)      Issue Log Suspend==> N (Yes/No)
Offload Options    ==> N (Yes/No/Update)  Validate Db2 Vols==> Y (Yes/No)
                                           Enable Obj Restore==> N (Yes/No)
----- Volume Mappings ----- Row 1 of 16  +
  Source  Dev   Src  Target
Cmd Volumes Type Unit Units  Message Area
  ARQ160 3390-1 7760
  ARQ161 3390-1 7761
  ARQ162 3390-1 7762
  ARQ163 3390-1 7763
  ARQ164 3390-1 7764
```

Each volume listed was detected by Db2 Recovery Expert to be in use by the specified Db2 subsystem. Use the **UP** and **DOWN** commands (PF7 and PF8) to scroll through the list when there are more volumes than can be displayed on one panel. You should review any messages that appear in the **Message Area**.

- To enter a range of Db2 source volumes, enter **SOURCE** in the **Option** line. When you press Enter, the **Enter a Source Range** window is displayed.

```
Enter a Source Range

Beginning Source Range 7500
Ending Source Range    7800
```

Enter a beginning and ending range of source units. When you press Enter, Db2 Recovery Expert scans the source volumes in the supplied range and determines if the volumes can be used. A volume list appears on the **Update Backup Profile** panel if the source scan is successful. If an error occurs, review the error message. You should also review any informational messages that appear in the **Message Area**. Use the **UP** and **DOWN** commands (PF7 and PF8) to scroll through the list when there are more volumes than can be displayed on one panel.

- You can manually input source volumes using the **I** line command and entering the source volume in the **Source Volumes** column.

To clear all source (and target) mappings from the profile, enter the **CLEAR** command in the **Option** line.

2. Enter one or more target volume(s) for each source volume.

You can enter target units for each source volume in several ways:

- Next to each source volume, enter corresponding target unit(s) in the **Target Units** area. The target units must reside on the same array as the paired source volumes.
- You can enter **TGTSEL** in the **Option** line. The **Enter Target Selection Range** window is displayed.

```

Enter Target Selection Range

Beginning Target Range  7700
Ending Target Range    7800
  
```

Enter a beginning and ending range of target units. When you press Enter, a list of target volumes in the specified range is displayed:

```

RCVYXPRT V3R2 ----- Target Selection ----- 2021/01/08 12:12:24
Option ==>                                     Scroll ==> PAGE

Line Commands: S - Select  B - Block select

----- Selection Criteria -----

CUU: *          SYM#: *          BCV Only: N          Volser: *
Enter by Generation      N

----- Row 1 of 257  +>
Cmd  CUU  SYM#  BCV  Volser  DevType  Status  Paired Relationships
7700 0962  No   ARQ100  3390-1
7701 0963  No   ARQ101  3390-1
7702 0964  No   ARQ102  3390-1
7703 0965  No   ARQ103  3390-1
7704 0966  No   ARQ104  3390-1
7705 0967  No   ARQ105  3390-1
7706 0968  No   ARQ106  3390-1
7707 0969  No   ARQ107  3390-1
7708 096A  No   ARQ108  3390-1
7709 096B  No   ARQ109  3390-1
770A 096C  No   ARQ10A  3390-1
  
```

The selection fields at the top of the panel allow you to limit the list of volumes displayed.

**CUU**

Enter a UCB name or mask to further limit the displayed list.

**SYM#**

If the volumes are on a Symmetrix array, you can enter a Symmetrix name or mask to further limit the displayed list.

**BCV Only**

Enter Y in this field to limit the list to only BCVs.

**Volser**

Enter a volume serial name or mask to further limit the displayed list.



### Enter by generation

The **Enter by Generation** field determines how the target unit fields are populated once you have made your target selections. If you enter N in the **Enter by Generation** field, volumes are assigned sequentially as follows:

```
Volume 1 - target unit 1
           target unit 2
Volume 2 - target unit 3
           target unit 4
```

If you enter Y in the **Enter by Generation** field, volumes are assigned as follows:

```
Volume 1 - target unit 1
           target unit 3
Volume 2 - target unit 2
           target unit 4
```

The following fields are on this panel:

#### CUU

The UCB of the target unit.

#### SYM#

The Symmetrix number of the target unit.

#### BCV

This column contains Y if the unit is a BCV, and N if the target unit is not a BCV.

#### Volser

The volume serial number associated with this target unit, if any.

#### DevType

The volume's device type.

#### Status

If the unit is a BCV, this field may contain the status of the target unit. NEVER indicates the target unit has never been paired in a BCV relationship. ESTAB indicates the target unit is currently established to a source unit.

#### Paired Relationships

This field contains information on any pairings that may be established for this target unit. If this target unit is paired with any source volume, the pairings are displayed in a comma separated list as AAAA-BBBB-CCCCC, where AAAA is the CUU number, BBBB is the SYM number, and CCCCC is the volume serial number, if one exists; if not \*\*\*\*\* is displayed.

To select a target unit, enter **S** in the line command area next to the target. To block select, place a **B** in the first target unit and the last target unit to be selected. When you have finished selecting target units, press PF3.

- You can enter **TARGET** in the **Option** line. The **Enter a Target Range** window is displayed.

```
Enter a Target Range
Beginning Target Range 7500
Ending Target Range    7600
Enter by Generation    N
```

Enter a beginning and ending range of target units. The **Enter by Generation** field determines how the target unit fields are populated. If you enter **N** in the **Enter by Generation** field, Db2 Recovery Expert assigns volumes sequentially as follows:

```
Volume 1 - target unit 1
           target unit 2
Volume 2 - target unit 3
           target unit 4
```

If you enter **Y** in the **Enter by Generation** field, Db2 Recovery Expert assigns volumes as follows:

```
Volume 1 - target unit 1
           target unit 3
Volume 2 - target unit 2
           target unit 4
```

When you press Enter, the target units are mapped. If an error occurs, review the message in the **Message Area**. If no target appears in the **Target Units** field, no target unit in the specified range could be matched to a source volume. The target and source cannot be matched if the target and source are on different Symmetrix arrays.

Successful results of the **TARGET** command are shown in the following example:

```
RCVYXPRT V3R2 ----- Update Backup Profile ----- 2021/01/08 12:23:02
Option ==> Scroll ==> PAGE

      Commands: ? - Show all commands
Line Commands: I - Insert D - Delete X - Exclude U - Undo from exclude

-----
Creator: TUSER      Name: SS9Z SNAP BACKUP      SSID: SS9Z
Share Option: U (Upd,View,No)  Description:
----- Backup Options -----
Backup Method => S (B/S/F/D/L)      Current Generation=> 00
Backup Scope  => F (Full/Data)      Setup Needed      => Y
Backup Generations=> 01(01 - 99)    Issue Log Suspend => N (Yes/No)
Offload Options => N (Yes/No/Update) Validate Db2 Vols => Y (Yes/No)
                                           Enable Obj Restore=> N (Yes/No)
----- Volume Mappings ----- Row 1 of 16 +
  Source  Dev   Src  Target
Cmd Volumes Type Unit Units  Message Area
  ARQ160 3390-1 7760 7700
  ARQ161 3390-1 7761 7701
  ARQ162 3390-1 7762 7702
  ARQ163 3390-1 7763 7703
  ARQ164 3390-1 7764 7704
```

3. You can modify the source/target volume mappings by doing any of the following:

- If you want to enter additional mappings (a source volume and its related target units), enter **I** in the line command area. To delete a mapping, enter **D** in the line command area.
- To exclude a volume, enter **X** in the line command area next to a volume. If you exclude a volume, Db2 Recovery Expert will not include the volume in the backup. The resulting backup will be tagged as a partial backup, which cannot be used for a system restore. However, a partial backup may be used to restore individual objects if you have enabled the object restore function. To undo an excluded volume, enter **U** in the line command area.
- To clear all target units from the mappings in the profile, enter the **TGTCLR** command in the **Option** line. To clear all source and target mappings from the profile, enter the **CLEAR** command in the **Option** line.
- To display more volume mappings, you can toggle the header fields on and off by entering the **HEADER** command in the **Option** line.
- To save the information you entered without ending your edit session, enter the **SAVE** command in the **Option** line.

4. When you have completed volume mapping, press PF3 to save your profile and exit.

## About offload options

Db2 Recovery Expert allows you to offload backups to tape (or another disk location if you choose). You can define various options for offloads depending on the backup method selected. When you build a backup profile and set the **Perform Offload** field to Y, Db2 Recovery Expert offloads the backup per your specifications when the job is run. You specify how many generations of backups you want to keep. Db2 Recovery Expert “rolls off” the oldest copy if required.

## Setting offload options for IBM FlashCopy, EMC SNAP, EMC BCV, and DFSMSdss backups

When offloading backups to tape (or another disk location if you choose) for IBM FlashCopy, EMC BCV, EMC SNAP, and DFSMSdss backups, you can specify the backup destination, data set naming conventions, and other options to meet your site's needs.

Offload options are set in each backup profile.

**Note:** If you enter offload options and later change the **Offload Options** field to N, the offload options all will be reset to their defaults.

1. The first time you create a profile, specify Y in the Offload Options field in the Update Backup Profile panel and press Enter. When you later edit a profile, enter U in the Offload Options field and press Enter.

In either case the **Offload Options** panel opens:

```
RCVYXPRT V3R2 ----- Offload Options ----- 2021/01/13 01:04:41
Option ==>
-----
Creator: TUSER      Name: T9B1 - DFSMSDSS      SSID: T9B1
Share Option: U    (Upd,View,No)  Description:
-----
Enter the Offload options to associate with this Backup profile:

Local Primary          ==> N  (Yes/No/Update)
Local Backup           ==> N  (Yes/No/Update)
Recovery Site Primary  ==> N  (Yes/No/Update)
Recovery Site Backup   ==> N  (Yes/No/Update)

Offload Generations    ==> 01  (1 - 99)
Delete Aged Backup files ==> Y  (Yes/No)
Compress Data          ==> N  (Yes/No)
Data Mover             ==> D  (Dfmsdss, Fdr, or fdrInstant)
Encrypt Data           ==> N  (Yes/No/Update)
Number of Tasks        ==> 02  (1 - 99)

Use Multiple Jobs      ==> N  (Yes/No/
Update)
```

The header fields **Creator**, **Name**, **SSID**, **Share Option**, and **Description** that identify the profile are read-only.

2. Specify the following fields:

### Local Primary/Local Backup/Recovery Site Primary/Recovery Site Backup

To specify the backup type, enter Y in the appropriate field. At least one of the backup copy types is required. Initially, after you select the backup type and press Enter, the Offload Options screen appears for the selected backup type.

**Note:** You must specify a backup type of Y for **Remote Site Primary** and optionally for **Remote Site Backup** if you are planning on recovering a Db2 subsystem at a remote site using the Db2 Recovery Expert disaster recovery feature.

### Offload Generations

Specify how many offline backups will be kept. Note that the number of offline generations retained is not related to the number of backup generations specified on the Update Backup Profile panel.

### Delete Aged Backup Files

If you enter Y in this field, when the oldest generation of the backup is rolled off, Db2 Recovery Expert will physically delete the backup data sets for the rolled-off generation.

### Compress Data

If you enter Y in this field, the data mover utility will compress the data when it is copied.

### Data Mover

Specify which program Db2 Recovery Expert should use to move the offline backup:

- D for DFSMSdss
- F for FDR
- I for FDRINSTANT.

### Encrypt Data

Enter Y to have the data encrypted when it is offloaded. Refer to [“About data encryption” on page 256](#) for information about using data encryption. After you have set encryption options the first time, to edit them enter U in this field, or enter N to not encrypt data during the offload.

### Number of tasks

Specify the number of subtasks that Db2 Recovery Expert is to use when offloading the backups. All backup types (LP, LB, RP, RB) are done simultaneously, so if you specify four backups to offload and specify one task, four tape drives will be required.

**Note:** Set the number of tasks to 1 when using FDR-type offload and encryption.

### Use Multiple Jobs

Specify whether you want to use multiple jobs for the offload process. Using multiple jobs can reduce the time it takes to perform the offload. Specify Y if you want to use multiple jobs. After pressing Enter, the **Multijob Options** panel opens. In the **Multijob Options** panel you specify the LPARS and job name prefix for the multiple jobs. Specify N to use a single job for the offload process. Specify U to update the multiple job options that are used to create the multiple offload jobs. For more information on specifying the multiple job options see [“Specifying offload multijob options” on page 248](#).

## Specifying offload multijob options

The offload multijob options are used to specify the LPARS where the multiple offload jobs are run and to specify a prefix that is used when generating the names for the multiple jobs.

The following considerations apply when specifying the LPARS where the offload jobs are run:

- To allow for workload balancing you can specify the same LPAR more than once in the LPAR list. For example, you might specify in the LPAR list:
    - LPAR1
    - LPAR2
    - LPAR3
    - LPAR1
  - When defining the LPAR list, you will need to consider the total number of tape drives that are available to each LPAR and the total number of tape drives that are required for processing if the maximum number of jobs are submitted to complete the offload. To calculate the maximum number of tape drives you multiply the maximum number of jobs by the maximum number of tasks for each LPAR, and then add all the values. In the Multijob Options panel example, the maximum number of jobs is 8 (2x2+2x2).
  - The main job that controls the distribution of the multiple jobs to the specified LPARs will also control the distribution of the volumes required for the recovery.
  - The JCL JOB statement TIME and NOTIFY parameters are passed from the main job to spawned jobs. If either parameter is not present in the main job, it will not be in the spawned jobs, either.
1. From the **Offload Options** panel specify Y or U in the **Use Multiple Jobs** field. Press Enter. The **Multijob Options** panel opens.

The following is an example of the **Multijob Options** panel:

```

RCVYXPRT V3R2 ----- Multijob Options ----- 2021/01/13 01:04:41
Option ==>
-----
Creator: TUSER      Name: T9B1 - DFSMSDSS      SSID: T9B1
Share Option: U    (Upd,View,No)  Description:
-----
Enter the options for performing offload and restore processing:

Multijob Prefix ==> TSMXDX (1-6 character job prefix)

Multijob LPAR list:
LPAR Name      Max Jobs (1-99)      Max Tasks (1-8)
RS22           02                  02
RS23           02                  02

```

2. In the **Multijob Prefix** field specify a 1 to 6 character prefix to use when generating the job name for each of the multiple jobs. Each job name begins with this prefix and is followed by a number from 01-99. If this value is not specified, then the prefix is taken from the first 6 characters of the main job's name. The first character specified for the **Multijob Prefix** option must begin with either an alphabetic character or a national symbol (#, @, or \$) so that when the job name is generated it will be a valid z/OS job name.
3. In the **Multijob LPAR list** field specify up to four LPARs where the multiple jobs can run. Specify the following for each LPAR:
  - a) Specify the LPAR name in the **LPAR Name** field. The LPAR name can be from 1 to 8 characters. You can specify a single asterisk (\*) to indicate that all the jobs are to be run on the same LPAR as the main job.
  - b) Specify a 2 digit number from 01-99 in the **Max Jobs** field. This number indicates the maximum number of jobs that can be submitted to run on the LPAR. The main job will submit jobs to the specified LPAR until this limit is reached. When this limit is reached, if more jobs are needed, the main job will move to the next LPAR list entry. The default value is 4.
  - c) Specify a 2 digit number from 01-8 in the **Max Tasks** field. This number specifies the maximum number of tasks that can be created in each multijob. When the multijob is submitted, it will create as many tasks as are needed, up to this limit, to perform the offload processing. The default value is 4.
4. Press Enter. The Multijob options are saved. You will have another opportunity to modify these options when you build the offload job.

## Setting offload options for Db2 backups

For Db2 backups, you can specify that HSM is used to offload the backups, or allow Db2 Recovery Expert to perform the offload. You can define options for the offloads, such as the dump class, backup destination, data set naming conventions, and other options, to meet your site's needs.

Offload options are set in each backup profile.

**Note:** If you enter offload options and later change the **Offload Options** field to N, the offload options all will be reset to their defaults.

1. The first time you create a profile, on the **Update Backup Profile** panel specify Y in the **Offload Options** field and press Enter. (When you later edit a profile, specify U in the **Offload Options** field and press Enter).

The **Choose Offload Method** panel is displayed.

### Choose Offload Method

Choose the method you wish to use to offload your system backups. Note: HSM dump classes must be properly configured outside of ARY when choosing HSM.

Choose offload method ==> A (H)SM or (A)RY

Press ENTER to process or PF3 to Cancel

2. Select the method you want to use to offload the Db2 backups.

#### H

Specify H to allow HSM to offload the backups. You will need to specify HSM dump classes. When you press Enter, the **Db2 Offload Options** panel is displayed where you can enter the dump classes.

```
RCVYXPRT V3R2 ----- Db2 Offload Options ----- 2021/01/13 01:09:16
Option  ==>
-----
Creator: TUSER      Name: T9B1 - Db2      SSID: T9B1
Share Option: U    (Upd,View,No)  Description:
-----

Enter the Offload options to associate with this Backup profile:

Offload Generations      ==> 01      (00 - 99)

Local Primary Dump Class ==>
Local Backup Dump Class  ==>
Remote Primary Dump Class ==>
Remote Backup Dump Class ==>
```

With HSM offload, you can create only one tape copy for each DFSMSHsm dump class. To process offload for different backup copy types, specify a unique dump class for each copy.

Specify the following fields:

#### **Offload Generations:**

Specify how many offline backups will be kept. Note that the number of offline generations retained is not related to the number of backup generations specified on the **Update Backup Profile** panel. Valid values are 1 to 99.

#### **Local Primary Dump Class**

Specify the HSM dump class to use for dump processing. This field may contain 1-8 alphanumeric characters.

#### **Local Backup Dump Class**

Specify the HSM dump class to use for dump processing. This field may contain 1-8 alphanumeric characters.

#### **Remote Primary Dump Class**

Specify the HSM dump class to use for dump processing. This field may contain 1-8 alphanumeric characters.

#### **Remote Backup Dump Class**

Specify the HSM dump class to use for dump processing. This field may contain 1-8 alphanumeric characters.

**Note:** You must specify at least one HSM dump class field. However, you can override the specified dump class using the DUMPC keywords in the offload step of the system backup job. For more information, see [“Adding keywords to the system backup offload job step” on page 273](#).

## A

Enter A to allow ARY to offload the backups.

When you press Enter, the **Offload Options** window is displayed.

```
RCVYXPRT V3R2 ----- Offload Options ----- 2021/01/13 1:12:18
Option  ==>
-----
Creator: TUSER      Name: T9B1 - Db2      SSID: T9B1
Share Option: U    (Upd,View,No)  Description:
-----
Enter the Offload options to associate with this Backup profile:

Local Primary      ==> N (Yes/No/Update)
Local Backup       ==> N (Yes/No/Update)
Recovery Site Primary ==> N (Yes/No/Update)
Recovery Site Backup ==> N (Yes/No/Update)

Offload Generations ==> 01 (1 - 99)
Delete Aged Backup files ==> Y (Yes/No)
Compress Data      ==> N (Yes/No)
Data Mover         ==> D (Dfmsdss, Fdr, or fdrInstant)
Encrypt Data       ==> N (Yes/No/Update)
Number of Tasks    ==> 02 (1 - 99)
```

The header fields **Creator**, **Name**, **SSID**, **Share Option**, and **Description** that identify the profile are read-only. Specify the following fields:

### Local Primary

### Local Backup

### Recovery Site Primary

### Recovery Site Backup

To specify the backup type, enter Y in the appropriate field. At least one of the backup copy types is required. Initially, after you select the backup type and press Enter, the **Offload Options** screen appears for the selected backup type.

**Note:** You must specify a backup type of Y for **Remote Site Primary** and optionally for **Remote Site Backup** if you are planning on recovering a Db2 subsystem at a remote site using the Db2 Recovery Expert disaster recovery feature.

### Offload Generations

Specify how many offline backups will be kept. Note that the number of offline generations retained is not related to the number of backup generations specified on the Update Backup Profile panel.

### Delete Aged Backup Files

If you enter Y in this field, when the oldest generation of the backup is rolled off, Db2 Recovery Expert will physically delete the backup data sets for the rolled-off generation.

### Compress Data

If you enter Y in this field, Db2 Recovery Expert will instruct the data mover utility to compress the data when it is copied.

### Data Mover

Specify which program Db2 Recovery Expert should use to move the offline backup: D for DFMSDSS, F for FDR, or I for FDRINSTANT.

### Encrypt Data

Enter Y to have the data encrypted when it is offloaded. Refer to “About data encryption” on page 256 for information about using data encryption. After you have set encryption options the first time, to edit them enter U in this field, or enter N to not encrypt data during the offload.

### Number of tasks

Specify the number of subtasks that Db2 Recovery Expert is to use when offloading the backups. All backup types (LP, LB, RP, RB) are done simultaneously, so if you specify four backups to offload and specify one task, four tape drives will be required.

**Note:** Set the number of tasks to 1 when using FDR-type offload and encryption.

## Setting data set options

If you plan to allow Db2 Recovery Expert to offload backups, you must set data set names and other specifications for the offloaded data sets.

1. From the **Offload Options** panel, specify Y in the appropriate backup type field (**Local Primary**, **Local Backup**, **Recovery Site Primary**, or **Recovery Site Backup**). (When you later edit a profile, enter U in the backup type field).

When you press Enter, the **Offload Options** panel for the backup type opens:

```
RCVYXPRT V3R2 ----- LP Offload Options ----- 2021/01/13 01:14:20
Option  ==>
-----
Creator: TUSER      Name: T9B1 - Db2      SSID: T9B1
Share Option: U    (Upd,View,No)  Description:
-----
Update DSN Specification => Y      (Yes/No)
Unit Type              =>          (CART/SYSALLDA/etc.)
Catalog                => Y      (Yes/No)
Data Class              =>          (8 character class)
Storage Class          =>          (8 character class)
Management Class       =>          (8 character class)
Maximum Tapes          => 005     (1-256)
Tape specific parameters (only needed if Unit Type is a Tape device):
Stack Backups on Tape  => Y      (Yes/No)
Tape Stack Limit       => 005     (1 - 999)
Expiration date *or*   =>          (YYYYDDD/YYDDD)
```

The header fields **Creator**, **Name**, **SSID**, **Share Option**, and **Description** that identify the profile are read-only.

2. You can specify one or more of the following fields:

#### Update DSN specification

Specify Y in this field to specify or update the copy data set name template.

#### Unit Type

Type in a valid UNIT where the data set(s) will be written.

#### Catalog

Type Y to catalog the data sets. Type N to not catalog the data sets.

#### Data Class

If your site uses SMS to manage data sets, type in the SMS data class.

#### Storage Class

If your site uses SMS to manage data sets, type in the SMS storage class.

#### Management Class

If your site uses SMS to manage data sets, type in the SMS management class.

#### Stack Backups on Tape

Indicate whether you want to stack backups on a single tape when possible.

#### Tape Stack Limit

If stacking backups, enter the number of volumes that you want Db2 Recovery Expert to stack on one tape before dismounting the tape.



## Expiration date \*or\* Retention period

If the unit type specified in the **Unit Type** field is a tape device, enter either the tape expiration date in **YYYYDDD** format, or the tape retention period in number of days.

## Specifying data set naming conventions

You can use the Db2 Recovery Expert **Offload DSN Specification** screens to construct data set names for the offloaded backups.

The **Offload DSN Specification** screen allows you to build data set names using variables that are resolved at run time.

1. Specify Y in an **Update DSN Specification** field. The Offload DSN Specification window for the offload type opens.

```
RCVYXPRT V3R2 ----- LP Offload DSN Specification ----- 2021/01/13 01:17:27
Option   ==>
```

```
-----
Creator: TUSER      Name: T9B1 - Db2                      SSID: T9B1
Share Option: U    (Upd,View,No)  Description:
-----
```

Enter codes to create a dataset name specification:

```
Qualifier code ==>   Free form literal ==>           Show DSN ==> N
```

Current dataset name qualifier string:

Valid dataset name specification codes are:

1. Volser	9. Day (DD)	17. Backup Type (#18.#19)
2. Vcatname	10. Julian Day (DDD)	18. Local/Recovery (L/R)
3. Subsystem ID	11. Hours (HH)	19. Primary/Backup (P/B)
4. User ID	12. Minutes (MM)	20. Job Name
5. Time (HHMMSS)	13. Seconds (SS)	21. Step Name
6. Date (YYYYDDD)	14. Timestamp	22. Profile Creator
7. Year (YYYY)	15. Random Number	23. Profile Name
8. Month (MM)	16. GDG (+1)..(+n)	24. Substring Qualifier
		25. Use freeform literal

2. In the following fields specify codes that will be used to create a data set name:

### Qualifier code

To include a qualifier, type its number in the **Qualifier code** field and press Enter. The qualifier string appears in the **Current dataset name generation qualifier string** field. You can also type the data set name or string directly in the string field.

### Free form literal

After selecting the **Use Freeform literal qualifier**, you can enter an eight-character literal in this field. If you want the literal to be in its own substring, make sure to begin the literal with a period.

### Show DSN

To view the string as it would be completed, enter Y in this field and press Enter.

### Current dataset name generation qualifier string

This field displays the qualifier string as it was input.

3. Valid qualifiers for the data set names that you can use on the **Offload DSN Specification** screen are listed on the bottom half of the screen. You can use one or more of the following fields:

### Volser

The volume serial of the data set.

### Vcatname

The volume catalog name.

### Subsystem ID

The Db2 subsystem ID.

### User ID

The TSO user ID of the job builder.

**Time (HHMMSS)**

The current time in the format shown.

**Date (YYYYDDD)**

The current date in the format shown.

**Year (YYYY)**

The year in the format shown.

**Month (MM)**

The month in the format shown.

**Day (DD)**

The day of the month in the format shown.

**Julian Day (DDD)**

The Julian day.

**Hours (HH)**

The current time in hours.

**Minutes (MM)**

The current time in minutes.

**Seconds (SS)**

The current time in seconds.

**Timestamp**

The current timestamp, in format *yymmdd.hhmmss*.

**Random Number**

A random number in format *Rnnnnnn*.

**GDG (+1)..(+n)**

If you are using GDG data sets, this variable appends (+n) to the GDG base. This must be the last qualifier code you specify for the data set name.

**Backup Type (#18.#19)**

The backup type. The format is x.y, where x is L for local or R for recovery and y is P for primary or B for backup.

**Local/Recovery (L/R)**

The backup type; L is used for local and R for recovery.

**Primary/Backup (P/B)**

The image copy backup type; P is used for primary and B for backup.

**Job Name**

The job name.

**Step Name**

The job step name.

**Profile Creator**

The profile creator ID.

**Profile Name**

The profile name.

**Substring Qualifier**

Select this option to specify one of the qualifiers and customize the substring. When you press Enter, the substring parameters window appears.

**Use freeform literal**

After selecting this qualifier, you can enter an eight-character literal in the Free Form literal field. If you want the literal to be in its own substring, make sure to begin the literal with a period. For example, if you enter 1 (Volser), 3 (Subsystem ID), then 14 (Timestamp), the data set name appears as:

```
volser.ssid.D070104.T151509
```

where *volser* and *ssid* resolve to values appropriate to your site.

## Using the substring function

Use the Substring Qualifier function to customize substring parameters.

When you choose the **Substring Qualifier** data set name specification code, the Substring Parameters window is displayed.

```
Substring Parameters

Enter the Qualifier Code ==>
Enter Starting Position ==>
Enter Substring Length ==>

Press ENTER or PF3 to continue
```

You can choose to enter almost any of the qualifier codes and specify the string's starting position and length. For example, qualifier code 3 generates a string of "&SSID", a four-character subsystem name. However, if your site uses three-character SSIDs, option 24 can be used to specify the SSID and customize the string length, as follows:

```
Substring Parameters

Enter the Qualifier Code ==> 3
Enter Starting Position ==> 1
Enter Substring Length ==> 3

Press ENTER or PF3 to continue
```

An example of the result is shown in the following screen:

```
RCVYXPRT V3R2 ---- LP Offload DSN Specification --- 2021/01/13 01:23:28
Option ==>
-----
Creator: TUSER      Name: FLASH BACKUP      SSID: K82B
Share Option: U (Upd,View,No)  Description:
-----
Enter codes to create a dataset name specification:
Qualifier code ==>      Free form literal ==>      Show DSN ==> N

Current dataset name qualifier string:
&SSID(1,3).

Valid dataset name specification codes are:
1. Volser          9. Day (DD)          17. Backup Type (#18.#19)
2. Vcatname       10. Julian Day (DDD) 18. Local/Recovery (L/R)
3. Subsystem ID   11. Hours (HH)      19. Primary/Backup (P/B)
4. User ID        12. Minutes (MM)    20. Job Name
5. Time (HHMMSS)  13. Seconds (SS)    21. Step Name
6. Date (YYYYDDD) 14. Timestamp        22. Profile Creator
7. Year (YYYY)    15. Random Number    23. Profile Name
8. Month (MM)     16. GDG (+1)..(+n)  24. Substring Qualifier
                  25. Use freeform literal
```

## Resulting DSN using current symbolic string

Some substrings (such as time and date) require the addition of an alphanumeric or symbol in the beginning of the string.

When you select these substrings, the following window is displayed.

```

Resulting DSN using current symbolic string

Enter a Literal or Symbolic to Prefix the Invalid Dataset Node

==>

Invalid Dataset Name:
* VOLSER.DATABASE.SPACENAM.2009014          *

-----
| ARYR284E - Invalid ending period detected. |
-----

```

This screen allows you to insert an alphanumeric or symbol to make the data set node name valid. When finished, press Enter. The Offload DSN Specification screen reappears with the corrected substring.

### Viewing a sample string

To view the string as it will be completed, type Y in the **Show DSN** field.

When you press Enter, the sample string appears, as shown in the following screen:

```

Resulting DSN using current symbolic string

Using the following sample data as input:

&JOBNAME   = 'JOBNAME '  &STEPNAME   = 'STEPNAME'  &UID       = 'TUSER'
&SSID      = 'K82B'     &VOLSER     = 'VOLSER'    &VCATNAME  = 'VCATNAME'
&LOCREM    = 'L'       &PRIBAC     = 'P'
&PROFCRTR  = 'TUSER'   &PROFNAME   = 'FLASH BACKUP'
The date/time fields are set to the current time.

The generated dataset would be:
* TUSER.K82B.D070705.T160501          *

Press ENTER or PF3 to continue

```

## About data encryption

Db2 Recovery Expert allows you to encrypt the data when the backup is offloaded to tape or disk. You can specify data encryption for both DFSMSdss and FDR offloads, and customize the encryption to meet your site's needs. Data encryption is not allowed for Db2 backups that use HSM to offload data.

### Setting data encryption options for DFSMSdss offloads

For DFSMSdss offloads, you can specify the type of encryption and set other options for the encryption.

Data encryption options are set in each backup profile.

**Note:** If you enter encryption options and later change the **Offload Options** field to N, all the encryption options will be reset to their defaults.

1. On the **Offload Options** panel, enter D in the **Data Mover** field and U in the **Encrypt Data** field, and press Enter.

The following is an example of the **DFSMSdss Encryption Options** panel:

```

RCVYXPRT V3R2 ---- DFSMSdss Encryption Options --- 2021/01/13 12:36:06
Option ==>
-----
Creator: TUSER      Name: T9B1 - Db2      SSID: T9B1
Share Option: U    (Upd,View,No)  Description:
-----
Keypasswd => Y      (Yes/No)
ICount    => 00016  (1-10000)
Type      => C      (Clraes128/clrtDes)

RSA       => N      (Yes/No)
Type      => C      (Clraes128/clrtDes/Enctdes)
Label     =>

```

The header fields **Creator**, **Name**, **SSID**, **Share Option**, and **Description** that identify the profile are read-only.

- Specify the following encryption options.

**Note:** Either **Keypasswd** or **RSA** encryption can be specified, but not both. Refer to the documentation for DFSMSdss for specific information about these encryption types and settings.

#### **Keypasswd**

Enter Y to specify the type of encryption that uses an 8 to 32 EBCDIC character key to perform encryption. The key password will be automatically generated.

#### **ICount**

If you specify a Y in the **Keypasswd** field, indicate how many times DFSMSdss should perform the hash algorithm in the generation of the data key.

#### **Type**

If you specify a Y in the **Keypasswd** field, indicate the type of encryption to perform. Enter C for CLRAES128 or D for CLRTDES.

#### **RSA**

Enter Y to specify the type of encryption that uses the label of an existing RSA public key to perform encryption.

#### **Type**

If you specify a Y in the **RSA** field, indicate the type of encryption to perform. Enter C for CLRAES128, D for CLRTDES, or E for ENCTDES.

#### **Label**

If you specify a Y in the **RSA** field, enter the label of an existing RSA public key. The label can be up to 64 characters. The first character must be alphabetic or a national character (#,\$,@). The remaining characters may be alphabetic, numeric, national or a period.

## **Setting data encryption options for FDR offloads**

For FDR offloads, you can select the type of encryption.

Data encryption options are set in each backup profile.

**Note:** If you enter encryption options and later change the **Offload Options** field to N, all the encryption options will be reset to their defaults.

- On the **Offload Options** panel, enter F or I in the **Data Mover** field and U in the **Encrypt Data** field, and press Enter.

The FDR Encryption Options panel opens. The following is an example of the panel:

```

RCVYXPRT V3R2 ----- FDR Encryption Options ----- 2021/01/13 12:39:08
Option  ==>
-----
Creator: TUSER      Name: T9B1 - Db2      SSID: T9B1
Share Option: U    (Upd,View,No)  Description:
-----

Encryption Type => S      (Substitute/Cipher/Aes/
                           aes192(1)/aes256(2)/
                           aesFast/Tdes)

```

The header fields **Creator**, **Name**, **SSID**, **Share Option**, and **Description** that identify the profile are read-only.

2. Specify the following encryption options.

#### Encryption type

Indicate the type of encryption to use. Refer to the documentation for your version of FDR for specific information about these encryption types. Valid options are:

- S: Substitute
- C: CIPHER
- A: AES
- 1: AES192
- 2: AES256
- F: AESFAST
- T: for TDES

## Specifying PARMLIB override options

---

When creating a System Backup Profile with Db2 Recovery Expert, you can override some of the default settings defined in the PARMLIB member.

Override PARMLIB options can be specified in each System Backup Profile.

**Note:** If you enter override PARMLIB options and later change the **Override PARMLIB** field to N, the override PARMLIB options will be reset to their defaults.

1. From the Update Backup Profile panel, specify Y in the **Override PARMLIB** field and press Enter. When you later edit a System Backup profile, enter U in the **Override PARMLIB** field and press Enter.

```

RCVYXPRT V3R2 ----- Update Backup Profile ----- 2021/01/07 18:24:43
Option ==> Scroll ==> PAGE

  Commands: ? - Show all commands
Line Commands: I - Insert D - Delete X - Exclude U - Undo from exclude

-----
Creator: TUSER      Name: BKUP PROF      SSID: S89Z
Share Option: U (Upd,View,No)  Description:
----- Backup Options -----
Backup Method      ==> B (B/S/F/D/L)      Current Generation==> 00
Backup Scope       ==> F (Full/Data)      Setup Needed       ==> Y
Backup Generations==> 01(01 - 08)      Issue Log Suspend ==> N (Yes/No)
Offload Options    ==> N (Yes/No/Update)  Validate Db2 Vols ==> Y (Yes/No)
Source Stogroups   ==> Y (Yes/No/Update)  Enable Obj Restore==> N (Yes/No)
Target Pool        ==> Y (Yes/No/Update)  Incremental Generation ==> N
Override PARMLIB   ==> Y (Yes/No/Update)
----- Volume Mappings ----- Row 1 of 1
  Source  Dev  Src  Target
Cmd Volumes Type Unit Units  Message Area
I  PRESS ENTER FOR NEW LINE
***** Bottom of Data *****

```

2. The Override PARMLIB Options panel opens.

```

RCVYXPRT V3R2 ----- Override PARMLIB Options ----- 2018/07/26 14:25:57
Option ==>
-----
Creator: TUSER      Name: BKUP PROF      SSID: S89Z
Share Option: U (Upd,View,No)  Description:
-----
Specify override parameter value to be used:

Archive Warnings      ==> - (Yes/No)
Reset Copy Pending Tablespaces ==> - (Yes/No)
Reset Copy Pending Indexspaces ==> - (Yes/No)
Wait for Background Copy ==> - (Yes/No/Separate)
Backup Work Datasets  ==> - (Yes/No)
Reinit Space Efficient Volumes ==> - (Yes/No)

```

The corresponding PARMLIB parameter names for these fields are as follows:

- Archive Warnings: ARCHIVE\_WARNINGS
- Reset Copy Pending Tablespaces: RESET\_COPY\_PENDING\_TS
- Reset Copy Pending Indexspaces: RESET\_COPY\_PENDING\_IX
- Wait for Background Copy: WAIT\_FOR\_BACKGROUND\_COPY
- Backup Work Datasets: BACKUP\_WORK\_DATASETS
- Reinit Space Efficient Volumes: REINIT\_SPACE\_EFFICIENT

**Note:** The default value for each of these fields is ' ' (empty). If the field is left empty, the corresponding PARMLIB value will be used.

### Archive Warnings

If you specify Y, Db2 Recovery Expert will issue warning messages if archive log data sets are not found on volumes within the scope of the backup. Archive volumes are listed in subsystem setup and analysis. If you specify N in this field, Db2 Recovery Expert will not issue warning messages. If you leave this field empty, the ARCHIVE\_WARNINGS parameter from PARMLIB will be used.

The default is Y.

### Reset Copy Pending Tablespaces

If you specify Y, Db2 Recovery Expert will reset all tablespaces so that they are no longer in copy pending status after a system backup. If you leave this field empty, the RESET\_COPY\_PENDING\_TS parameter from PARMLIB will be used.

The default is N.

### Reset Copy Pending Indexspaces

If you specify Y, Db2 Recovery Expert will reset all indexspaces so that they are no longer in copy pending status after a system backup. If you leave this field empty, the RESET\_COPY\_PENDING\_IX parameter from PARMLIB will be used.

The default is N.

### Wait for Background Copy

If you specify Y, Db2 Recovery Expert will wait for background SNAPS to complete before letting the job complete.

If you specify S, Db2 Recovery Expert will monitor the Flash Copy backup in a separate ARYCOPY step but will not halt completion of the job.

If you specify N, Db2 Recovery Expert will not wait for background copy to complete. If you leave this field empty, the WAIT\_FOR\_BACKGROUND\_COPY parameter from PARMLIB will be used.

The default is N.

### Backup Work Datasets

If you specify Y, Db2 Recovery Expert will consider work data sets critical. An error message will be issued if critical work data sets are not included in the backup. If you specify N, Db2 Recovery Expert will not consider work data sets critical and no error message will be issued if there are not included in the backup. If you leave this field empty, the value of BACKUP\_WORK\_DATASETS parameter from PARMLIB will be used.

The default is Y.

### Reinit Space Efficient Volumes

If you specify Y or N, its value will override the REINIT\_SPACE\_EFFICIENT PARMLIB value. If you leave this field empty, the REINIT\_SPACE\_EFFICIENT parameter from PARMLIB will be used.

- When you are satisfied with your specifications, press Enter.

**Note:** For more information about PARMLIB values, see [“Configuring the PARMLIB member”](#) on page 66.

## Message Area messages

The following messages may appear in the **Message Area** of the Update Backup Profile panel. This table explains the message and actions you may take to resolve the message. In some cases, no further action is required.

Message	Explanation	Action
Source Volume not online or not found	The listed source volume is either offline or not a valid volume.	Bring the volume online or check with your systems programmer to ensure the volume entered is a valid volume.



Table 25. Message Area messages and explanations (continued)

Message	Explanation	Action
Source Volume cannot be a BCV Device	For a BCV backup, the source volumes cannot be BCV devices.	If the volume entered was an incorrect volume, change it to the correct volume name. If the source volume is a BCV device, you will need to move the data from the BCV device to a non-BCV device.
Source Volume is not on a Symmetrix	The listed source volume is not on a Symmetrix array.	The source volume must be on a Symmetrix. Move the source volume to a Symmetrix array.
Target Unit not found	The target unit entered does not exist.	If the target unit was entered incorrectly, correct the unit. Otherwise, check with your systems programmer to ensure the target unit entered is a valid target unit. If you plan on adding the target units to the Symmetrix before running the backup, you can disregard this message.
Target Unit specified is not a BCV Device	The target unit entered is not a BCV device. For a BCV backup, all target units entered must be BCV devices.	Select a target unit that is a BCV device.
Target Unit is not on a Symmetrix	Each target unit must be on a Symmetrix.	Select a target unit that is located on a Symmetrix array.
Target BCV target_unit is established to source_volume	For BCV backups, this informational message lists the source volume to which the target unit is established.	None required.
Target Unit is paired to source_volume	For SNAP type backups, this message appears if the target happens to be a BCV unit and it is currently paired to a source volume.	None required.
Source volume has BCV unit_name established	For BCV backups, this informational message displays the target unit to which the source volume is established.	None required.
Source Volume is not Flash capable	The source volume does not reside in a storage subsystem that is FlashCopy capable.	If the source volume was entered incorrectly, correct the volume. Or, move the source volume to a FlashCopy capable storage system. Otherwise, check with your systems programmer to ensure the source volume entered is FlashCopy capable.

Table 25. Message Area messages and explanations (continued)

Message	Explanation	Action
Target Unit is not flash capable	For FlashCopy backups, the target volume cannot use FlashCopy to copy the volume.	If the target unit was entered incorrectly, correct the unit. Otherwise, check with your systems programmer to ensure the target unit entered is FlashCopy capable.

## Profile management

This section describes the tasks that you can use to manage your system backup profiles.

### Updating a profile

You can update your own system backup profiles or one created by another user if the profile was created with the **Update option** field set to Update (U).

You can update a backup profile at any time to add or delete source or target volumes, change the number of generations, and change most other settings. However, once setup has been run successfully on a backup profile, you cannot change the Db2 subsystem or the backup method when you update the profile.

1. Access the **Backup Profile Display** panel.
2. Specify U in the **Cmd** line next to the profile you want to update and press Enter.
3. The **Update Backup Profile** panel opens.  
You can then make changes to the profile.
4. Press PF3 when you have finished to save the changes.  
To cancel and exit without making changes, specify CAN in the **Option** line and press Enter.

### Viewing a profile

You can view your own backup profiles or one created by another user if the profile has the **Update option** field set to view or update.

1. Access the **Backup Profile Display** panel.
2. Specify V in the **Cmd** line next to the profile you want to view and press Enter.  
The **View Backup Profile** panel opens. You can view profile details, but cannot make any changes.

### Renaming a profile

You can use the **Rename** line command to change the name, creator, or description of a backup profile. You can rename profiles created under your user ID, regardless of the value assigned to the **Update Option** field. You can also rename a profile created by another user if the profile has the value of the **Update Option** field set to **Update (U)**.

1. Access the **Backup Profile Display** panel.
2. Specify R in the **Cmd** line next to the profile that you want to rename.
3. Press Enter.  
The **Rename Backup Profile** panel opens.

```

Rename Backup Profile

Existing Profile:

  Creator      TUSER
  Profile Name BCV BACKUP
  Description

New Profile:

  Creator      TUSER
  Profile Name BCV BACKUP
  Description

Press ENTER to process or PF3 to Cancel

```

4. The **Creator** field is automatically filled with the user ID that created the profile. If you have been granted permission, you can change the user ID in the **Creator** field. Permission to change the creator user ID is granted using the ADMIN\_USERID parameter in the SYSPARM library.
5. To rename the profile, specify a new name in the **Profile Name** field.
6. To change the profile description, specify a new description in the **Description** field.
7. Press Enter.  
To cancel the rename, press PF3 on the **Rename Backup Profile** window.

## Deleting a profile

You can delete profiles created under your user ID. You can also delete a profile created by another user if the profile was created with the value of the **Update Option** field set to Update (U).

If you delete a backup profile, you will also delete all backups associated with the profile.

1. Access the **Backup Profile Display** panel.
2. Specify D in the **Cmd** line next to the profile you want to delete and press Enter.  
The Confirm Deletion of Profile panel opens.

```

Confirm Deletion of Profile

*****
**                                     *
** Warning Deleting this Profile will also delete all *
** Backups associated with this profile.             *
**                                     *
*****

Confirm delete of profile TUSER.BCV BACKUP

Delete  N  (Yes/No)

Press ENTER to process or PF3 to Cancel

```

3. To delete the profile, specify Y in the **Delete** field and press Enter.  
A message appears to confirm deletion. To cancel deletion, press PF3.

## Creating a system backup

This section provides information about building a backup job from a backup profile and then submitting the backup job to create a system backup.

## Building and submitting backup jobs

After you create a Db2 Recovery Expert backup profile you will build a backup job. Based on the values that were specified in the backup profile, Db2 Recovery Expert will generate the JCL for the backup job.

When you build the JCL for the backup job you can specify whether or not you will:

- edit the JCL that is created
- automatically run a system backup after the JCL is created
- offload the backup after it was taken
- backup the Db2 Recovery Expert repository

### Note:

- After you create the backup job, you should put the job into a scheduler to create regular backups of your Db2 subsystem.
- For EMC Snap and BCV backups, Db2 Recovery Expert can detect if the volumes are online to either the local or a remote system and will wait until they go offline before completing the backup. If you wish to bypass this check, add the NO-OFFLINE-CHECK control card to the job. Db2 Recovery Expert cannot detect if the volumes are online to other z/OS systems for other backup types.
- When performing a system backup using Flash or Snap profiles that use UCB numbers as targets, Db2 Recovery Expert will issue an error message if the UCB volumes are online during the backup. This is done to prevent you from accidentally overwriting target volumes. If you want Db2 Recovery Expert to overwrite the target volumes, you need to vary the volumes offline and then run the backup.

1. Enter 1 (System Operations) on the Db2 Recovery Expert main menu and press Enter. From the Systems Operations Menu panel, specify 2 (System Backup Profiles) and press Enter. Specify selection criteria in the Enter Backup Profile selection criteria panel and press Enter.

The **Backup Profile Display** panel opens.

2. From the **Backup Profile Display** panel, specify B in the **Cmd** line next to the profile for which you want to build the JCL and press Enter.

The following panel opens:

```
Build Backup Job
Edit Generated Job      Y   (Yes/No)
Setup Job               Y   (Yes/No)
Perform Offload        N   (Yes/No)
Backup Repository      N   (Yes/No)

Build job in Dataset   TUSER.BR.TEST
Member                 FLASH001

Job Cards:
==> //TUSERAA JOB TUSER,CLASS=A,NOTIFY=&SYSUID
==> /**
==> /**
==> /**

Press ENTER to process or PF3 to Cancel
```

3. Specify the following fields on this panel:

### Edit Generated Job

Enter Y to view the job in an ISPF edit session after generation. If you enter N, after the job is generated you will return to the Backup Profile Display panel.

### Setup Job

Enter Y if you want Db2 Recovery Expert to build JCL only for profile setup; no backup will be taken. This option can be useful if you know that volume mapping or another aspect of the backup profile has changed. Enter N to build the JCL to perform the backup. If Db2 Recovery Expert detects that setup needs to be run on this profile, this field will be set to Y.

### Perform Offload

Enter Y to offload the backup after it has been taken. If you have not specified offload options for the backup, this field is read-only and set to N.

### Backup Repository

Enter Y to back up the Db2 Recovery Expert repository as part of the backup job. This process uses IDCAMS to copy Db2 Recovery Expert's VSAM control files to the GDGs configured during installation. The backup files can be used to restore the Db2 Recovery Expert control information if it is lost or damaged.

### Build job in Dataset/Member

Enter the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, enter a member name. If the member does not exist, Db2 Recovery Expert will create it.

### Job Cards

Enter a valid job card for your site.

4. When you have completed the fields, press Enter.

If you specified to edit the job, an ISPF panel containing the job appears. If you did not specify to edit the job, the **Backup Profile Display** panel reappears.

5. Submit the build job.

Check the job log for error messages.

If the WAIT\_FOR\_BACKGROUND\_COPY parmlib parameter is set to **Y** or **S**, the backup process ends with a Copenpool FASTREPLICATIONSTATE status check.

One of the following messages will appear in the job log:

- If an error occurs while checking Copenpool FASTREPLICATIONSTATE status: ARYS427E: An error occurred obtaining SMS copenpool information.
- If the copenpool FASTREPLICATIONSTATE status has been checked successfully and the status is **RECOVERABLE**, message ARYS871I will appear, indicating that the backup is recoverable.
- If the copenpool FASTREPLICATIONSTATE status has been checked, but the status is **NONE** or **FAILED**, message ARYS872E will appear, indicating that the backup is non-recoverable.

**Note:** The additional monitoring provided by the WAIT\_FOR\_BACKGROUND\_COPY and WAIT\_FOR\_OFFLOAD parmlib parameters is only available for Db2 profiles. FlashCopy and other backup profiles are not supported for this additional monitoring.

See also: [Reviewing output from offloading a backup](#)

## Sample build JCL for the profile setup process

This sample job shows the JCL for the profile setup process and does not back up the Db2 Recovery Expert repository.

```
//TUSERAB JOB TUSERDH,CLASS=A,NOTIFY=&SYSUID
//*
//*
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/**
/** Profile: PUSER2.TEST S89Z - SNAP TO STOGROUPS *
/** Job: 01 of 01 *
/** Desc: *
/** User: TUSER *
/** Date: Monday October 27, 2021 *
/** Time: 11:37:47.95 *
```

```

/*
/*
** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/* * Step:      ARY BACK
/*
/* * Desc:      This step will invoke the System Backup job.
/*
/*
** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
//ARYBACK EXEC PGM=ARY@MAIN,REGION=006M,COND=(4,LT)
/*
//STEPLIB DD DISP=SHR,DSN=ARYRTE.WRK0320.LOADLIB
// DD DISP=SHR,DSN=DEV RTE.EMC.SSCF580.LINKLIB
// DD DISP=SHR,DSN=RSRTE.VENDOR.FDR5467.LOAD
// DD DISP=SHR,DSN=DSN.S89Z.SDSNEXIT
// DD DISP=SHR,DSN=DSN.Vxxxx.SDSNLOAD
//Db2PARMS DD DISP=SHR,DSN=ARY.WRK0320.Db2.CONTROL
//ARYBPROF DD DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILES
//ARYBOFFL DD DISP=SHR,DSN=ARY.WRK0320.ARY.OFFOPTS
//ARYBPMAP DD DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILE.MAPS
//ARYBPCAT DD DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILE.CATS
//ARYSBACK DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK
//ARYSBOBJ DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.OBJS
//ARYSBVOL DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.VOLS
//ARYSBSSD DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.SSIDS
//ARYBREPT DD DISP=SHR,DSN=ARY.WRK0320.ARY.BREPREPT
//SYSOUT DD SYSOUT=*
//ARYOUT DD SYSOUT=*
//ARY#REPT DD SYSOUT=*
//ARYSNAPO DD SYSOUT=*
//HSMOUT DD SYSOUT=*
//ARY#PARM DD DSN=RTE.WRK0320.SAMPLIB(#PARM),DISP=SHR
//ARYIN DD *
//BACKUP "PUSER2"."TEST S89Z - SNAP TO STOGROUPS"
//SETUP
/*
/*

```

## Sample build JCL for a backup

This sample shows backup JCL and includes offloading a backup and also backing up the Db2 Recovery Expert repository.

```

//TUSERAA JOB TUSER,CLASS=A,NOTIFY=&SYSUID
/*
/*
/*
/*
** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/* * Profile:   PUSER.TEST S89Z - SNAP
/* * Job:       01 of 01
/* * Desc:
/* * User:      TUSER
/* * Date:      Thursday October 23, 2021
/* * Time:      11:09:53.06
/*
** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/* * Step:      ARYBACK
/*
/* * Desc:      This step will invoke the System Backup job.
/*
/*
** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
//ARYBACK EXEC PGM=ARY@MAIN,REGION=006M,COND=(4,LT)
/*
//STEPLIB DD DISP=SHR,DSN=ARYRTE.WRK0320.LOADLIB
// DD DISP=SHR,DSN=DEV RTE.EMC.SSCF580.LINKLIB
// DD DISP=SHR,DSN=RSRTE.VENDOR.FDR5467.LOAD
// DD DISP=SHR,DSN=DSN.Vxxxx.SDSNEXIT
// DD DISP=SHR,DSN=DSN.Vxxxx.SDSNLOAD
//Db2PARMS DD DISP=SHR,DSN=ARY.WRK0320.Db2.CONTROL
//ARYBPROF DD DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILES
//ARYBOFFL DD DISP=SHR,DSN=ARY.WRK0320.ARY.OFFOPTS

```

```

//ARYBPMAP DD DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILE.MAPS
//ARYBPCAT DD DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILE.CATS
//ARYSBACK DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK
//ARYSBOBJ DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.OBJS
//ARYSBVOL DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.VOLS
//ARYSBSSD DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.SSIDS
//ARYBREPT DD DISP=SHR,DSN=ARY.WRK0320.ARY.BREPORT
//SYSOUT DD SYSOUT=*
//ARYOUT DD SYSOUT=*
//ARY#REPT DD SYSOUT=*
//ARYSNAPO DD SYSOUT=*
//HSMOUT DD SYSOUT=*
//ARY#PARM DD DSN=ARYRTE.WRK0320.SAMPLIB(ARY#PARM),DISP=SHR
//ARYIN DD *
BACKUP "PUSER"."TEST S89Z - SNAP"
/*
/*
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/* * Step: ARYJOFFL *
/*
/* * Desc: This step will invoke the Offload job. *
/*
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
//ARYJOFFL EXEC PGM=ARY@MAIN,REGION=006M,COND=(4,LT)
/*
//STEPLIB DD DISP=SHR,DSN=ARYRTE.WRK0320.LOADLIB
// DD DISP=SHR,DSN=DEV RTE.EMC.SSCF580.LINKLIB
// DD DISP=SHR,DSN=RSRTE.VENDOR.FDR5467.LOAD
// DD DISP=SHR,DSN=DSN.Vxxx.SDSNEXIT
// DD DISP=SHR,DSN=DSN.Vxxx.SDSNLOAD
//Db2PARMS DD DISP=SHR,DSN=ARY.WRK0320.Db2.CONTROL
//ARYBPROF DD DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILES
//ARYBOFFL DD DISP=SHR,DSN=ARY.WRK0320.ARY.OFFOPTS
//ARYBPMAP DD DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILE.MAPS
//ARYBPCAT DD DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILE.CATS
//ARYSBACK DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK
//ARYSBOBJ DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.OBJS
//ARYSBVOL DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.VOLS
//ARYSBSSD DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.SSIDS
//ARYBREPT DD DISP=SHR,DSN=ARY.WRK0320.ARY.BREPORT
//ARY#REPT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//ARYOUT DD SYSOUT=*
//ARYSNAPO DD SYSOUT=*
//ARY#PARM DD DSN=ARYRTE.WRK0320.SAMPLIB(ARY#PARM),DISP=SHR
//ARYIN DD *
OFFLOAD "PUSER"."TEST S89Z - SNAP"
GENERATION LAST-BACKUP
/*
/*
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/* * Step: ARYREBU *
/*
/* * Desc: This step will back up the *
/* repository files to GDG datasets. *
/*
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
//ARYREBU1 EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSQUT DD SYSOUT=*
//KSDS DD DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILES
//FLAT DD DISP=(NEW,CATLG,DELETE),
// DCB=(RECFM=VB,LRECL=1028,BLKSIZE=10280),
// UNIT=SYSALLDA,SPACE=(CYL,(3)),
// DSN=ARY.WRK0320.PROFILE.BACKUP(+1)
//SYSIN DD *
REPRO INFILE(KSDS) OUTFILE(FLAT)
/*
/*
//ARYREBU2 EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSQUT DD SYSOUT=*
//KSDS DD DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILE.MAPS
//FLAT DD DISP=(NEW,CATLG,DELETE),
// DCB=(RECFM=VB,LRECL=1028,BLKSIZE=10280),
// UNIT=SYSALLDA,SPACE=(CYL,(3)),
// DSN=ARY.WRK0320.PROFMAP.BACKUP(+1)
//SYSIN DD *

```

```

                REPRO INFILE(KSDS) OUTFILE(FLAT)
/*
/**
//ARYREBU3 EXEC PGM=IDCAMS
//SYSPRINT DD  SYSOUT=*
//SYSQOUT  DD  SYSOUT=*
//KSDS     DD  DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILE.CATS
//FLAT     DD  DISP=(NEW,CATLG,DELETE),
//         DCB=(RECFM=VB,LRECL=1028,BLKSIZE=10280),
//         UNIT=SYSALLDA,SPACE=(CYL,(3)),
//         DSN=ARY.WRK0320.PROFCAT.BACKUP(+1)
//SYSIN    DD  *
                REPRO INFILE(KSDS) OUTFILE(FLAT)
/*
/**
//ARYREBU4 EXEC PGM=IDCAMS
//SYSPRINT DD  SYSOUT=*
//SYSQOUT  DD  SYSOUT=*
//KSDS     DD  DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK
//FLAT     DD  DISP=(NEW,CATLG,DELETE),
//         DCB=(RECFM=VB,LRECL=1028,BLKSIZE=10280),
//         UNIT=SYSALLDA,SPACE=(CYL,(3)),
//         DSN=ARY.WRK0320.SYSBACK.BACKUP(+1)
//SYSIN    DD  *
                REPRO INFILE(KSDS) OUTFILE(FLAT)
/*
/**
//ARYREBU5 EXEC PGM=IDCAMS
//SYSPRINT DD  SYSOUT=*
//SYSQOUT  DD  SYSOUT=*
//KSDS     DD  DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.VOLS
//FLAT     DD  DISP=(NEW,CATLG,DELETE),
//         DCB=(RECFM=VB,LRECL=1028,BLKSIZE=10280),
//         UNIT=SYSALLDA,SPACE=(CYL,(3)),
//         DSN=ARY.WRK0320.SYSBVOL.BACKUP(+1)
//SYSIN    DD  *
                REPRO INFILE(KSDS) OUTFILE(FLAT)
/*
/**
//ARYREBU6 EXEC PGM=IDCAMS
//SYSPRINT DD  SYSOUT=*
//SYSQOUT  DD  SYSOUT=*
//KSDS     DD  DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.SSIDS
//FLAT     DD  DISP=(NEW,CATLG,DELETE),
//         DCB=(RECFM=VB,LRECL=1028,BLKSIZE=10280),
//         UNIT=SYSALLDA,SPACE=(CYL,(3)),
//         DSN=ARY.WRK0320.SYSSSID.BACKUP(+1)
//SYSIN    DD  *
                REPRO INFILE(KSDS) OUTFILE(FLAT)
/*
/**
//ARYREBU7 EXEC PGM=IDCAMS
//SYSPRINT DD  SYSOUT=*
//SYSQOUT  DD  SYSOUT=*
//KSDS     DD  DISP=SHR,DSN=ARY.WRK0320.ARY.BREPORT
//FLAT     DD  DISP=(NEW,CATLG,DELETE),
//         DCB=(RECFM=VB,LRECL=1028,BLKSIZE=10280),
//         UNIT=SYSALLDA,SPACE=(CYL,(3)),
//         DSN=ARY.WRK0320.BREPORT.BACKUP(+1)
//SYSIN    DD  *
                REPRO INFILE(KSDS) OUTFILE(FLAT)
/*
/**
//ARYREBU8 EXEC PGM=IDCAMS
//SYSPRINT DD  SYSOUT=*
//SYSQOUT  DD  SYSOUT=*
//KSDS     DD  DISP=SHR,DSN=ARY.WRK0320.ARY.OFFOPTS
//FLAT     DD  DISP=(NEW,CATLG,DELETE),
//         DCB=(RECFM=VB,LRECL=1284,BLKSIZE=12840),
//         UNIT=SYSALLDA,SPACE=(CYL,(3)),
//         DSN=ARY.WRK0320.OFFOPTS.BACKUP(+1)
//SYSIN    DD  *
                REPRO INFILE(KSDS) OUTFILE(FLAT)
/*
/**
//ARYREBU9 EXEC PGM=IDCAMS
//SYSPRINT DD  SYSOUT=*
//SYSQOUT  DD  SYSOUT=*
//KSDS     DD  DISP=SHR,DSN=ARY.WRK0320.ARY.OBJECTS
//FLAT     DD  DISP=(NEW,CATLG,DELETE),
//         DCB=(RECFM=VB,LRECL=1310,BLKSIZE=13100),
//         UNIT=SYSALLDA,SPACE=(CYL,(3)),

```



```

//          DSN=ARY.WRK0320.OBJECTS.BACKUP(+1)
//SYSIN    DD  *
//SYSPRINT DD  SYSOUT=*
//SYSOUT   DD  SYSOUT=*
//KSDS     DD  DISP=SHR,DSN=ARY.WRK0320.ARY.OFFOPTS
//FLAT     DD  DISP=(NEW,CATLG,DELETE),
//          DCB=(RECFM=VB,LRECL=1284,BLKSIZE=12840),
//          UNIT=SYSALLDA,SPACE=(CYL,(3)),
//          DSN=ARY.WRK0320.OFFOPTS.BACKUP(+1)
//SYSIN    DD  *
//          REPRO INFILE(KSDS) OUTFILE(FLAT)

/*
//*
//ARYREBU9 EXEC PGM=IDCAMS
//SYSPRINT DD  SYSOUT=*
//SYSOUT   DD  SYSOUT=*
//KSDS     DD  DISP=SHR,DSN=ARY.WRK0320.ARY.OBJECTS
//FLAT     DD  DISP=(NEW,CATLG,DELETE),
//          DCB=(RECFM=VB,LRECL=1310,BLKSIZE=13100),
//          UNIT=SYSALLDA,SPACE=(CYL,(3)),
//          DSN=ARY.WRK0320.OBJECTS.BACKUP(+1)
//SYSIN    DD  *
//          REPRO INFILE(KSDS) OUTFILE(FLAT)

/*
//*
//ARYREBUA EXEC PGM=IDCAMS
//SYSPRINT DD  SYSOUT=*
//SYSOUT   DD  SYSOUT=*
//KSDS     DD  DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.OBJS
//FLAT     DD  DISP=(NEW,CATLG,DELETE),
//          DCB=(RECFM=VB,LRECL=2630,BLKSIZE=26300),
//          UNIT=SYSALLDA,SPACE=(CYL,(3)),
//          DSN=ARY.WRK0320.SYSBOBJ.BACKUP(+1)
//SYSIN    DD  *
//          REPRO INFILE(KSDS) OUTFILE(FLAT)

/*
//*

```

## About incremental system backups (simple and multiple)

When building backup JCL, you can generate simple and multiple incremental system backups. Multiple incremental backups are only available for the Db2 backup type.

### System requirements

The following requirements must be in place to use simple incremental system backup:

- The subsystem must be Db2 V11 or later
- The operating system must be z/OS version 2 release 2 or later
- All Db2 data must reside on volumes that are managed by DFSMSdss.

For multiple incremental backup, the following additional requirements apply:

- The subsystem must be Db2 V11 or later
- Incremental FlashCopy must be at Version 2 (V2) or later
- The copy pool must be configured to allow fast reverse restore at the time of backup. For more information, see [Recovering a copy pool using fast reverse restore](#) in the IBM Knowledge Center.
- **ALLOW FCFRR** must be set to YES
- **FCTOPPRC FRBACKUP** and **FCTOPPRC FRRECOV** must both be set to PMNO.

### How incremental system backups work

An incremental system backup differs from an incremental Db2 image copy in that it still results in a complete system backup on each execution. An incremental system backup replaces the previous system backup, but only the changed pages are re-copied from the source to the target volumes of the previous system backup.

When an incremental system backup is first initiated, a full backup is taken and an internal relationship is tracked between the source and target volumes. On the next system backup that uses the same set of target volumes, the previous backup is replaced, and only the tracks that have changed since the previous system backup are copied to the target volumes. When an end incremental is specified on a system backup, one final incremental backup will be performed and from that point on all system backups will be full system backups.

### Simple and multiple incremental backups

If you are doing a simple incremental backup, only one incremental FlashCopy relationship can be established to a source volume at a time. If you specify two generations of backups, every other generation is incremental; if you specify three generations, every third backup is incremental. Db2 Recovery Expert keeps track of which generation is incremental and creates the correct system backup type. Refer to the Db2 documentation for detailed information about incremental FlashCopy backups. For the procedure, see [Starting and stopping simple incremental system backups](#).

With multiple incremental backups, you can do as many incremental backups as you want, or you can specify a maximum number of incremental backups, as high as 12, after which the next backup will be a full backup.

### Using multiple incremental system backups

When you build backup profiles using Db2 BACKUP, you can generate JCL that performs multiple incremental system backups, on Db2 V11 and later subsystems. As many as 12 incremental FlashCopy relationships can be established to a source volume at a time.

The **Update Backup Profile** panel contains a field called **Multiple Incremental**, which, if enabled, builds JCL that specifies multiple incremental backups. The **Multiple Incremental** field cannot be set in ISPF; you can set it to Y or N by running a backup job with a control card that starts or ends incremental backup.

When you have ended the sequence of multiple incremental backups, by submitting a job that includes the END-MULTI-INCREMENTAL keyword, the **Multiple Incremental** field in the backup profile will be set to E, until the last incremental backup has been completed. At that point, the **Multiple Incremental** field will change to N.

The workflow for multiple incremental backups is similar to how incremental backups work. The difference is that you can do as many incremental backups as you want before you have to do a full backup again. For the procedure, see [Starting and stopping multiple incremental system backups](#). For more information on creating backup profiles, see [Creating a backup profile using the Db2 backup method](#).

## Starting and stopping simple incremental system backups

Use these steps to initiate a simple incremental system backup and to stop the incremental backups.

You must generate the FlashCopy, Db2, or DFSMSdss backup profile first, and then edit the JCL.

1. In the ARYIN DD, add the START-INCREMENTAL keyword after the BACKUP command, as follows:

```
//ARYIN DD *  
BACKUP "PDBOB"."B81A - Db2 SYSTEM BACKUP"  
START-INCREMENTAL  
/*
```

When this job is executed, an incremental relationship is established between the source and target volumes and a full backup. In addition, a log is established that will record which tracks have changed since this backup.

**Note:** In the Backup Summary Report, the **Backup Type** field will display (Inc1) after the backup type if the backup is incremental.

2. Before the next backup job is run, remove the START-INCREMENTAL keyword from the job, or rebuild the job profile without adding the keyword.

3. When you want to end the incremental backups, add the END-INCREMENTAL keyword, as follows:

```
//ARYIN DD *  
BACKUP "PDBOB"."B81A - Db2 SYSTEM BACKUP"  
END-INCREMENTAL  
/*
```

Upon execution of this job, the incremental relationship is terminated and a full system backup is taken.

## Starting and stopping multiple incremental system backups

Use this procedure to initiate multiple incremental system backups and to stop them and return to full backups.

You can create as many as 12 incremental FlashCopy relationships between a source volume in the copy pool with a corresponding target volume. The limit of 12 FlashCopy relationships means that it is possible to keep only 12 incremental generations. There is, however, no limit on the number of incremental backups that can be performed while multiple incremental backup is in effect.

Depending on the number of backup generations defined for a copy pool, there are two possible cases:

- The number of backup generations is less than or equal to 12. In this case, all backups will be incremental, until you run a job with the END-MULTI-INCREMENTAL control card.
- The number of backup generations is greater than 12. In this case, there will be 12 incremental backups performed, followed by full backups until the number of backup generations is reached. For example, with 15 backup generations, there will be 12 incremental backups performed, followed by three full backups, then another 12 incremental backups, etc. This sequence will continue until you run a backup job with the END-MULTI-INCREMENTAL control card. The process is similar to simple incremental backup when only one generation is incremental, and all others are full.

In ISPF, **MULTIPLE INCREMENTAL** is always a read-only field. To initiate multiple incremental backups, you must generate a Db2 backup profile first, then edit the JCL.

1. From the main menu, select **1. System Operations**.
2. Select **System Backup Profiles**.
3. Specify the Backup profile selection criteria, then choose the profile you want to use from the list and enter **B** to build it.
4. In the **Build Backup Job** panel, make sure that **Edit Generated Job** is set to **Y**.
5. In the ARYIN DD, add the START-MULTI-INCREMENTAL keyword after the BACKUP command, as follows:

```
//ARYIN DD *  
BACKUP "PDBOB"."B81A - Db2 SYSTEM BACKUP"  
START-MULTI-INCREMENTAL  
/*
```

When this job is executed, an incremental relationship is established between the source and target volumes and a full backup. In addition, a log is established that will record which tracks have changed since this backup.

**Note:** In the Backup Summary Report, the **Backup Type** field will display (Multi-Incr) after the backup type if the backup is incremental.

6. Before the next backup job is run, remove the START-MULTI-INCREMENTAL keyword from the job, or rebuild the job profile without adding the keyword.
7. When you want to end the incremental backups, add the END-MULTI-INCREMENTAL keyword, as follows:

```
//ARYIN DD *  
BACKUP "PDBOB"."B81A - Db2 SYSTEM BACKUP"  
END-MULTI-INCREMENTAL  
/*
```

Upon execution of this job, the incremental relationship is terminated, and a full system backup is taken.

A few restrictions apply when performing multiple incremental backups:

- Before starting multiple incremental with the START-MULTI-INCREMENTAL control card, make sure that all copy pool backup generations exist.
- Do not start multiple incremental for the first backup after copy pool deletion or any other operation that will lead to the creation of the first copy pool generation. This can lead to mixing up simple and multiple incremental processes; the simple incremental will be shown in the backup report as multiple incremental, but a full backup copy might be taken.
- If you create more than one Db2 profile based on the same copy pool, it is strongly recommended not to apply START-MULTI-INCREMENTAL or END-MULTI-INCREMENTAL keywords to several of them at the same time. Start the multiple incremental backup process with one profile, make sure that all copy pool generations are INCREMENTAL=Y, and only at that point run build jobs with other profiles. The applies to the END-MULTI-INCREMENTAL keyword: Apply it to one profile, run build jobs with other profiles only after the Multiple Incremental process has completed (indicated by the profile's Multiple Incremental status of N).

## Job log and copy pool messages for multiple incremental backups

---

The job log and copy pool listing show the incremental status of each backup generation created during a sequence of incremental backups.

When you run a backup job with the START-MULTI-INCREMENTAL control card, the job log will show an informational message indicating that the backup profile's incremental status will be set to match that of the HSM copy pool. The copy pool listing will show INCREMENTAL=Y for the incremental backup generation(s) that have been created since you started multiple incremental backups.

For more information on the messages themselves, see [Messages and Codes](#).

## Adding keywords to a system backup job

---

Db2 Recovery Expert allows you to edit the system backup job and add one or more keywords. Each keyword that you specify adds functionality that otherwise would not be present in the generated JCL.

1. Access the **Build Backup Job** panel as follows:
  - a) From the **Backup Profile Display** panel, specify B in the **Cmd** line next to the backup profile for which you want to build a backup job. The **Build Backup Job** panel opens.
  - b) Specify Y in the **Edit Generated Job** field. Specify any other fields that are applicable.
  - c) Press Enter. The JCL for the system backup job displays in an ISPF edit session.
2. Add one or more keywords to the JCL. You add keywords to the ARYIN DD \* statement following the keywords that are generated by Db2 Recovery Expert. One or more of the following keywords can be added:

### **BYPASS-VOL-CHECK**

This keyword allows Db2 Recovery Expert to continue executing the system backup even after it has found that some Db2 data is not included in the backup (and no Db2 volumes were excluded). Use this keyword at your own risk.

### **DEBUG**

This keyword produces extra debugging information. You should only add this keyword when directed to by technical support.

### **END-INCREMENTAL**

For Flash, DFSMSdss, and Db2 type backups, this keyword ends an incremental copy process of the system backup. The next time a backup is taken and sent to this set of target volumes, the complete source volume will be copied.

### **INCLUDE-ARCHIVE-VOLS**

This keyword can be added if you wish to make sure the volumes Db2 ARCHIVE LOG data sets (on disk) are copied in a system backup. For an AUTOMAP type profile, volumes containing only archive log data sets on disk are not normally included in the system backup. Adding this keyword ensures that they are included.

### **MAX-TASKS**

This keyword controls how many tasks are started to complete the backup processing for operations that can be multi-tasked. You can specify a number from 1 to 8. The default is 4.

### **PROMPT**

This keyword is used for BCV type backups. Adding the keyword overrides the current setting in ARY#PARM. If the current generation of BCVs has not synchronized with the source volumes, a WTOR will prompt the operator and ask what to do.

### **REUSE-SHARED-TARGETS**

This keyword can be added when you are using shared target pool(s) with space efficient volumes and want to reuse a shared target volume that may already contain an existing relationship.

### **SETUP**

This keyword is automatically added by Db2 Recovery Expert when it is needed. This keyword is needed the first time a backup profile is run or after a backup profile is edited. The presence of this keyword triggers a “setup” check to ensure a backup profile is valid. A backup is not taken when the SETUP card is present. You can add the SETUP keyword if you want additional checking to be performed.

### **SNAP-TARGET-ONLINE**

This keyword is used only for SNAP type backups. Adding the keyword allows the target UCBs to be online during the backup. They remain online with unique volume serial numbers after the backup as well.

### **START-INCREMENTAL**

For Flash, DFSMSdss, and Db2 type backups, this keyword starts an incremental copy process of the system backup. The next time a backup is taken and sent to this set of target volumes, only the changed tracks will be copied.

### **VALIDATE-Db2-VOLS**

This keyword overrides the “Validate Db2 Volumes” setting in the backup profile. This causes Db2 Recovery Expert to always validate that the Db2 volumes are all backed up regardless of the setting in the profile.

3. Either run the job or hit PF3 to return to the **Backup Profile Display** panel.

## **Adding keywords to the system backup offload job step**

---

Db2 Recovery Expert allows you to edit the offload job step of the system backup job and add one or more keywords. Each keyword that you specify adds functionality that otherwise would not be present in the generated JCL.

1. Access the **Build Backup Job** panel as follows:
  - a) From the **Backup Profile Display** panel, specify B in the **Cmd** line next to the backup profile that for which you want to build a backup job. The **Build Backup Job** panel opens.
  - b) Specify Y in the **Edit Generated Job** field. Specify any other fields that are applicable.
  - c) Press Enter. The JCL for the system backup job displays in an ISPF edit session.
2. Search the JCL for the job step named ARYJOFFL. You add keywords for the offload step to the ARYIN DD \* statement. Additional keywords are placed at the end of the keywords generated by Db2 Recovery Expert. One or more of the following keywords can be added:

### **DUMPC-LP *dumpclassname***

This keyword overrides the LP dump class that is specified in the system backup profile with the name specified in the *dumpclassname* variable.

**DUMPC-LB *dumpclassname***

This keyword overrides the LB dump class that is specified in the system backup profile with the name specified in the *dumpclassname* variable.

**DUMPC-RP *dumpclassname***

This keyword overrides the RP dump class that is specified in the system backup profile with the name specified in the *dumpclassname* variable.

**DUMPC-RB *dumpclassname***

This keyword overrides the RB dump class that is specified in the system backup profile with the name specified in the *dumpclassname* variable.

**OFFLOAD-TO-VOLSERS**

This keyword can be added to the offload job. It is required if your USBs don't exist any longer and new USBs are formatted with the same VOLSERS as old ones. Otherwise, it can be removed.

3. Either run the job or press PF3 to return to the **Backup Profile Display** panel.

## Reviewing output from an IBM FlashCopy backup

---

During an IBM FlashCopy backup, Db2 Recovery Expert writes messages to the job's DD statements. You should access and review these DD statements to determine if the backup was successful.

### Reviewing output from an IBM FlashCopy backup with auto mapping to target stogroups

This topic shows sample output from an IBM FlashCopy backup taken using a backup profile that specified auto mapping of target volumes within specified stogroups.

**ARYOUT DD (ARYBACK step)**

This DD contains the backup profile information, control cards, and Db2 Recovery Expert messages. The following shows a sample ARYOUT DD:

**Note:** Some lines that generally appear as single lines appear in this sample on two lines for display purposes.

```

ARYS001I - Db2 Recovery Expert Starting. Version
ARYS003I - Control Cards:
ARYS004I -   BACKUP "PUSER2"."TEST S99Z - FLASH TO STOGROUP"
ARYS004I -
ARYS013I - Backup profile PUSER2.TEST S99Z -
          FLASH TO STOGROUP was read from the repository.
ARYS075I - Performing subsystem source volume validation.
ARYS190W - Volume ARX125 is not included in this backup.
          It contains only ARCHIVE log data.
ARYS190W - Volume ARX126 is not included in this backup.
          It contains only ARCHIVE log data.
ARYS076I - Subsystem source volume validation complete.
          All source volumes are in this prof
ARYS370I - Performing target volume validation...
ARYS275I - Fetching volumes in target storage group: ARZSG06
ARYS334I - Volume ARX13A is offline. It will not be included in target list
ARYS334I - Volume ARX13B is offline. It will not be included in target list
ARYS334I - Volume ARX13C is offline. It will not be included in target list
ARYS334I - Volume ARX13D is offline. It will not be included in target list
ARYS334I - Volume ARX13E is offline. It will not be included in target list
ARYS334I - Volume ARX13F is offline. It will not be included in target list
ARYS334I - Volume ARX138 is offline. It will not be included in target list
ARYS334I - Volume ARX139 is offline. It will not be included in target list
ARYS275I - Fetching volumes in target storage group: ARZSG08
ARYS334I - Volume ARZ13A is offline. It will not be included in target list
ARYS334I - Volume ARZ13B is offline. It will not be included in target list
ARYS334I - Volume ARZ13C is offline. It will not be included in target list
ARYS334I - Volume ARZ13D is offline. It will not be included in target list
ARYS334I - Volume ARZ13E is offline. It will not be included in target list
ARYS334I - Volume ARZ13F is offline. It will not be included in target list
ARYS334I - Volume ARZ138 is offline. It will not be included in target list
ARYS334I - Volume ARZ139 is offline. It will not be included in target list

```

ARYS404I - Source Volser: ARX120 has been mapped to Target Volser: ARX128  
 ARYS404I - Source Volser: ARX121 has been mapped to Target Volser: ARX129  
 ARYS404I - Source Volser: ARX122 has been mapped to Target Volser: ARX12A  
 ARYS404I - Source Volser: ARX123 has been mapped to Target Volser: ARX12B  
 ARYS404I - Source Volser: ARX124 has been mapped to Target Volser: ARX12C  
 ARYS404I - Source Volser: ARX127 has been mapped to Target Volser: ARX12D  
 ARYS404I - Source Volser: ARZ120 has been mapped to Target Volser: ARZ128  
 ARYS404I - Source Volser: ARZ121 has been mapped to Target Volser: ARZ129  
 ARYS404I - Source Volser: ARZ122 has been mapped to Target Volser: ARZ12A  
 ARYS404I - Source Volser: ARZ123 has been mapped to Target Volser: ARZ12B  
 ARYS404I - Source Volser: ARZ124 has been mapped to Target Volser: ARZ12C  
 ARYS404I - Source Volser: ARZ125 has been mapped to Target Volser: ARZ12D  
 ARYS404I - Source Volser: ARZ126 has been mapped to Target Volser: ARZ12E  
 ARYS404I - Source Volser: ARZ127 has been mapped to Target Volser: ARZ12F  
 ARYS371I - Target volume validation complete.  
 ARYS039I - Volume map validation complete.  
 ARYS275I - Db2 checkpoint taken at RBA/LRSN 0000066DE46A  
 ARYS081I - Backup with timestamp 2021/10/23-19:32:02  
 Generation 01 was removed from the repository  
 ARYS152I - Suspending log activity to subsystem S99Z.  
 ARYS240I - Performing Flash Copy to create backup.  
 ARYS241I - Backup via flash volume from source volser ARX127  
 to unit 772D has completed.  
 ARYS241I - Backup via flash volume from source volser ARX121  
 to unit 7729 has completed.  
 ARYS241I - Backup via flash volume from source volser ARZ121  
 to unit 7529 has completed.  
 ARYS241I - Backup via flash volume from source volser ARZ120  
 to unit 7528 has completed.  
 ARYS241I - Backup via flash volume from source volser ARX124  
 to unit 772C has completed.  
 ARYS241I - Backup via flash volume from source volser ARX123  
 to unit 772B has completed.  
 ARYS241I - Backup via flash volume from source volser ARX120  
 to unit 7728 has completed.  
 ARYS241I - Backup via flash volume from source volser ARX122  
 to unit 772A has completed.  
 ARYS241I - Backup via flash volume from source volser ARZ127  
 to unit 752F has completed.  
 ARYS241I - Backup via flash volume from source volser ARZ126  
 to unit 752E has completed.  
 ARYS241I - Backup via flash volume from source volser ARZ123  
 to unit 752B has completed.  
 ARYS241I - Backup via flash volume from source volser ARZ125  
 to unit 752D has completed.  
 ARYS241I - Backup via flash volume from source volser ARZ124  
 to unit 752C has completed.  
 ARYS241I - Backup via flash volume from source volser ARZ122  
 to unit 752A has completed.  
 ARYS152I - Resuming log activity to subsystem S99Z.  
 ARYS084I - Backup of profile PUSER2.TEST S99Z - FLASH TO STOGROUP has been created.  
 ARYS279I - Task 08 - Unit 7529 with old volser ARZ121 was clipped to volser ARZ129  
 ARYS279I - Task 02 - Unit 7729 with old volser ARX121 was clipped to volser ARX129  
 ARYS279I - Task 03 - Unit 772A with old volser ARX122 was clipped to volser ARX12A  
 ARYS279I - Task 06 - Unit 772D with old volser ARX127 was clipped to volser ARX12D  
 ARYS279I - Task 05 - Unit 772C with old volser ARX124 was clipped to volser ARX12C  
 ARYS279I - Task 01 - Unit 7728 with old volser ARX120 was clipped to volser ARX128  
 ARYS279I - Task 07 - Unit 7528 with old volser ARZ120 was clipped to volser ARZ128  
 ARYS279I - Task 04 - Unit 772B with old volser ARX123 was clipped to volser ARX12B  
 ARYS279I - Task 02 - Unit 752B with old volser ARZ123 was clipped to volser ARZ12B  
 ARYS279I - Task 03 - Unit 752C with old volser ARZ124 was clipped to volser ARZ12C  
 ARYS279I - Task 06 - Unit 752F with old volser ARZ127 was clipped to volser ARZ12F  
 ARYS279I - Task 05 - Unit 752E with old volser ARZ126 was clipped to volser ARZ12E  
 ARYS279I - Task 01 - Unit 752A with old volser ARZ122 was clipped to volser ARZ12A  
 ARYS279I - Task 04 - Unit 752D with old volser ARZ125 was clipped to volser ARZ12D  
 ARYS004I - Collecting dataset information for object level recovery.  
 ARYS004I - Dataset information collection complete.  
 ARYS080I - Backup with timestamp 2021/10/27-15:19:06  
 Generation 01 was saved in the repository  
 ARYS002I - Db2 Recovery Expert complete. RC=004.

## ARY#REPT DD (ARYBACK step)

This DD contains a summary report that describes the details of the backup, including the standard and IBM FlashCopy volume information, and the data types found on the backup volumes. The following shows a sample ARY#REPT DD from an IBM FlashCopy backup:

```

                                Db2 Recovery Expert
                                Backup Summary Report

Utility Executed:..... Backup
Profile Name:..... PUSER2.TEST S99Z - FLASH TO STOGR0UP
Db2 Subsystem:..... S99Z
Db2 Version:..... Vvvv
Backup Type:..... Flash Copy
Backup Contains:..... Object Data and Log Data
Partial Backup:..... No
Nbr of Volumes:..... 0014
Backup RBA:..... 000000000000066E0C5A
Last Checkpoint RBA:..... 000000000000066DE46A
HPGRBLP RBA:..... 000000000000066D946E
Backup Date:..... 10/27/2021
Backup Time:..... 15:19:06
Consistency Method:..... Db2 Log Suspend
Supports Object Restore:.. Yes
I/O Suspend Time:..... 2021-10-27-15.19.06.717854
I/O Resume Time:..... 2021-10-27-15.19.06.920242
Backup Elapsed:..... 00.20 Seconds

                                Db2 Recovery Expert
                                Backup Volume Detail Report

<---Db2 Volume---> <-Target--> <-----Data Types----->
Volser Ucb# Devtyp Volser Ucb# Obj OCat ALog ACat RLog RCat
-----
ARX120 7720 3390-1 ARX128 7728 No No Yes No Yes No
ARX121 7721 3390-1 ARX129 7729 No No No Yes Yes Yes
ARX122 7722 3390-1 ARX12A 772A No No Yes No Yes No
ARX123 7723 3390-1 ARX12B 772B No No Yes No No No
ARX124 7724 3390-1 ARX12C 772C No No Yes No No No
ARX127 7727 3390-1 ARX12D 772D No No Yes No Yes No
ARZ120 7520 3390-3 ARZ128 7528 Yes No No No No No
ARZ121 7521 3390-3 ARZ129 7529 Yes No No No No No
ARZ122 7522 3390-3 ARZ12A 752A Yes No No No No No
ARZ123 7523 3390-3 ARZ12B 752B Yes No No No No No
ARZ124 7524 3390-3 ARZ12C 752C Yes Yes No No No No
ARZ125 7525 3390-3 ARZ12D 752D Yes No No No No No
ARZ126 7526 3390-3 ARZ12E 752E Yes No No No No No
ARZ127 7527 3390-3 ARZ12F 752F Yes No No No No No

```

The Source Volumes and Flash sections of this report list the target units that now contain the backup of the associated Db2 standard volumes. The Data Types section of the report contains the following information:

### Obj

Yes means that the volume contains object data.

### OCat

Yes means that the volume contains a user catalog that in turn contains the z/OS catalog information for object data sets.

### ALog

Yes means that the volume contains one or more active log data set(s).

### ACat

Yes means that the volume contains a user catalog that in turn contains z/OS catalog information for an active log data set.

### RLog

Yes means that the volume contains one or more archive log data set(s).



## RCat

Yes means that the volume contains a user catalog that in turn contains z/OS catalog information for an archive log data set.

If a volume contains a mix of object data or catalogs and log data or catalogs, then Db2 Recovery Expert issues a message stating that the object and log data are not separated and a full system restore is required.

## Reviewing output from an IBM FlashCopy backup with auto mapping to target units

This topic shows sample output from an IBM FlashCopy backup taken using a backup profile that specified auto mapping of target volumes with unit ranges.

### ARYOUT DD (ARYBACK step)

This DD contains the backup profile information, control cards, and Db2 Recovery Expert messages. The following shows a sample ARYOUT DD:

**Note:** Some lines that generally appear as single lines appear in this sample on two lines for display purposes.

```
ARYS001I - Db2 Recovery Expert Starting. Version 02.02.001
ARYS003I - Control Cards:
ARYS004I - BACKUP "PUSER2"."TEST S99Z - FLASH"
ARYS004I -
ARYS013I - Backup profile PUSER2.TEST S99Z - FLASH was read from the repository.
ARYS075I - Performing subsystem source volume validation...
ARYS190W - Volume ARX125 is not included in this backup.
           It contains only ARCHIVE log data.
ARYS190W - Volume ARX126 is not included in this backup.
           It contains only ARCHIVE log data.
ARYS076I - Subsystem source volume validation complete.
           All source volumes are in this prof
ARYS370I - Performing target volume validation...
ARYS404I - Source Volser: ARX120 has been mapped to Target Unit: 7738
ARYS404I - Source Volser: ARX121 has been mapped to Target Unit: 7739
ARYS404I - Source Volser: ARX122 has been mapped to Target Unit: 773A
ARYS404I - Source Volser: ARX123 has been mapped to Target Unit: 773B
ARYS404I - Source Volser: ARX124 has been mapped to Target Unit: 773C
ARYS404I - Source Volser: ARX127 has been mapped to Target Unit: 773F
ARYS404I - Source Volser: ARZ120 has been mapped to Target Unit: 7538
ARYS404I - Source Volser: ARZ121 has been mapped to Target Unit: 7539
ARYS404I - Source Volser: ARZ122 has been mapped to Target Unit: 753A
ARYS404I - Source Volser: ARZ123 has been mapped to Target Unit: 753B
ARYS404I - Source Volser: ARZ124 has been mapped to Target Unit: 753C
ARYS404I - Source Volser: ARZ125 has been mapped to Target Unit: 753D
ARYS404I - Source Volser: ARZ126 has been mapped to Target Unit: 753E
ARYS404I - Source Volser: ARZ127 has been mapped to Target Unit: 753F
ARYS371I - Target volume validation complete.
ARYS039I - Volume map validation complete.
ARYS137I - Varying volumes offline.
ARYS275I - Db2 checkpoint taken at RBA/LRSN 0000066E36C4
ARYS081I - Backup with timestamp 2008/10/27-15:13:52
           Generation 01 was removed from the repository
ARYS152I - Suspending log activity to subsystem S99Z.
ARYS240I - Performing Flash Copy to create backup...
ARYS241I - Backup via flash volume from source volser ARX122
           to unit 773A has completed.
ARYS241I - Backup via flash volume from source volser ARX123
           to unit 773B has completed.
ARYS241I - Backup via flash volume from source volser ARX120
           to unit 7738 has completed.
ARYS241I - Backup via flash volume from source volser ARX121
           to unit 7739 has completed.
ARYS241I - Backup via flash volume from source volser ARX124
           to unit 773C has completed.
ARYS241I - Backup via flash volume from source volser ARZ120
           to unit 7538 has completed.
ARYS241I - Backup via flash volume from source volser ARZ121
           to unit 7539 has completed.
ARYS241I - Backup via flash volume from source volser ARX127
           to unit 773F has completed.
ARYS241I - Backup via flash volume from source volser ARZ122
```

```

to unit 753A has completed.
ARYS241I - Backup via flash volume from source volser ARZ125
to unit 753D has completed.
ARYS241I - Backup via flash volume from source volser ARZ124
to unit 753C has completed.
ARYS241I - Backup via flash volume from source volser ARZ127
to unit 753F has completed.
ARYS241I - Backup via flash volume from source volser ARZ123
to unit 753B has completed.
ARYS241I - Backup via flash volume from source volser ARZ126
to unit 753E has completed.
ARYS152I - Resuming log activity to subsystem S99Z.
ARYS084I - Backup of profile PUSER2.TEST S99Z - FLASH has been created.
ARYS004I - Collecting dataset information for object level recovery.
ARYS004I - Dataset information collection complete.
ARYS080I - Backup with timestamp 2008/10/27-15:25:13
Generation 01 was saved in the repository.
ARYS002I - Db2 Recovery Expert

```

## ARY#REPT DD (ARYBACK step)

This DD contains a summary report that describes the details of the backup, including the standard and IBM FlashCopy volume information and the data types found on the backup volumes. The following shows a sample ARY#REPT DD from an IBM FlashCopy backup:

### Db2 Recovery Expert

#### Backup Summary Report

```

Utility Executed:..... Backup

Profile Name:..... PUSER2.TEST S99Z - FLASH
Db2 Subsystem:..... S99Z
Db2 Version:..... 0910
Backup Type:..... Flash Copy
Backup Contains:..... Object Data and Log Data
Partial Backup:..... No
Nbr of Volumes:..... 0014
Backup RBA:..... 0000066E61FA
Last Checkpoint RBA:..... 0000066E36C4
HPGRBLP RBA:..... 0000066DE61C
Backup Date:..... 10/27/2021
Backup Time:..... 15:25:13
Consistency Method:..... Db2 Log Suspend
Supports Object Restore:.. Yes
I/O Suspend Time:..... 2021-10-27-15.25.13.708776
I/O Resume Time:..... 2021-10-27-15.25.13.918449
Backup Elapsed:..... 00.20 Seconds

```

### Db2 Recovery Expert Backup Volume Detail Report

<-Source Volumes->			<-Flash->	<-----Data Types----->					
Volser	Ucb#	Devtyp	Ucb#	Obj	OCat	ALog	ACat	RLog	RCat
ARX120	7720	3390-1	7738	No	No	Yes	No	Yes	No
ARX121	7721	3390-1	7739	No	No	No	Yes	Yes	Yes
ARX122	7722	3390-1	773A	No	No	Yes	No	Yes	No
ARX123	7723	3390-1	773B	No	No	Yes	No	No	No
ARX124	7724	3390-1	773C	No	No	Yes	No	No	No
ARX127	7727	3390-1	773F	No	No	Yes	No	Yes	No
ARZ120	7520	3390-3	7538	Yes	No	No	No	No	No
ARZ121	7521	3390-3	7539	Yes	No	No	No	No	No
ARZ122	7522	3390-3	753A	Yes	No	No	No	No	No
ARZ123	7523	3390-3	753B	Yes	No	No	No	No	No
ARZ124	7524	3390-3	753C	Yes	Yes	No	No	No	No
ARZ125	7525	3390-3	753D	Yes	No	No	No	No	No
ARZ126	7526	3390-3	753E	Yes	No	No	No	No	No
ARZ127	7527	3390-3	753F	Yes	No	No	No	No	No

The **Source Volumes** and **Flash** sections of this report list the target units that now contain the backup of the associated Db2 standard volumes. The **Data Types** section of the report contains the following information:

#### Obj

Yes means that the volume contains object data.

**OCat**

Yes means that the volume contains a user catalog that in turn contains the z/OS catalog information for object data sets.

**ALog**

Yes means that the volume contains one or more active log data set(s).

**ACat**

Yes means that the volume contains a user catalog that in turn contains z/OS catalog information for an active log data set.

**RLog**

Yes means that the volume contains one or more archive log data set(s).

**RCat**

Yes means that the volume contains a user catalog that in turn contains z/OS catalog information for an archive log data set.

If a volume contains a mix of object data or catalogs and log data or catalogs, then Db2 Recovery Expert issues a message stating that the object and log data are not separated and a full system restore is required.

## Reviewing output from an EMC BCV backup

---

During an EMC BCV backup, Db2 Recovery Expert writes messages to several DD statements. You should access and review these DD statements to determine if the backup was successful.

**ARYOUT DD**

This DD contains the backup profile information, control cards, and Db2 Recovery Expert messages. The following shows a sample ARYOUT DD:

**Note:** Some lines that generally appear as single lines appear in this sample on two lines for display purposes.

```

ARYS001I - Db2 Recovery Expert.
ARYS003I - Control Cards:
ARYS004I -     BACKUP "PUSER"."TEST K72A - BCV"
ARYS004I -
ARYS013I - Backup profile PUSER.TEST K72A - BCV was read from the repository.
ARYS150I - EMC API version 05.08.00. API patch level 0001. SCF patch level 0001.
ARYS075I - Performing subsystem source volume validation.
ARYS196W - 32K Tablespace DLADB.PAGEL0G3 does not have a CISIZE of 32K.
ARYS190W - Volume DIP106 is not included in this backup.
           It contains only ARCHIVE log data.
ARYS190W - Volume DIP109 is not included in this backup.
           It contains only ARCHIVE log data.
ARYS190W - Volume DIP10C is not included in this backup.
           It contains only ARCHIVE log data.
ARYS190W - Volume DIP11C is not included in this backup.
           It contains only ARCHIVE log data.
ARYS076I - Subsystem source volume validation complete.
           All source volumes are in this prof
ARYS039I - Volume map validation complete.
ARYS275I - Db2 checkpoint taken at RBA/LRSN 0000FE909B4E
ARYS082I - Performing BCV splits to create backup.
ARYS084I - Backup of profile PUSER.TEST K72A - BCV has been created.
ARYS080I - Backup with timestamp 2008/10/30-17:44:32
           Generation 01 was saved in the repository
ARYS187W - Profile PUSER.TEST K72A - BCV has been marked "Setup Needed".
ARYS002I - Db2 Recovery Expert. RC=004.

```

**ARY#REPT DD**

This DD contains a summary report that describes the details of the backup, including the standard volume and split device volume information and mappings, and the data types found on the backup volumes. The following shows a sample ARY#REPT DD for an EMC BCV backup:

Db2 Recovery Expert

Backup Summary Report

```
Utility Executed:..... Backup
Profile Name:..... PUSER.TEST K72A - BCV
Db2 Subsystem:..... K72A
Db2 Version:..... 0710
Backup Type:..... BCV
Backup Contains:..... Object Data and Log Data
Partial Backup:..... No
Nbr of Controllers:..... 01
Lowest Microcode Level:... 5x73
Nbr of Volumes:..... 0002
Backup RBA:..... 0000FE909C28
Last Checkpoint RBA:..... 0000FE909B4E
Backup Date:..... 10/30/2021
Backup Time:..... 17:44:32
Consistency Method:..... EMC Consistency Assist
Supports Object Restore:.. No
I/O Suspend Time:..... 2021-10-30-17.44.32.451865
I/O Resume Time:..... 2021-10-30-17.44.33.172728
Backup Elapsed:..... 00.72 Seconds
```

Db2 Recovery Expert  
Backup Volume Detail Report

<-Db2 Source Volume-->				<-Split->				<-Estab->				<-----Data Types----->					
Volser	Ucb#	Sym#	Devtyp	Ucb#	Sym#	Ucb#	Sym#	Obj	OCat	ALog	ACat	RLog	RCat				
ARY090	9090	0190	3390-3	90B3	01B3	N/A	N/A	Yes	Yes	No	No	No	No				
ARY092	9092	0192	3390-3	90B5	01B5	N/A	N/A	No	No	Yes	Yes	No	No				

The **Split** section of this report lists the BCV units that were mirroring the standard volumes; these volumes now contain this backup. The **Estab** (Establish) section of the report details the next generation BCV units that are now established to the Db2 standard volumes.

The **Data Types** section of the report contains the following information:

**Obj**

Yes indicates that the volume contains object data.

**OCat**

Yes indicates that the volume contains a user catalog that in turn contains the z/OS catalog information for object data sets.

**ALog**

Yes indicates that the volume contains one or more active log data sets.

**ACat**

Yes indicates that the volume contains a user catalog that in turn contains z/OS catalog information for an active log data set.

**RLog**

Yes indicates that the volume contains one or more archive log data sets.

**RCat**

Yes indicates that the volume contains a user catalog that in turn contains z/OS catalog information for an archive log data set.

If a volume contains a mix of object data or catalogs and log data or catalogs, then Db2 Recovery Expert issues a message stating that the object and log data are not separated and a full system restore is required.

## Reviewing output from an EMC SNAP backup

During an EMC SNAP backup, Db2 Recovery Expert writes messages to the job's SYSPRINT DD as well as other DD statements. You should access and review these DD statements to determine if the backup was successful.

### Reviewing output from an EMC SNAP backup with manual mapping

This topic shows sample output from an EMC SNAP backup taken using a profile that specified manual target volume mapping.

During an EMC SNAP backup, Db2 Recovery Expert writes messages to several DD statements. You should access and review these DD statements to determine if the backup was successful.

#### ARYOUT DD

This DD contains the backup profile information, control cards, and Db2 Recovery Expert messages. The following shows a sample SYSPRINT DD:

**Note:** Some lines that generally appear as single lines appear in this sample on two lines for display purposes.

```
Version 02.02.001 ARYS001I - Db2 Recovery Expert Starting.
ARYS003I - Control Cards:
ARYS004I -     BACKUP "PUSER"."TEST S89Z - SNAP"
ARYS004I -
ARYS013I - Backup profile PUSER.TEST S89Z - SNAP was read from the repository.
ARYS150I - EMC API version 05.08.00. API patch level 0001. SCF patch level 0001.
ARYS179I - EMC Snap software version 05080001.
ARYS075I - Performing subsystem source volume validation.
ARYS076I - Subsystem source volume validation complete.
           All source volumes are in this profile
ARYS039I - Volume map validation complete.
ARYS137I - Varying volumes offline.
ARYS275I - Db2 checkpoint taken at RBA/LRSN 00000A698CE5
ARYS081I - Backup with timestamp 2008/10/23-11:04:51
           Generation 01 was removed from the repository
ARYS083I - Performing Snap Volume to create backup.
ARYS198I - Backup via Snap Volume Std Vol ARX100 Dev 7700 to Dev 7718
ARYS198I - Backup via Snap Volume Std Vol ARX101 Dev 7701 to Dev 7719
ARYS198I - Backup via Snap Volume Std Vol ARX102 Dev 7702 to Dev 771A
ARYS198I - Backup via Snap Volume Std Vol ARX103 Dev 7703 to Dev 771B
ARYS198I - Backup via Snap Volume Std Vol ARX104 Dev 7704 to Dev 771C
ARYS198I - Backup via Snap Volume Std Vol ARX105 Dev 7705 to Dev 771D
ARYS198I - Backup via Snap Volume Std Vol ARX106 Dev 7706 to Dev 771E
ARYS198I - Backup via Snap Volume Std Vol ARX107 Dev 7707 to Dev 771F
ARYS198I - Backup via Snap Volume Std Vol ARZ100 Dev 7500 to Dev 7518
ARYS198I - Backup via Snap Volume Std Vol ARZ101 Dev 7501 to Dev 7519
ARYS198I - Backup via Snap Volume Std Vol ARZ102 Dev 7502 to Dev 751A
ARYS198I - Backup via Snap Volume Std Vol ARZ103 Dev 7503 to Dev 751B
ARYS198I - Backup via Snap Volume Std Vol ARZ104 Dev 7504 to Dev 751C
ARYS198I - Backup via Snap Volume Std Vol ARZ105 Dev 7505 to Dev 751D
ARYS198I - Backup via Snap Volume Std Vol ARZ106 Dev 7506 to Dev 751E
ARYS198I - Backup via Snap Volume Std Vol ARZ107 Dev 7507 to Dev 751F
ARYS084I - Backup of profile PUSER.TEST S89Z - SNAP has been created.
ARYS004I - Collecting dataset information for object level recovery.
ARYS004I - Dataset information collection complete.
ARYS080I - Backup with timestamp 2008/10/23-12:48:56
           Generation 01 was saved in the repository
ARYS002I - Db2 Recovery Expert complete. RC=000.
```

#### ARY#REPT DD

This DD contains a summary report that describes the details of the backup, including the standard and SNAP volume information, and the data types found on the backup volumes. The following shows a sample ARY#REPT DD from a SNAP backup:

```
Db2 Recovery Expert
Backup Summary Report
```

```

Utility Executed:..... Backup
Profile Name:..... PUSER.TEST S89Z - SNAP
Db2 Subsystem:..... S89Z
Db2 Version:..... 0810
Backup Type:..... Snap
Backup Contains:..... Object Data and Log Data
Partial Backup:..... No
Nbr of Controllers:..... 01
Lowest Microcode Level:... 5x73
Nbr of Volumes:..... 0016
Backup RBA:..... 00000A698D53
Last Checkpoint RBA:..... 00000A698CE5
HPGRBLP RBA:..... 00000A669A6B
Backup Date:..... 10/23/2021
Backup Time:..... 12:48:56
Consistency Method:..... EMC Consistent Snap
Supports Object Restore:.. Yes

```

Db2 Recovery Expert  
Backup Volume Detail Report

<--Db2 Source Volume-->				<-Snap-->		<-----Data Types----->					
Volser	Ucb#	Sym#	Devtyp	Ucb#	Sym#	Obj	OCat	ALog	ACat	RLog	RCat
ARX100	7700	0962	3390-1	7718	097A	No	No	No	No	Yes	No
ARX101	7701	0963	3390-1	7719	097B	No	No	Yes	No	Yes	No
ARX102	7702	0964	3390-1	771A	097C	No	No	Yes	Yes	Yes	Yes
ARX103	7703	0965	3390-1	771B	097D	No	No	Yes	No	No	No
ARX104	7704	0966	3390-1	771C	097E	No	No	No	No	Yes	No
ARX105	7705	0967	3390-1	771D	097F	No	No	Yes	No	Yes	No
ARX106	7706	0968	3390-1	771E	0980	No	No	Yes	No	No	No
ARX107	7707	0969	3390-1	771F	0981	No	No	Yes	No	Yes	No
ARZ100	7500	0762	3390-3	7518	077A	Yes	No	No	No	No	No
ARZ101	7501	0763	3390-3	7519	077B	Yes	No	No	No	No	No
ARZ102	7502	0764	3390-3	751A	077C	Yes	No	No	No	No	No
ARZ103	7503	0765	3390-3	751B	077D	Yes	No	No	No	No	No
ARZ104	7504	0766	3390-3	751C	077E	Yes	Yes	No	No	No	No
ARZ105	7505	0767	3390-3	751D	077F	Yes	No	No	No	No	No
ARZ106	7506	0768	3390-3	751E	0780	Yes	No	No	No	No	No
ARZ107	7507	0769	3390-3	751F	0781	Yes	No	No	No	No	No

The **Snap** section of this report lists the target units that now contain the backup of the associated Db2 standard volumes. The **Data Types** section of the report contains the following information:

**Obj**

Yes means that the volume contains object data.

**OCat**

Yes means that the volume contains a user catalog that in turn contains the z/OS catalog information for object data sets.

**ALog**

Yes means that the volume contains one or more active log data set(s).

**ACat**

Yes means that the volume contains a user catalog that in turn contains z/OS catalog information for an active log data set.

**RLog**

Yes means that the volume contains one or more archive log data set(s).

**RCat**

Yes means that the volume contains a user catalog that in turn contains z/OS catalog information for an archive log data set.

If a volume contains a mix of object data or catalogs and log data or catalogs, then Db2 Recovery Expert issues a message stating that the object and log data are not separated and a full system restore is required.

## ARYSNAPO DD

This DD contains messages generated by the EMC SNAP Volume and Timefinder utilities. For information on these messages, refer to the EMC documentation. The following shows a portion of a sample ARYSNAPO DD:

ARY@SNPV - EMC Snap Volume Messages:

```
*** TIMEFINDER MF SNAP V5.8.0 (001) ***
ESNP010I BEGINNING COMMAND PARSE
ESNP011I PARSING STATEMENT #1
ESNPD00I API GLOBAL REQUEST PROCESSED
ESNP011I PARSING STATEMENT #2
ESNPD40I API SNAP VOLUME REQUEST PROCESSED
ESNP500I UNIT 7700 WAS REQUESTED, FOUND WITH VOLUME ARX100 MOUNTED
ESNP504I UNIT 7718 WAS REQUESTED, FOUND OFFLINE
ESNP011I PARSING STATEMENT #3
ESNPD40I API SNAP VOLUME REQUEST PROCESSED
ESNP500I UNIT 7701 WAS REQUESTED, FOUND WITH VOLUME ARX101 MOUNTED
ESNP504I UNIT 7719 WAS REQUESTED, FOUND OFFLINE
ESNP011I PARSING STATEMENT #4
ESNPD40I API SNAP VOLUME REQUEST PROCESSED
ESNP500I UNIT 7702 WAS REQUESTED, FOUND WITH VOLUME ARX102 MOUNTED
ESNP504I UNIT 771A WAS REQUESTED, FOUND OFFLINE
ESNP011I PARSING STATEMENT #5
ESNPD40I API SNAP VOLUME REQUEST PROCESSED
ESNP500I UNIT 7703 WAS REQUESTED, FOUND WITH VOLUME ARX103 MOUNTED
ESNP504I UNIT 771B WAS REQUESTED, FOUND OFFLINE
.
.
.
ESNPK31I A MAXIMUM OF 86 SUBTASKS WILL BE SCHEDULED
ESNP040I PROCESSING REQUESTS
ESNP460I PROCESSING FOR STATEMENT #2 BEGINNING,
COPY FROM VOLUME ARX100 TO VOLUME *7718*
ESNP466W VOLUME *7718* (S/N 0001903-01055/097A) IS ONLINE TO ANOTHER SYSTEM,
IT SHOULD BE VARIED OFFLINE AND ONLINE BEFORE USING
ESNP465I ONLINE PATH GROUP(S) ARE: 8800047D2D2096C3222E7E
ESNPJ31I PROCESSING FOR STATEMENT #2 SUSPENDED FOR PENDING ACTIVATE
ESNP460I PROCESSING FOR STATEMENT #3 BEGINNING,
COPY FROM VOLUME ARX101 TO VOLUME 7719
ESNP466W VOLUME *7719* (S/N 0001903-01055/097B) IS ONLINE TO ANOTHER SYSTEM,
IT SHOULD BE VARIED OFFLINE AND ONLINE BEFORE USING
ESNP465I ONLINE PATH GROUP(S) ARE: 8800047D2D2096C3222E7E
ESNPJ31I PROCESSING FOR STATEMENT #3 SUSPENDED FOR PENDING ACTIVATE
.
.
.
ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
- FROM VOLUME ARZ100 (S/N 0001903-01055/0762) TO VOLUME
ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
- FROM VOLUME ARZ101 (S/N 0001903-01055/0763) TO VOLUME
ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
- FROM VOLUME ARZ102 (S/N 0001903-01055/0764) TO VOLUME
ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
- FROM VOLUME ARZ103 (S/N 0001903-01055/0765) TO VOLUME
ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
- FROM VOLUME ARZ104 (S/N 0001903-01055/0766) TO VOLUME
ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
- FROM VOLUME ARZ105 (S/N 0001903-01055/0767) TO VOLUME
ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
- FROM VOLUME ARZ106 (S/N 0001903-01055/0768) TO VOLUME
ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
- FROM VOLUME ARZ107 (S/N 0001903-01055/0769) TO VOLUME
ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 16695 TRACK(S)
- FROM VOLUME ARX100 (S/N 0001903-01055/0962) TO VOLUME
ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 16695 TRACK(S)
.
.
.
ESNPJ30I PROCESSING FOR STATEMENT #5 RESUMED, COPY FROM VOLUME
ESNP461I PROCESSING FOR STATEMENT #5 COMPLETED, HIGHEST RETURN CODE EN
ESNPJ30I PROCESSING FOR STATEMENT #6 RESUMED, COPY FROM VOLUME
ESNP461I PROCESSING FOR STATEMENT #6 COMPLETED, HIGHEST RETURN CODE EN
ESNPJ30I PROCESSING FOR STATEMENT #7 RESUMED, COPY FROM VOLUME
ESNP461I PROCESSING FOR STATEMENT #7 COMPLETED, HIGHEST RETURN CODE EN
SNPJ30I PROCESSING FOR STATEMENT #8 RESUMED, COPY FROM VOLUME
ESNP461I PROCESSING FOR STATEMENT #8 COMPLETED, HIGHEST RETURN CODE EN
ESNPJ30I PROCESSING FOR STATEMENT #9 RESUMED, COPY FROM VOLUME
ESNP461I PROCESSING FOR STATEMENT #9 COMPLETED, HIGHEST RETURN CODE EN
ESNPJ30I PROCESSING FOR STATEMENT #10 RESUMED, COPY FROM VOLUME
```

```

ESNP461I PROCESSING FOR STATEMENT #10 COMPLETED, HIGHEST RETURN CODE EN
ESNPJ30I PROCESSING FOR STATEMENT #12 RESUMED, COPY FROM VOLUME
ESNP461I PROCESSING FOR STATEMENT #12 COMPLETED, HIGHEST RETURN CODE EN
ESNPJ30I PROCESSING FOR STATEMENT #13 RESUMED, COPY FROM VOLUME
ESNP461I PROCESSING FOR STATEMENT #13 COMPLETED, HIGHEST RETURN CODE EN
ESNPJ30I PROCESSING FOR STATEMENT #14 RESUMED, COPY FROM VOLUME
ESNP461I PROCESSING FOR STATEMENT #14 COMPLETED, HIGHEST RETURN CODE EN

```

```

.
.
RQST RC SOURCE TARGET
2 04 SNAP VOLUME ARX100 *7718*
3 04 SNAP VOLUME ARX101 *7719*
4 04 SNAP VOLUME ARX102 *771A*
5 04 SNAP VOLUME ARX103 *771B*
6 04 SNAP VOLUME ARX104 *771C*
7 04 SNAP VOLUME ARX105 *771D*
8 04 SNAP VOLUME ARX106 *771E*
9 04 SNAP VOLUME ARX107 *771F*
10 04 SNAP VOLUME ARZ100 *7518*
11 04 SNAP VOLUME ARZ101 *7519*
12 04 SNAP VOLUME ARZ102 *751A*
13 04 SNAP VOLUME ARZ103 *751B*
14 04 SNAP VOLUME ARZ104 *751C*
15 04 SNAP VOLUME ARZ105 *751D*
16 04 SNAP VOLUME ARZ106 *751E*
17 04 SNAP VOLUME ARZ107 *751F*
18 00 ACTIVATE - CONSISTENT(YES)
ESNPL80I 16 INTRA-REQUEST LEVEL SUBTASKS WERE ATTACHED
ESNPL81I 2 INTER-REQUEST LEVEL SUBTASKS WERE ATTACHED

```

## Reviewing output from an EMC SNAP backup with auto mapping

This topic shows sample output from an EMC SNAP backup taken using a profile that specified auto mapping of target volumes.

During a SNAP backup, Db2 Recovery Expert writes messages to several DD statements. You should access and review these DD statements to determine if the backup was successful.

### ARYOUT DD

This DD contains the backup profile information, control cards, and Db2 Recovery Expert messages. The following shows a sample SYSPRINT DD:

**Note:** Some lines that generally appear as single lines appear in this sample on two lines for display purposes.

```

0001I - ARYS001I - Db2 Recovery Expert Starting.
ARYS003I - Control Cards:
ARYS004I -   BACKUP "PUSER2"."TEST S89Z - SNAP TO STOGROUPS"
ARYS004I -
ARYS013I - Backup profile PUSER2.TEST S89Z - SNAP TO STOGROUPS was
           read from the repository.
ARYS150I - EMC API version 05.08.00. API patch level 0001. SCF patch level 0001.
ARYS179I - EMC Snap software version 05080001.
ARYS075I - Performing subsystem source volume validation.
ARYS190W - Volume ARX100 is not included in this backup.
           It contains only ARCHIVE log data.
ARYS190W - Volume ARX104 is not included in this backup.
           It contains only ARCHIVE log data.
ARYS076I - Subsystem source volume validation complete.
           All source volumes are in this profile.
ARYS370I - Performing target volume validation.
ARYS275I - Fetching volumes in target storage group: ARZSG02
ARYS334I - Volume ARX11A is offline. It will not be included in target list.
ARYS334I - Volume ARX11B is offline. It will not be included in target list.
ARYS334I - Volume ARX11C is offline. It will not be included in target list.
ARYS334I - Volume ARX11D is offline. It will not be included in target list.
ARYS334I - Volume ARX11E is offline. It will not be included in target list.
ARYS334I - Volume ARX11F is offline. It will not be included in target list.
ARYS334I - Volume ARX118 is offline. It will not be included in target list.
ARYS334I - Volume ARX119 is offline. It will not be included in target list.
ARYS275I - Fetching volumes in target storage group: ARZSG04
ARYS334I - Volume ARZ11A is offline. It will not be included in target list.
ARYS334I - Volume ARZ11B is offline. It will not be included in target list.
ARYS334I - Volume ARZ11C is offline. It will not be included in target list.

```



```

ARYS334I - Volume ARZ11D is offline. It will not be included in target list.
ARYS334I - Volume ARZ11E is offline. It will not be included in target list.
ARYS334I - Volume ARZ11F is offline. It will not be included in target list.
ARYS334I - Volume ARZ118 is offline. It will not be included in target list.
ARYS334I - Volume ARZ119 is offline. It will not be included in target list.
ARYS404I - Source Volser: ARX101 has been mapped to Target Volser: ARX10E
ARYS404I - Source Volser: ARX102 has been mapped to Target Volser: ARX10F
ARYS404I - Source Volser: ARX103 has been mapped to Target Volser: ARX110
ARYS404I - Source Volser: ARX105 has been mapped to Target Volser: ARX111
ARYS404I - Source Volser: ARX106 has been mapped to Target Volser: ARX112
ARYS404I - Source Volser: ARX107 has been mapped to Target Volser: ARX113
ARYS404I - Source Volser: ARZ100 has been mapped to Target Volser: ARZ110
ARYS404I - Source Volser: ARZ101 has been mapped to Target Volser: ARZ111
ARYS404I - Source Volser: ARZ102 has been mapped to Target Volser: ARZ112
ARYS404I - Source Volser: ARZ103 has been mapped to Target Volser: ARZ113
ARYS404I - Source Volser: ARZ104 has been mapped to Target Volser: ARZ114
ARYS404I - Source Volser: ARZ105 has been mapped to Target Volser: ARZ115
ARYS404I - Source Volser: ARZ106 has been mapped to Target Volser: ARZ116
ARYS404I - Source Volser: ARZ107 has been mapped to Target Volser: ARZ117
ARYS371I - Target volume validation complete.
ARYS039I - Volume map validation complete.
ARYS275I - Db2 checkpoint taken at RBA/LRSN 00000B2169DF
ARYS081I - Backup with timestamp 2008/10/24-23:41:51
           Generation 01 was removed from the repository
ARYS083I - Performing Snap Volume to create backup...
ARYS198I - Backup via Snap Volume Std Vol ARX101 Dev 7701 to Dev 770E
ARYS198I - Backup via Snap Volume Std Vol ARX102 Dev 7702 to Dev 770F
ARYS198I - Backup via Snap Volume Std Vol ARX103 Dev 7703 to Dev 7710
ARYS198I - Backup via Snap Volume Std Vol ARX105 Dev 7705 to Dev 7711
ARYS198I - Backup via Snap Volume Std Vol ARX106 Dev 7706 to Dev 7712
ARYS198I - Backup via Snap Volume Std Vol ARX107 Dev 7707 to Dev 7713
ARYS198I - Backup via Snap Volume Std Vol ARZ100 Dev 7500 to Dev 7510
ARYS198I - Backup via Snap Volume Std Vol ARZ101 Dev 7501 to Dev 7511
ARYS198I - Backup via Snap Volume Std Vol ARZ102 Dev 7502 to Dev 7512
ARYS198I - Backup via Snap Volume Std Vol ARZ103 Dev 7503 to Dev 7513
ARYS198I - Backup via Snap Volume Std Vol ARZ104 Dev 7504 to Dev 7514
ARYS198I - Backup via Snap Volume Std Vol ARZ105 Dev 7505 to Dev 7515
ARYS198I - Backup via Snap Volume Std Vol ARZ106 Dev 7506 to Dev 7516
ARYS198I - Backup via Snap Volume Std Vol ARZ107 Dev 7507 to Dev 7517
ARYS084I - Backup of profile PUSER2.TEST S89Z - SNAP TO STOGROUPS has been created.
ARYS279I - Task 03 - Unit 7710 with old volser ARX103 was clipped to volser ARX110
ARYS279I - Task 07 - Unit 7510 with old volser ARZ100 was clipped to volser ARZ110
ARYS279I - Task 02 - Unit 770F with old volser ARX102 was clipped to volser ARX10F
ARYS279I - Task 08 - Unit 7511 with old volser ARZ101 was clipped to volser ARZ111
ARYS279I - Task 04 - Unit 7711 with old volser ARX105 was clipped to volser ARX111
ARYS279I - Task 05 - Unit 7712 with old volser ARX106 was clipped to volser ARX112
ARYS279I - Task 06 - Unit 7713 with old volser ARX107 was clipped to volser ARX113
ARYS279I - Task 01 - Unit 770E with old volser ARX101 was clipped to volser ARX10E
ARYS279I - Task 03 - Unit 7514 with old volser ARZ104 was clipped to volser ARZ114
ARYS279I - Task 02 - Unit 7513 with old volser ARZ103 was clipped to volser ARZ113
ARYS279I - Task 04 - Unit 7515 with old volser ARZ105 was clipped to volser ARZ115
ARYS279I - Task 05 - Unit 7516 with old volser ARZ106 was clipped to volser ARZ116
ARYS279I - Task 06 - Unit 7517 with old volser ARZ107 was clipped to volser ARZ117
ARYS279I - Task 01 - Unit 7512 with old volser ARZ102 was clipped to volser ARZ112
ARYS004I - Collecting dataset information for object level recovery.
ARYS004I - Dataset information collection complete.
ARYS080I - Backup with timestamp 2008/10/27-11:54:22
           Generation 01 was saved in the repository
ARYS002I - ARY complete. RC=004.

```

## ARY#REPT DD

This DD contains a summary report that describes the details of the backup, including the standard and SNAP volume information and the data types found on the backup volumes. The following shows a sample ARY#REPT DD from a SNAP backup:

### Db2 Recovery Expert Backup Summary Report

```

Utility Executed:..... Backup
Profile Name:..... PUSER2.TEST S89Z - SNAP TO STOGROUPS
Db2 Subsystem:..... S89Z
Db2 Version:..... 0810
Backup Type:..... Snap
Backup Contains:..... Object Data and Log Data
Partial Backup:..... No
Nbr of Controllers:..... 01
Lowest Microcode Level:... 5x73
Nbr of Volumes:..... 0014

```

```

Backup RBA:..... 00000B2169DF
Last Checkpoint RBA:..... 00000B2169DF
HPGRBLP RBA:..... 00000A669A6B
Backup Date:..... 10/27/2021
Backup Time:..... 11:54:22
Consistency Method:..... EMC Consistent Snap
Supports Object Restore:.. Yes

```

Db2 Recovery Expert  
Backup Volume Detail Report

<---Db2 Volume--->			<-Target-->		<-----Data Types----->					
Volser	Ucb#	Devtyp	Volser	Ucb#	Obj	OCat	ALog	ACat	RLog	RCat
ARX101	7701	3390-1	ARX10E	770E	No	No	Yes	No	Yes	No
ARX102	7702	3390-1	ARX10F	770F	No	No	Yes	Yes	Yes	Yes
ARX103	7703	3390-1	ARX110	7710	No	No	Yes	No	No	No
ARX105	7705	3390-1	ARX111	7711	No	No	Yes	No	Yes	No
ARX106	7706	3390-1	ARX112	7712	No	No	Yes	No	No	No
ARX107	7707	3390-1	ARX113	7713	No	No	Yes	No	Yes	No
ARZ100	7500	3390-3	ARZ110	7510	Yes	No	No	No	No	No
ARZ101	7501	3390-3	ARZ111	7511	Yes	No	No	No	No	No
ARZ102	7502	3390-3	ARZ112	7512	Yes	No	No	No	No	No
ARZ103	7503	3390-3	ARZ113	7513	Yes	No	No	No	No	No
ARZ104	7504	3390-3	ARZ114	7514	Yes	Yes	No	No	No	No
ARZ105	7505	3390-3	ARZ115	7515	Yes	No	No	No	No	No
ARZ106	7506	3390-3	ARZ116	7516	Yes	No	No	No	No	No
ARZ107	7507	3390-3	ARZ117	7517	Yes	No	No	No	No	No

The **Snap** section of this report lists the target units that now contain the backup of the associated Db2 standard volumes. The **Data Types** section of the report contains the following information:

**Obj**

Yes means that the volume contains object data.

**OCat**

Yes means that the volume contains a user catalog that in turn contains the z/OS catalog information for object data sets.

**ALog**

Yes means that the volume contains one or more active log data set(s).

**ACat**

Yes means that the volume contains a user catalog that in turn contains z/OS catalog information for an active log data set.

**RLog**

Yes means that the volume contains one or more archive log data set(s).

**RCat**

Yes means that the volume contains a user catalog that in turn contains z/OS catalog information for an archive log data set.

If a volume contains a mix of object data or catalogs and log data or catalogs, then Db2 Recovery Expert issues a message stating that the object and log data are not separated and a full system restore is required.

**ARYSNAPO DD**

This DD contains messages generated by the EMC SNAP Volume and Timefinder utilities. For information on these messages, refer to the EMC documentation. The following shows portions of a sample ARYSNAPO DD:

```

*** TIMEFINDER MF SNAP V5.8.0 (001) ***
ESNP010I BEGINNING COMMAND PARSE
ESNP011I PARSING STATEMENT #1
ESNP000I API GLOBAL REQUEST PROCESSED
ESNP011I PARSING STATEMENT #2
ESNP040I API SNAP VOLUME REQUEST PROCESSED
ESNP500I UNIT 7701 WAS REQUESTED, FOUND WITH VOLUME ARX101 MOUNTED
ESNP500I UNIT 770E WAS REQUESTED, FOUND WITH VOLUME ARX10E MOUNTED
ESNP011I PARSING STATEMENT #3
ESNP040I API SNAP VOLUME REQUEST PROCESSED

```

```

ESNP500I UNIT 7702 WAS REQUESTED, FOUND WITH VOLUME ARX102 MOUNTED
ESNP500I UNIT 770F WAS REQUESTED, FOUND WITH VOLUME ARX10F MOUNTED
.
.
ESNP011I PARSING STATEMENT #17
ESNPK31I A MAXIMUM OF 86 SUBTASKS WILL BE SCHEDULED
ESNP040I PROCESSING REQUESTS
ESNP460I PROCESSING FOR STATEMENT #2 BEGINNING, COPY FROM VOLUME ARX101 TO VOLUME ARX10E
ESNP466W VOLUME ARX10E (S/N 0001903-01055/0970) IS ONLINE TO ANOTHER SYSTEM,
IT SHOULD BE VARIED OFFLINE AND ONLINE BEFORE USING
ESNP465I ONLINE PATH GROUP(S) ARE: 8800047D2D2096C333B989
ESNPJ31I PROCESSING FOR STATEMENT #2 SUSPENDED FOR PENDING ACTIVATE
ESNP460I PROCESSING FOR STATEMENT #3 BEGINNING, COPY FROM VOLUME ARX102 TO VOLUME ARX10F
ESNP466W VOLUME ARX10F (S/N 0001903-01055/0971) IS ONLINE TO ANOTHER SYSTEM,
IT SHOULD BE VARIED OFFLINE AND ONLINE BEFORE USING
ESNP465I ONLINE PATH GROUP(S) ARE: 8800047D2D2096C333B989
ESNPJ31I PROCESSING FOR STATEMENT #3 SUSPENDED FOR PENDING ACTIVATE
.
.
ESNPF50I PROCESSING FOR STATEMENT #16 BEGINNING, ACTIVATE SNAP
ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
- FROM VOLUME ARZ100 (S/N 0001903-01055/0762) TO VOLUME ARZ110 (S/N 0001903-01055/0772)
ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
- FROM VOLUME ARZ101 (S/N 0001903-01055/0763) TO VOLUME ARZ111 (S/N 0001903-01055/0773)
ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
- FROM VOLUME ARZ102 (S/N 0001903-01055/0764) TO VOLUME ARZ112 (S/N 0001903-01055/0774)
ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 50085 TRACK(S)
- FROM VOLUME ARZ103 (S/N 0001903-01055/0765) TO VOLUME ARZ113 (S/N 0001903-01055/0775)
.
.
11:54:22 ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 16695 TRACK(S)
11:54:22 - FROM VOLUME ARX106 (S/N 0001903-01055/0968) TO VOLUME ARX112 (S/N 0001903-01055/0974)
11:54:22 ESNP112I COPY HAS BEEN INITIATED FOR 1 EXTENT(S) - 16695 TRACK(S)
11:54:22 - FROM VOLUME ARX107 (S/N 0001903-01055/0969) TO VOLUME ARX113 (S/N 0001903-01055/0975)
11:54:22 ESNPF51I PROCESSING FOR STATEMENT #16 COMPLETED, HIGHEST RETURN CODE ENCOUNTERED IS 0
11:54:22 ESNPJ30I PROCESSING FOR STATEMENT #2 RESUMED, COPY FROM VOLUME
11:54:22 ESNP461I PROCESSING FOR STATEMENT #2 COMPLETED, HIGHEST RETURN CODE ENCOUNTERED IS 4
11:54:22 ESNPJ30I PROCESSING FOR STATEMENT #3 RESUMED, COPY FROM VOLUME
11:54:22 ESNP461I PROCESSING FOR STATEMENT #3 COMPLETED, HIGHEST RETURN CODE ENCOUNTERED IS 4
11:54:22 ESNPJ30I PROCESSING FOR STATEMENT #4 RESUMED, COPY FROM VOLUME
11:54:22 ESNP461I PROCESSING FOR STATEMENT #4 COMPLETED, HIGHEST RETURN CODE ENCOUNTERED IS 4
.
.
11:54:22 ESNPJ30I PROCESSING FOR STATEMENT #15 RESUMED, COPY FROM VOLUME
11:54:22 ESNP461I PROCESSING FOR STATEMENT #15 COMPLETED, HIGHEST RETURN CODE ENCOUNTERED IS 4
11:54:22 ESNP440I PROCESSING COMPLETED, HIGHEST RETURN CODE ENCOUNTERED IS 4
11:54:22 RQST RC SOURCE TARGET DISP TRACKS EXTENTS
11:54:22 2 04 SNAP VOLUME ARX101 ARX10E 16695 1- 1
11:54:22 3 04 SNAP VOLUME ARX102 ARX10F 16695 1- 1
11:54:22 4 04 SNAP VOLUME ARX103 ARX110 16695 1- 1
11:54:22 5 04 SNAP VOLUME ARX105 ARX111 16695 1- 1
11:54:22 6 04 SNAP VOLUME ARX106 ARX112 16695 1- 1
11:54:22 7 04 SNAP VOLUME ARX107 ARX113 16695 1- 1
11:54:22 8 04 SNAP VOLUME ARZ100 ARZ110 50085 1- 1
11:54:22 9 04 SNAP VOLUME ARZ101 ARZ111 50085 1- 1
11:54:22 10 04 SNAP VOLUME ARZ102 ARZ112 50085 1- 1
11:54:22 11 04 SNAP VOLUME ARZ103 ARZ113 50085 1- 1
11:54:22 12 04 SNAP VOLUME ARZ104 ARZ114 50085 1- 1
11:54:22 13 04 SNAP VOLUME ARZ105 ARZ115 50085 1- 1
11:54:22 14 04 SNAP VOLUME ARZ106 ARZ116 50085 1- 1
11:54:22 15 04 SNAP VOLUME ARZ107 ARZ117 50085 1- 1
11:54:22 16 00 ACTIVATE - CONSISTENT(YES)
11:54:22 ESNPL80I 14 INTRA-REQUEST LEVEL SUBTASKS WERE ATTACHED
11:54:22 ESNPL81I 2 INTER-REQUEST LEVEL SUBTASKS WERE ATTACHED

```

## Reviewing output from a Db2 backup

During a Db2 backup, Db2 Recovery Expert writes messages to the job's DD statements. You should access and review these DD statements to determine if the backup was successful.

### ARYOUT DD (ARYBACK step)

This DD contains the backup profile information, control cards, and Db2 Recovery Expert messages. The following shows a sample ARYOUT DD:

**Note:** Some lines that generally appear as single lines appear in this sample on two lines for display purposes.

```
ARYS001I - Db2 Recovery Expert Starting.
```

```

ARYS003I - Control Cards:
ARYS004I -   BACKUP "PUSER"."TEST S89X - Db2 BACKUP"
ARYS004I -
ARYS013I - Backup profile PUSER.TEST S89X -
           Db2 BACKUP was read from the repository.
ARYS075I - Performing subsystem source volume validation.
ARYS076I - Subsystem source volume validation complete.
           All source volumes are in this profile.
ARYS039I - Volume map validation complete.
ARYS275I - Db2 checkpoint taken at RBA/LRSN 000005B44000
ARYS913I - SSID <ssid> Invoking Backup System utility
ARYS914I - SSID <ssid> Backup System complete: <backup token>
ARYS004I - Collecting dataset information for object level recovery.
ARYS004I - Dataset information collection complete.
ARYS080I - Backup with timestamp 2008/10/28-10:54:38
           Generation 01 was saved in the repository.
ARYS002I - Db2 Recovery Expert complete. RC=000.

```

## ARY#REPT DD (ARYBACK step)

This DD contains a summary report that describes the details of the backup, including the source and target volume information and the data types found on the backup volumes. The following shows a sample ARY#REPT DD from a Db2 backup:

### Db2 Recovery Expert Backup Summary Report

```

Utility Executed:..... Backup
Profile Name:..... PUSER.TEST S89X - Db2 BACKUP
Db2 Subsystem:..... S89X
Db2 Version:..... 0810
Backup Type:..... Db2 System Level Backup
Backup Contains:..... Object Data and Log Data
Partial Backup:..... No
Nbr of Volumes:..... 0016
HSM Backup Token:..... C5F8F1C2C3361B5632B641C6000005B41B0A
Alternate Copy Pool:..... ALT1EC1B
Database Copy Pool Backup: SGEC1BDA
Log Copy Pool Backup:.....SGEC1BLA
Backup RBA:..... 000005B41B0A
Last Checkpoint RBA:..... 000005B44000
HPGRBLP RBA:..... 000005B41B0A
Backup Date:..... 10/28/2021
Backup Time:..... 10:54:38
Consistency Method:..... Db2 System Level Backup
Supports Object Restore:.. Yes
I/O Suspend Time:..... 2021-10-28-10.54.28.196549
I/O Resume Time:..... 2021-10-28-10.54.38.808076
Backup Elapsed:..... 10.61 Seconds

```

### Db2 Recovery Expert Backup Volume Detail Report

<-Source Volumes->			<-Targets->		<-----Data Types----->					
Volser	Ucb#	Devtyp	Volser	Ucb#	Obj	OCat	ALog	ACat	RLog	RCat
ARX140	7740	3390-1	ARX152	7752	No	No	Yes	No	No	No
ARX141	7741	3390-1	ARX153	7753	No	No	Yes	No	No	No
ARX142	7742	3390-1	ARX154	7754	No	No	No	No	Yes	No
ARX143	7743	3390-1	ARX155	7755	No	No	No	No	Yes	No
ARX144	7744	3390-1	ARX156	7756	No	No	No	Yes	Yes	Yes
ARX145	7745	3390-1	ARX157	7757	No	No	Yes	No	No	No
ARX146	7746	3390-1	ARX158	7758	No	No	Yes	No	Yes	No
ARX147	7747	3390-1	ARX159	7759	No	No	Yes	No	Yes	No
ARZ140	7540	3390-3	ARZ152	7552	Yes	No	No	No	No	No
ARZ141	7541	3390-3	ARZ153	7553	Yes	No	No	No	No	No
ARZ142	7542	3390-3	ARZ154	7554	Yes	Yes	No	No	No	No
ARZ143	7543	3390-3	ARZ155	7555	Yes	No	No	No	No	No
ARZ144	7544	3390-3	ARZ156	7556	Yes	No	No	No	No	No
ARZ145	7545	3390-3	ARZ157	7557	Yes	No	No	No	No	No
ARZ146	7546	3390-3	ARZ158	7558	Yes	No	No	No	No	No
ARZ147	7547	3390-3	ARZ159	7559	Yes	No	No	No	No	No

The **Source Volumes** and **Target** sections of this report list the target units that now contain the backup of the associated Db2 volumes. The **Data Types** section of the report contains the following information:

**Obj**

Yes means that the volume contains object data.

**OCat**

Yes means that the volume contains a user catalog that in turn contains the z/OS catalog information for object data sets.

**ALog**

Yes means that the volume contains one or more active log data set(s).

**ACat**

Yes means that the volume contains a user catalog that in turn contains z/OS catalog information for an active log data set.

**RLog**

Yes means that the volume contains one or more archive log data set(s).

**RCat**

Yes means that the volume contains a user catalog that in turn contains z/OS catalog information for an archive log data set.

If a volume contains a mix of object data or catalogs and log data or catalogs, then Db2 Recovery Expert issues a message stating that the object and log data are not separated and a full system restore is required.

## HSMOUT DD

The HSMOUT DD allows you to collect all HSM messages in one place, to aid in diagnosing backup issues.

**Background:** Db2 system level backup (SLB) supports sending HSM messages to the utility's SYSPRINT DD statement. Db2 Recovery Expert can also capture the HSM messages. Normally, all messages go into the ARYOUT DD, but if you want to collect the HSM messages in one place separate from the other messages, you can do that with a separate DD, HSMOUT.

The DDNAME for HSM output is defined in the HSM\_OUTPUT parameter in PARMLIB.

**Note:** The HSM\_OUTPUT PARMLIB parameter defines where you want to send HSM information during a system level backup in non-DEBUG mode. When you run a backup in DEBUG mode, the HSM messages always display, even if the HSM\_OUTPUT is set not to display HSM information.

These are the valid values for HSM\_OUTPUT:

- / (slash) do not display HSM information. When this value is specified, no additional messages appear in the output. This is the default value.
- **A** output HSM information into the regular ARYOUT DD. When this value is specified, the HSM messages appear in ARYOUT DDNAME together with the other output messages.
- **H** output HSM information into a separate HSMOUT DD. When this value is specified, the HSM messages appear in a separate HSMOUT DDNAME. If the Open fails for HSMOUT DD, the output is redirected to ARYOUT, and warning message ARYS883W appears in the job log.

## Reviewing output from a DFSMSdss backup

---

During a DFSMSdss backup, Db2 Recovery Expert writes messages to several of the job's DD statements. You should access and review these DD statements to determine if the backup was successful.

### Reviewing output from a DFSMSdss backup with auto mapping

This topic shows sample output from a DFSMSdss backup taken using a backup profile that specified auto mapping of target volumes within specified stogroups.

#### ARYOUT DD (ARYBACK step)

This DD contains the backup profile information, control cards, and Db2 Recovery Expert messages. The following shows a sample ARYOUT DD:

**Note:** Some lines that generally appear as single lines appear in this sample on two lines for display purposes.

```
ARYS001I - Db2 Recovery Expert Starting.
ARYS003I - Control Cards:
ARYS004I -     BACKUP "PUSER2"."TEST SS9X - DFDSS AUTO MAP"
ARYS004I -
ARYS013I - Backup profile PUSER2.TEST SS9X
           DFDSS AUTO MAP was read from the repository.
ARYS075I - Performing subsystem source volume validation.
ARYS190W - Volume ARX184 is not included in this backup.
           It contains only ARCHIVE log data.
ARYS190W - Volume ARX185 is not included in this backup.
           It contains only ARCHIVE log data.
ARYS076I - Subsystem source volume validation complete.
           All source volumes are in this prof
ARYS370I - Performing target volume validation.
ARYS275I - Fetching volumes in target storage group: ARZSG20
ARYS275I - Fetching volumes in target storage group: ARZSG18
ARYS404I - Source Volser: ARX180 has been mapped to Target Volser: ARX190
ARYS404I - Source Volser: ARX181 has been mapped to Target Volser: ARX191
ARYS404I - Source Volser: ARX182 has been mapped to Target Volser: ARX192
ARYS404I - Source Volser: ARX183 has been mapped to Target Volser: ARX193
ARYS404I - Source Volser: ARX186 has been mapped to Target Volser: ARX196
ARYS404I - Source Volser: ARX187 has been mapped to Target Volser: ARX197
ARYS404I - Source Volser: ARZ180 has been mapped to Target Volser: ARZ190
ARYS404I - Source Volser: ARZ181 has been mapped to Target Volser: ARZ191
ARYS404I - Source Volser: ARZ182 has been mapped to Target Volser: ARZ192
ARYS404I - Source Volser: ARZ183 has been mapped to Target Volser: ARZ193
ARYS404I - Source Volser: ARZ184 has been mapped to Target Volser: ARZ194
ARYS404I - Source Volser: ARZ185 has been mapped to Target Volser: ARZ195
ARYS404I - Source Volser: ARZ186 has been mapped to Target Volser: ARZ196
ARYS404I - Source Volser: ARZ187 has been mapped to Target Volser: ARZ197
ARYS371I - Target volume validation complete.
ARYS039I - Volume map validation complete.
ARYS275I - Db2 checkpoint taken at RBA/LRSN 00000746D761
ARYS081I - Backup with timestamp 2021/10/22-22:44:46
           Generation 02 was removed from the repository.
ARYS152I - Suspending log activity to subsystem SS9X.
ARYS004I - Performing disk copy process.
ARYS356I - Task 01 - Copying source volser ARX180 to target volser ARX190.
ARYS356I - Task 02 - Copying source volser ARX181 to target volser ARX191.
ARYS356I - Task 04 - Copying source volser ARX183 to target volser ARX193.
ARYS356I - Task 03 - Copying source volser ARX182 to target volser ARX192.
ARYS356I - Task 04 - Copying source volser ARZ181 to target volser ARZ191.
ARYS356I - Task 02 - Copying source volser ARX187 to target volser ARX197.
ARYS356I - Task 03 - Copying source volser ARZ180 to target volser ARZ190.
ARYS356I - Task 01 - Copying source volser ARX186 to target volser ARX196.
ARYS356I - Task 04 - Copying source volser ARZ185 to target volser ARZ195.
ARYS356I - Task 02 - Copying source volser ARZ183 to target volser ARZ193.
ARYS356I - Task 03 - Copying source volser ARZ184 to target volser ARZ194.
ARYS356I - Task 01 - Copying source volser ARZ182 to target volser ARZ192.
ARYS356I - Task 02 - Copying source volser ARZ187 to target volser ARZ197.
ARYS356I - Task 01 - Copying source volser ARZ186 to target volser ARZ196.
ARYS152I - Resuming log activity to subsystem SS9X.
ARYS084I - Backup of profile PUSER2.TEST SS9X - DFDSS AUTO MAP has been created.
ARYS004I - Collecting dataset information for object level recovery.
ARYS004I - Dataset information collection complete.
ARYS080I - Backup with timestamp 2021/10/28-11:47:08
           Generation 02 was saved in the repository.
ARYS002I - Db2 Recovery Expert complete. RC=004.
```

## ARY#REPT DD (ARYBACK step)

This DD contains a summary report that describes the details of the backup, including the standard and DFSMSdss volume information and the data types found on the backup volumes. The following shows a sample ARY#REPT DD from a DFSMSdss backup:

Db2 Recovery Expert  
Backup Summary Report

Utility Executed:..... Backup  
Profile Name:..... PUSER2.TEST SS9X - DFDSS AUTO MAP

```

Db2 Subsystem:..... SS9X
Db2 Version:..... 0910
Backup Type:..... DFSMSdss Disk Copy
Backup Contains:..... Object Data and Log Data
Partial Backup:..... No
Nbr of Volumes:..... 0014
Backup RBA:..... 0000074700AA
Last Checkpoint RBA:..... 00000746D761
HPGRBLP RBA:..... 000007465EFF
Backup Date:..... 10/28/2021
Backup Time:..... 11:47:08
Consistency Method:..... Db2 Log Suspend
Supports Object Restore:.. Yes
I/O Suspend Time:..... 2021-10-28-11.47.08.670802
I/O Resume Time:..... 2021-10-28-11.47.11.178833
Backup Elapsed:..... 02.50 Seconds

```

Db2 Recovery Expert  
Backup Volume Detail Report

<---Db2 Volume--->			<-Target-->		<-----Data Types----->					
Volser	Ucb#	Devtyp	Volser	Ucb#	Obj	OCat	ALog	ACat	RLog	RCat
ARX180	7780	3390-1	ARX190	7790	No	No	Yes	No	No	No
ARX181	7781	3390-1	ARX191	7791	No	No	Yes	No	No	No
ARX182	7782	3390-1	ARX192	7792	No	No	No	Yes	Yes	Yes
ARX183	7783	3390-1	ARX193	7793	No	No	Yes	No	No	No
ARX186	7786	3390-1	ARX196	7796	No	No	Yes	No	Yes	No
ARX187	7787	3390-1	ARX197	7797	No	No	Yes	No	Yes	No
ARZ180	7580	3390-3	ARZ190	7590	Yes	No	No	No	No	No
ARZ181	7581	3390-3	ARZ191	7591	Yes	No	No	No	No	No
ARZ182	7582	3390-3	ARZ192	7592	Yes	No	No	No	No	No
ARZ183	7583	3390-3	ARZ193	7593	Yes	No	No	No	No	No
ARZ184	7584	3390-3	ARZ194	7594	Yes	No	No	No	No	No
ARZ185	7585	3390-3	ARZ195	7595	Yes	Yes	No	No	No	No
ARZ186	7586	3390-3	ARZ196	7596	Yes	No	No	No	No	No
ARZ187	7587	3390-3	ARZ197	7597	Yes	No	No	No	No	No

The **Db2 Volume** and **Target** sections of this report list the target units that now contain the backup of the associated Db2 standard volumes. The **Data Types** section of the report contains the following information:

**Obj**

Yes means that the volume contains object data.

**OCat**

Yes means that the volume contains a user catalog that in turn contains the z/OS catalog information for object data sets.

**ALog**

Yes means that the volume contains one or more active log data set(s).

**ACat**

Yes means that the volume contains a user catalog that in turn contains z/OS catalog information for an active log data set.

**RLog**

Yes means that the volume contains one or more archive log data set(s).

**RCat**

Yes means that the volume contains a user catalog that in turn contains z/OS catalog information for an archive log data set.

## Reviewing output from a DFSMSdss backup with manual mapping

This topic shows sample output from a DFSMSdss backup taken using a backup profile that used manual mapping of target volumes.

### ARYOUT DD (ARYBACK step)

This DD contains the backup profile information, control cards, and Db2 Recovery Expert messages. The following shows a sample ARYOUT DD:

**Note:** Some lines that generally appear as single lines appear in this sample on two lines for display purposes.

```

ARYS001I - Db2 Recovery Expert Starting.
ARYS003I - Control Cards:
ARYS004I -     BACKUP "TUSERDH"."TEST S99X - DFSMSDSS MANUAL"
ARYS004I -
ARYS013I - Backup profile TUSERDH.TEST S99X - DFSMSDSS MANUAL
           was read from the repository.
ARYS075I - Performing subsystem source volume validation.
ARYS076I - Subsystem source volume validation complete.
           All source volumes are in this profile.
ARYS039I - Volume map validation complete.
ARYS275I - Checkpoint taken at RBA/LRSN 00000747E737
ARYS152I - Suspending log activity to subsystem S99X.
ARYS004I - Performing disk copy process.
ARYS356I - Task 01 - Copying source volser ARZ180 to target volser ARZ190
ARYS356I - Task 02 - Copying source volser ARZ181 to target volser ARZ191
ARYS356I - Task 03 - Copying source volser ARZ182 to target volser ARZ192
ARYS356I - Task 04 - Copying source volser ARZ183 to target volser ARZ193
ARYS356I - Task 04 - Copying source volser ARZ187 to target volser ARZ197
ARYS356I - Task 02 - Copying source volser ARZ185 to target volser ARZ195
ARYS356I - Task 03 - Copying source volser ARZ186 to target volser ARZ196
ARYS356I - Task 01 - Copying source volser ARZ184 to target volser ARZ194
ARYS152I - Resuming log activity to subsystem S99X.
ARYS084I - Backup of profile TUSERDH.TEST S99X - DFSMSDSS MANUAL has been created.
ARYS004I - Collecting dataset information for object level recovery.
ARYS004I - Dataset information collection complete.
ARYS080I - Backup with timestamp 2021/10/28-19:41:00
           Generation 01 was saved in the repository.
ARYS002I - Db2 Recovery Expert complete. RC=000.

```

## ARY#REPT DD (ARYBACK step)

This DD contains a summary report that describes the details of the backup, including the standard and DFSMS volume information and the data types found on the backup volumes. The following shows a sample ARY#REPT DD from a DFSSsms backup:

### Db2 Recovery Expert Backup Summary Report

```

Utility Executed:..... Backup
Profile Name:..... TUSERDH.TEST S99X - DFSMSDSS MANUAL
Db2 Subsystem:..... S99X
Db2 Version:..... 0910
Backup Type:..... DFSMSdss Disk Copy
Backup Contains:..... Object Data Only
Partial Backup:..... No
Nbr of Volumes:..... 0008
Backup RBA:..... 0000074814FD
Last Checkpoint RBA:..... 00000747E737
HPGRBLP RBA:..... 000007473B43
Backup Date:..... 10/28/2021
Backup Time:..... 19:41:00
Consistency Method:..... Db2 Log Suspend
Supports Object Restore:.. Yes
I/O Suspend Time:..... 2021-10-28-19.40.59.817572
I/O Resume Time:..... 2021-10-28-19.41.01.531081
Backup Elapsed:..... 01.71 Seconds

```

### Db2 Recovery Expert Backup Volume Detail Report

<---Db2 Volume--->			<-Target-->		<-----Data Types----->					
Volser	Ucb#	Devtyp	Volser	Ucb#	Obj	OCat	ALog	ACat	RLog	RCat
ARZ180	7580	3390-3	ARZ190	7590	Yes	No	No	No	No	No
ARZ181	7581	3390-3	ARZ191	7591	Yes	No	No	No	No	No
ARZ182	7582	3390-3	ARZ192	7592	Yes	No	No	No	No	No
ARZ183	7583	3390-3	ARZ193	7593	Yes	No	No	No	No	No
ARZ184	7584	3390-3	ARZ194	7594	Yes	No	No	No	No	No
ARZ185	7585	3390-3	ARZ195	7595	Yes	Yes	No	No	No	No
ARZ186	7586	3390-3	ARZ196	7596	Yes	No	No	No	No	No
ARZ187	7587	3390-3	ARZ197	7597	Yes	No	No	No	No	No



The **Db2 Volumes** and **Target** sections of this report list the target units that now contain the backup of the associated Db2 standard volumes. The **Data Types** section of the report contains the following information:

**Obj**

Yes means that the volume contains object data.

**OCat**

Yes means that the volume contains a user catalog that in turn contains the z/OS catalog information for object data sets.

**ALog**

Yes means that the volume contains one or more active log data set(s).

**ACat**

Yes means that the volume contains a user catalog that in turn contains z/OS catalog information for an active log data set.

**RLog**

Yes means that the volume contains one or more archive log data set(s).

**RCat**

Yes means that the volume contains a user catalog that in turn contains z/OS catalog information for an archive log data set.

## Reviewing the Restricted Objects report

The Restricted Objects report lists the objects that were in a restricted state when a system level backup was created.

As a system level backup is performed, Db2 Recovery Expert will check for any objects that are in a restricted state. The restricted statuses Db2 Recovery Expert checks for are CHKP, GRECP, LPL, RBDP, RECP, UTUT and WEPR. If an object is found that is in one of these restricted states, it will be included in the Restricted Objects report. In addition, Db2 Recovery Expert will flag the object in the data repository as restricted at the time of the system backup.

An object that has been flagged as having a restricted status cannot be image copied or restored from a system level backup. If a job tries to image copy or restore an object that has been flagged as being in a restricted state, an error message is issued alerting the user to the object's status.

The Restricted Objects report displays after the System Backup report and shows all objects that were in a restricted state at the time of a system level backup. The following is a sample of a Restricted Objects report.

Db2 Recovery Expert for z/OS Restricted Objects Report				
<-Database->	<-Space Name->	<-Type->	<-Partition->	<-Status->
RIDb2	RITS1	TS		RW,CHKP
FLCPDB14	NPRT1CEP	IX		UT,RBDP
FLCPDB14	NPRT1B6P	IX		UT,RBDP
FLCPDB14	PARTRCPY	IX	0001	UT,RBDP*
FLCPDB14	PARTRCPY	IX	0002	UT,RBDP*
FLCPDB14	PARTRCPY	IX	0003	UT,RBDP*
FLCPDB14	PARTRCPY	IX	0004	UT,RBDP*
FLCPDB14	NPRT1ZIP	IX	0001	UT,RBDP*
DSN00018	ARYTESTR	TS	0001	UT,RECP
RIDB	RITS1	TS		RW,RECP,COPY
RIDB	RITS2	TS		RW,RECP,COPY
RIDB	RIIX1A	IX		RW,RBDP
RIDB	RIIX1B	IX		RW,RBDP
RIDB	RIIX2A	IX		RW,RBDP

## Reviewing output from offloading a backup

When offloading a backup, Db2 Recovery Expert writes messages to several of the offload job's DD statements. You should access and review these DD statements to determine if the offload was successful.

**Note:** If you created the system level backup using the Db2 backup method and discover that the offload you requested failed on one of the copy pools, you must wait to resubmit the failed offload job until the offload of the other copy pool completes.

### ARYOUT DD (ARYOFFL step)

This DD contains the backup profile information, control cards, and Db2 Recovery Expert messages. The following shows part of a sample ARYOUT DD:

**Note:** Some lines that generally appear as single lines appear in this sample on two lines for display purposes.

```
ARYS001I - Db2 Recovery Expert Starting.
ARYS003I - Control Cards:
ARYS004I - OFFLOAD "PUSER"."TEST S89Z - SNAP"
ARYS004I - GENERATION LAST-BACKUP
ARYS004I -
ARYS123I - Backup PUSER.TEST S89Z
          SNAP generation 001 was read from the repository.
ARYS004I - Performing full volume offload.
ARYS249I - Task 01 - Offload process starting for unit 7718 (Source volser ARX100).
ARYS249I - Task 02 - Offload process starting for unit 7719 (Source volser ARX101).
ARYS279I - Task 01 - Unit 7718 with old volser ARX100 was clipped to volser ZZX100.
ARYS279I - Task 02 - Unit 7719 with old volser ARX101 was clipped to volser ZZX101.
ARYS263I - Task 01 - Unit 7718 offloaded to local primary dataset
          TUSERDH.S89Z.ARX100.D08102
ARYS254I - Task 01 - Offload process for unit 7718 (Source volser ARX100) complete.
ARYS263I - Task 02 - Unit 7719 offloaded to local primary dataset
          TUSERDH.S89Z.ARX101.D08102
ARYS254I - Task 02 - Offload process for unit 7719 (Source volser ARX101) complete.
.
.
.
ARYS002I - Db2 Recovery Expert complete.
```

### ARY#REPT DD (ARYOFFL step)

This DD contains a summary report that describes the details of the offload, original and target volume information, and the offloaded file names. The following shows a sample ARY#REPT DD from an offload using the SNAP backup method. This report includes the same information for FlashCopy, BCV, and DFSMSdss backup methods.

```
                Db2 Recovery Expert
                Volume Offload Summary Report

Utility Executed:..... Offload
Profile Name:..... PUSER.TEST S89Z - SNAP
Offload Date:..... 10/23/2021
Offload Time:..... 12:49:19
Data Mover:..... DFSMSdss
Compress:..... No
Encrypted..... No
Encryption Method..... RSA CLRAES128
Generation:..... 0001
Nbr Of Volumes:..... 0016
```

The following shows a sample ARY#REPT DD from an offload using the Db2 backup method.

Db2 Recovery Expert  
Volume Offload Summary Report

Utility Executed:..... Offload  
 Profile Name:..... PUSER.TEST S89Z - Db2  
 Offload Date:..... 10/23/2021  
 Offload Time:..... 12:49:19  
 Data Mover:..... DFSMSDss  
 Compress:..... No  
 Encrypted..... No  
 Encryption Method..... RSA CLRAES128  
 Generation:..... 0001  
 Nbr Of Volumes:..... 0016  
 Alternate Copy Pool:..... ALT1EC1B  
 Database Copy Pool Backup: SGEC1BDA  
 Log Copy Pool Backup:.....SGEC1BLA

Db2 Recovery Expert  
Volume Offload Detail Report

<---Db2--->				<---Tape--->	
Volser	Ucb#	Type	Offloaded to Filename	FileSeq	Volser
ARX100	7700	LP	TUSERDH.S89Z.ARX100.D081023.T124922	001	C10021
ARX101	7701	LP	TUSERDH.S89Z.ARX101.D081023.T124922	001	C10022
ARX102	7702	LP	TUSERDH.S89Z.ARX102.D081023.T124937	002	C10021
ARX103	7703	LP	TUSERDH.S89Z.ARX103.D081023.T124938	002	C10022
ARX104	7704	LP	TUSERDH.S89Z.ARX104.D081023.T124949	003	C10021
ARX105	7705	LP	TUSERDH.S89Z.ARX105.D081023.T124949	003	C10022
ARX106	7706	LP	TUSERDH.S89Z.ARX106.D081023.T125002	004	C10021
ARX107	7707	LP	TUSERDH.S89Z.ARX107.D081023.T125016	004	C10022
ARZ100	7500	LP	TUSERDH.S89Z.ARZ100.D081023.T125007	005	C10021
ARZ101	7501	LP	TUSERDH.S89Z.ARZ101.D081023.T125022	005	C10022
ARZ102	7502	LP	TUSERDH.S89Z.ARZ102.D081023.T125024	001	C10023
ARZ103	7503	LP	TUSERDH.S89Z.ARZ103.D081023.T125030	001	C10026
ARZ104	7504	LP	TUSERDH.S89Z.ARZ104.D081023.T125031	002	C10023
ARZ105	7505	LP	TUSERDH.S89Z.ARZ105.D081023.T125040	002	C10026
ARZ106	7506	LP	TUSERDH.S89Z.ARZ106.D081023.T125037	003	C10023
ARZ107	7507	LP	TUSERDH.S89Z.ARZ107.D081023.T125048	003	C10026

This report contains the following information:

**Db2 Volser/Ucb#**

The Db2 volume serial and UCB of the backup before offload.

**Type**

The backup type: LP is local primary, LB is local backup, RP is remote primary, RB is remote backup.

**Offloaded to Filename**

The data set name of the offloaded backup.

**FileSeq**

The data set file sequence number.

**Volser**

The data set volume serial number.

**Job log messages**

If the WAIT\_FOR\_OFFLOAD parameter is set to **Y**, one of the following messages will appear in the job log:

- If the offload is completed successfully, ARYS873I: Ccopypool DUMPSTATE status is **ALLCOMPLETE**.
- If the offload is completed but did not result in changing the copypool DUMPSTATE status, ARYS875W: Ccopypool DUMPSTATE status is **NONE**.

- If the offload process is still running, ARYS874I: The backup was not completely dumped to tape. This message may appear in the job log several times; it means the process is still in progress and Copypool DUMPSTATE status is **PARTIAL**. When the process ends, one of the two messages above will appear.

**Note:** The additional monitoring provided by the WAIT\_FOR\_BACKGROUND\_COPY and WAIT\_FOR\_OFFLOAD parmlib parameters is only available for Db2 profiles. FlashCopy and other backup profiles are not supported for this additional monitoring.

## Target units and the OFFLOAD-TO-VOLSERS control card

When Target units do not exist physically any longer and have been replaced with new ones which are formatted with the same VOLSERS, ARY offload may fail. In this example, the old Target, *USB 5701*, was replaced with the new Target, *USB 7701*.

The job log will contain the following messages:

ARYS054E - MVS UCB Scan failed for Target Unit 5701.

ARYS636I - Task 01 Processing VOL 7701 ARX100

ARYS249I - Task 01 - Offload process starting for unit 5701 (Source volser ARX100).

ARYS256E - Task 01 - Allocation failed for input volume 00000004

ARYS002I - IBM DB2 Recovery Expert for z/OS complete. RC=008.

The OFFLOAD-TO-VOLSERS control card is useful in this case. It will result in re-defining USBs for the Target Volumes just before the offload starts. USBs saved in the *\*\* .SYSBACK .VOLS VSAM* dataset will be ignored. To restore from this offload, use the RESTORE-TO-VOLSERS control card.

The following is an example of ARYIN DD:

```
/ARYIN DD *
OFFLOAD "PDUSER"."TEST S89Z - FLASH"
GENERATION LAST-BACKUP
OFFLOAD-TO-VOLSERS
```

Job log messages:

ARYS404I - Target Unit for Volser ARX100 changed to 7701

ARYS881W - Restore from this offload will need RESTORE-TO-VOLSERS control card.

## Improving performance with faster alias processing

If Subsystem Analysis finds only single-level aliases, you can select a faster processing method than if multi-level aliases are in use.

### Alias processing

When you have analyzed the subsystem, found no multi-level aliases, and set PARMLIB parameter ALIAS\_PROCESS\_METHOD to F, a new line in the Alias section, shown in white in ISPF, will indicate that Subsystem Analysis found no data sets using multi-level aliases. A faster alias processing algorithm will be used for subsequent backups:

```
No multilevel aliases found. Faster processing will be performed for backup.
_ DB2S CATALOG.RSPLEX01.DB2SDB.CAT
Data Other
_ DB2SLOG CATALOG.RSPLEX01.DB2SLG.CAT
Log Other
Line Cmds: (D-Dataset Display, M-Merge catalog entries, R-Rename Alias)
```

If new objects were created on the subsystem or new aliases were added, you should re-analyze the subsystem. If there are data sets using Multi-level aliases, the new (white) line does not appear, and the multi-level alias will appear instead. The general alias processing algorithm will be used for all subsequent backups:



```

//ARYBPCAT DD DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILE.CATS
//ARYSBACK DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK
//ARYSBOBJ DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.OBJS
//ARYSBVOL DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.VOLS
//ARYSBSSD DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.SSIDS
//ARYBREPT DD DISP=SHR,DSN=ARY.WRK0320.ARY.BREPORT
//ARYMOVER DD DISP=SHR,DSN=ARY.WRK0320.ARY.MOVDATA
//SYSOUT DD SYSOUT=*
//ARYOUT DD SYSOUT=*
//ARY#REPT DD SYSOUT=*
//ARYSNAPO DD SYSOUT=*
//ARY#PARM DD DSN=ARYRTE.WRK0320.SAMPLIB(ARY#PARM),DISP=SHR
//ARYIN DD *
BACKUP "PUSER"."TEST" BYPASS-OFFLOAD
/*

```

If ALIAS\_PROCESS\_METHOD is set to F and you want to run a pre-generated JCL, an ARYMOVER DD should be added to the job manually (see highlighted ARYMOVER line in the sample JCL above)

---

## Chapter 9. Recovering database objects

This section describes how to create and maintain the application profiles and ad-hoc specifications that are used to recover Db2 subsystem objects. In addition it describes how to build the recovery jobs using the Db2 Recovery Expert ISPF interface.

Application profiles allow you to recover a Db2 subsystem's objects to a desired point in time. Ad-hoc specifications let you quickly recover objects that have been changed by one or more transactions, without having to create an application profile. Ad-hoc specifications have replaced transaction and log based application profiles. See [“Creating ad-hoc recovery specifications” on page 319](#) for more information.

---

### Application Recovery: Using application profiles

Application profiles contain the information that is used by Db2 Recovery Expert to recover a Db2 subsystem's objects to a desired point in time. Using Db2 Recovery Expert's ISPF interface you create application profiles specifying the objects that are to be recovered based on a set of options. You can include in an application profile individual objects or groups of objects recovered singularly or collectively.

You can view, update, rename, delete, import, export, and copy application profiles. These operations are described in [“Displaying profiles and specifications” on page 300](#).

#### Application profiles

You use an application profile to recover objects using the recovery information that is contained in the Db2 Recovery Expert schema level repository (SLR).

The Db2 Recovery Expert SLR is a collection of Db2 tables that are used to archive Db2 object metadata and recovery information. Using the SLR you can recover dropped objects to a point in time or you can recover an object back to a specific version. The versioning information that Db2 Recovery Expert keeps in the SLR is updated by running the SLR update program. The SLR update program compares the objects in the Db2 catalog to the last known version of the objects in the SLR and if an object has changed, a new entry for that object is added. If kept current by frequently running the update program, the versioning information in the SLR can present a complete historical view of the object. The information tracks when every attribute of the object changes. With this information you can choose to recover an object to one of several versions.

**Note:** Db2 Recovery Expert no longer uses Log based or Transaction application profiles; these have been replaced by ad-hoc specifications, which you can create and manage by selecting **Ad-hoc Operations** from the main menu. This brings up the **Ad-hoc Operations** menu. The idea is to streamline the process, so you don't have to create a profile; you can just specify which objects you want to recover, from where, and for what period of time. For more on creating an ad-hoc specification, see [“Ad-hoc Operations: Transaction specifications” on page 319](#). If you have existing Transaction and Log based profiles, these have been converted to specifications, and you can manage them from the **Ad-hoc Operations** menu.

---

### Backing up objects using system backups

Db2 Recovery Expert lets you use system backups to make subsystem objects available for recovery.

#### Using system level backups

If you have used Db2 Recovery Expert to create a system level backup and enabled the object restore option, Db2 Recovery Expert will backup the entire Db2 system (including objects) at the volume level. All the volumes of Db2 are backed up very quickly with little or no effect to users of the Db2 system. You can use the system level backup to recover the Db2 objects in place of an image copy for each table space and/or index.

With a system level backup you can recover all of the Db2 objects that were included in the backup or only a subset of the objects. If you are choosing to recover only a subset of the Db2 objects that are included in the system level backup, you would create an application profile to specify the objects you wish to recover.

For example, suppose a single application on a Db2 system needed to be restored. You would probably not want to recover the whole Db2 system back to the point of failure, as all the other applications on the Db2 system are fine. In this case you would create a system level backup for the Db2 subsystem, and create an application profile that identifies the application that you will recover. In a case where an entire Db2 subsystem is one application, and that application failed, you would want to restore the entire Db2 subsystem from the system level backup.

### Using the RECOVER utility with a system level backup as a recovery base

If you have used Db2 Recovery Expert to create a Db2 backup, regardless of whether the object restore option is enabled for the created backup and if the SYSTEM\_LEVEL\_BACKUPS ZPARM parameter is set to YES, the produced backup will be considered as eligible for object recovery using the RECOVER utility. The produced backup can be located both on disk and offloaded to tape. If the backup is located at the same time on disk and on tape, then disk copy will be chosen. Offloaded backup will be chosen if there is no disk copy and HSM offload method was used to offload the backup onto tape. If the backup was offloaded using method other than HSM, this backup cannot be used by the RECOVER utility.

Db2 Recovery Expert will be able to take this backup into account when generating the RECOVER plan. To choose the correct recovery point, note that the RBLP of the backup must be greater than creation timestamp of every recovered object. Image copy has higher priority than system level backup; if an eligible image copy is found, it will be used instead of the system level backup. To ensure that the system level backup will be used for recovery, open details of the generated RECOVER plan and check that there is **System Level Backup** resource under the RECOVER utility.

**Note:** SLB backups, as a recovery base for the RECOVER utility, are supported only for data sharing subsystems.

## Displaying profiles and specifications

---

From the **Application Profile Display** and **Ad-hoc Specification Display** panels, you can perform all the specification or profile functions.

The first step in working with application profiles or specifications is to open one of the panels for a particular Db2 subsystem. From the **Application Profile Display** panel, you can do the following:

- create new profiles
- update profiles
- delete profiles
- rename profiles
- copy profiles
- import profiles
- export profiles
- view profiles
- view quiet times
- generate recovery DDL
- select recovery plans

From the **Ad-hoc Specifications Display** panel, you can do the following:

- update a specification
- delete a specification
- rename a specification



- copy a specification
- import a specification
- export a specification
- view a specification
- generate recovery DDL
- select recovery plans

1. **For application profiles:** Specify 2 (Application Operations) on the Db2 Recovery Expert for z/OS main menu and press ENTER.

The **Application Operations Menu** panel opens. Specify 1 (Application Profiles) on the **Application Operations Menu** panel. The **Enter Application Group Selection Criteria** panel opens.

```

Enter Application Profile Selection Criteria

Stored on SSID *      ( ? for subsystem list)
Name like         *
Creator like      *

```

**For specifications:** Specify 3 (Ad-hoc Operations) on the Db2 Recovery Expert for z/OS main menu and press Enter. The SSID Selection panel opens. Specify DB2 subsystem where the specifications reside and press Enter. Specify 3 (Manage Specifications) on the Ad-hoc Operations Menu panel. The Enter Specification Selection Criteria panel opens.

```

Enter Specification Selection Criteria

Name like         *
Creator like      *

```

2. You use the **Enter Application Profile Selection Criteria** or **Enter Specification Selection Criteria** panel to filter the application profiles or ad-hoc specifications that are listed on the **Application Profile Display** or **Specification Display** panels. In the **Stored on SSID** field specify the Db2 subsystem where the application profiles reside. You can list all the application profiles for the Db2 system using wildcard characters in the **Stored on SSID**, **Name like**, and **Creator like** fields. The asterisk (\*) is a wildcard character that will return all the profiles for the field where it is specified. You can use an asterisk (\*) for one or all fields. To limit the profiles that are listed, enter a specific profile name, profile creator name, or SSID in one or more of the **Stored on SSID**, **Name like**, and **Creator like** fields. Press Enter.

- **For Application Profiles:** The **Application Profile Display** panel opens. The first time you access this panel, it appears as follows:

```

RCVYXPRT V3R2 ----- Application Profile Display ----- 2021/01/13 12:56:12
Option ==> Scroll ==> CSR

Line Commands: C - Create          U - Update          Q - Quiet Time      V - View
                D - Delete          R - Rename          G - DDL Generation  X - Copy
                M - Import          E - Export          P - Recovery Plans
                H - Recovery Health  S - Recovery Suggestions

-----
Creator Like *      Name Like *      SSID Like *
----- Row 1 of 1 >

Cmd  Name          Creator  SSID  Updt
C    Press Enter to Create Profile

***** Bottom of Data *****
| ARYR031I - No Profiles were found that match your selection criteria. |
| Press enter to create a new profile or change the selection criteria. |
-----

```

- **For Ad-hoc Specifications:** The **Ad-hoc Specification Display** panel opens. It appears as follows:

```

RCVYXPRT V3R2 ----- Ad-hoc Specification Display ----- 2021/01/13 12:56:12
Option ==> Scroll ==> CSR

Line Commands:  U - Update           V - View       D - Delete     R - Rename
                 G - DDL Generation   X - Copy       M - Import     E - Export
                 P - Recovery Plans

-----
Creator Like *      Name Like *                      SSID Like *
----- Row 1 of 1 >
Name      Creator   SSID   Updt  Desc   Last upd  Last updated  Creat  Userid
__L8D0030 ARYTEST  QC18   N     TS5670 2019-06-14-05.07.05 TS6720
__L8D0030N TS5463   QC18   U     TS5463 2019-06-14-05.03.05 TS5463
__TESTTS   TS5463   QC18   U     TS5463 2019-06-14-05.08.05 TS5463

Cmd  Name      Creator   SSID   Updt
C    Press Enter to Create Profile

***** Bottom of Data *****

```

You can use the **RIGHT** and **LEFT** scroll commands (PF10 and PF11) to see all the available columns. You can use the **UP** and **DOWN** commands (PF7 and PF8) to scroll through the list when there are more profiles or specifications than can be displayed on one panel. The following fields are displayed on the panel:

**Name Like**

Specifies the profile/specification name or mask that you entered on the **Enter Application profile/specification Selection Criteria** panel. You can change the name or mask to modify the profile/specifications that are listed on this panel.

**Creator Like**

Specifies the profile/specification creator name or mask that you entered on the **Enter Application profile/specification Selection Criteria** panel. You can change the name or mask to modify the profile/specifications that are listed on this panel.

**SSID Like**

Specifies the Db2 subsystem ID or mask that you entered on the **Enter Application Profile/ Specification Selection Criteria** panel. You can change the name or mask to modify the profile/specifications that are listed on this panel.

**Row x of y**

Displays the current row and the total number of rows in the profile/specification list. Adjacent to this field is a scroll indicator: > indicates scroll right for more data; < > indicates scroll left or right for data; < indicates scroll left for more data. A plus sign (+) indicates scroll down for more data; a minus sign (-) indicates scroll up for more data.

**Name**

Specifies the name of the profile/specification.

**Creator**

Specifies the profile/specification creator.

**SSID**

Specifies the Db2 subsystem ID for which the profile/specification was created.

**Updt**

Specifies how users other than the profile/specification creator may use the profile.

**U(pdate)**

Allows other users to update the profile/specification.

**V(iew)**

Allows other users to view but not update the profile/specification.

**N(o access)**

Prevents other users from viewing or updating the profile/specification.

**Description**

Displays the profile/specification description, if included.

**Last Updated: Userid**

Specifies the ID of the last user to update the profile/specification.

**Last Updated: Timestamp**

Specifies the date and time that the profile/specification was last updated.

**Created: Userid**

Specifies the ID of the creator of the profile/specification.

**Created: Timestamp**

Specifies the date and time that the profile/specification was created.

**Cmd**

The **Cmd** line next to each profile/specification allows you to use line commands to perform updates, build jobs, and other profile/specification management tasks.

3. Enter one of the following commands in the **Cmd** line next to an application profile/specification:

- To create an application profile or an ad-hoc specification, specify a **C** in any command line and press Enter. If no application profiles are listed then you can create a new profile by just pressing Enter. The **Create Application Profile** panel opens. See [“Creating application profiles” on page 304](#) for more information on creating profiles.
- To update an application profile or an ad-hoc specification, specify a **U** in the command line next to the profile that you want to update and press Enter.

If you are updating an application profile, the **Update Application Profile** panel opens.

If you are updating a log based specification, the **Set Log Range** panel opens. From this panel, specify log range and press Enter. The **Update Specification** panel opens.

From this panel, you can add objects to the profile/specification; remove objects from the profile/specification; specify and update the image copy options; specify and update recovery plan options; update the profile's share option; and view object properties, versions, and include/exclude status. See [“Updating an application profile” on page 310](#) for more information on updating profiles/specifications.

If you are updating a transaction specification, the **Transaction Report Details** panel opens. From this panel you can update the selection of transactions for recovery, and generate the JCL for the recovery job. You can also change the filtering options and rescan the Db2 log for additional transactions.

- To view the details of an application profile or an ad-hoc specification, enter a **V** in the command line next to the profile that you want to view and press ENTER.
  - If you selected to view an application profile, the **View Application Profile** panel opens. See [“Viewing an application profile” on page 308](#) for more information on viewing profiles.
  - If you selected to view a log based specification, the **View Specification** panel opens.
  - If you selected to view a transaction specification, the **View Transaction Report Details** panel appears.
- To delete an application profile or an ad-hoc specification, enter a **D** in the command line next to the application profile/specification that you want to delete and press Enter. You can use this line command to delete one of your own application profiles/specifications or one created by another user if the profile/specification was created with a share option of view or update.
- To rename an application profile or an ad-hoc specification, enter an **R** in the command line next to the application profile that you want to rename and press Enter. The **Rename Application Profile/Specification** panel opens. You can use this line command to change the name or the description in one of your own application profiles/specifications or one created by another user if the profile/specification was created with a share option of view or update.

- To copy an application profile or an ad-hoc specification, enter an **X** in the command line next to the profile/specification that you want to copy and press Enter. The **Copy Application Profile/Specification** panel opens. You can use this line command to copy one of your own application profiles or one created by another user if the profile/specification was created with a share option of view or update.
  - To import an application profile, enter an **M** in the **Cmd** line next to the profile that you want to import and press Enter. The **Import Application Profile** panel opens. You can use this line command to import one of your own application profiles or one created by another user if the profile was created with a share option of view or update.
  - To export an application profile or an ad-hoc specification, enter an **E** in the command line next to the profile/specification that you want to export and press Enter. The **Export Application Profile/Specification** panel opens. You can use this line command to export one of your own application profiles/specifications or one created by another user if the profile/specification was created with a share option of view or update.
  - To perform quiet time analysis for the objects in an application profile, enter a **Q** in the **Cmd** line next to the profile and press Enter. The **Log Analysis** panel opens. See [“Performing quiet time analysis for an object”](#) on page 312 for more information on log analysis.
  - To generate DDL that can be used to recover an object or objects in an application profile, enter a **G** in the **Cmd** line next to the profile and press Enter. The **Generate DDL** panel opens.
- Note:** The quiet time option is available only from the **Application Profile Display** panel.
- To generate a recovery plan for an application profile, enter a **P** in the command line next to the profile for which you want to generate a recovery plan and press Enter. The **Generate Recovery Plan** panel opens. See [“Generating object recovery plans”](#) on page 334 for more information on generating recovery plans.

## Creating application profiles and recovery jobs

### Creating application profiles

From the Create Application Profile panel you create an application profile, which can be used to recover objects that have been changed by one or more transactions.

1. From the **Application Profile Display** panel specify a **C** in any **Cmd** line and press Enter.

The following panel is displayed:

```

Create Application Profile

Creator      USERID
Profile Name K82C OBJECTS
Description
Db2 SSID    K82C (? for system list)
Share Option U      (Update, View only, No access)

```

2. The **Creator** field is automatically filled with your user ID as the profile creator. To create the profile with a different user ID, type the new ID in this field.
3. Specify a name for the application profile in the **Profile Name** field. The name can consist of up to 30 characters.
4. Specify a description for the application profile in the **Description** field.
5. Specify the SSID where the objects included in the application profile currently reside in the **Db2 SSID** field. The application profile will also be stored at that SSID.

6. You control access to the application profile using the **Share Option** field. Specify **U** to allow other users to update the profile. Specify **V** to allow other users to view but not update the profile. Specify **N** to deny other users access to the profile.

7. Press Enter.

The **Object Types Selection** panel opens. From this panel, you select the objects that are added to the profile.

## Selecting object types for profiles and specifications

From the **Object Types Selection** panel, you choose the types of objects that you want to recover and include in an application profile or a log based specification. Selecting the types of objects that will be recovered is the first step to selecting specific objects.

### Note:

- When setting up the recovery of an index space, Db2 Recovery Expert can only recover indexes when the table space data is still valid.
- Several object types may not produce recovery JCL when doing a recover to Current because they are non-data types. Non-data object types are Alias, Function, Global Variable, Procedure, Role, Sequence, Sequence Alias, Synonym, Trigger, and View. You can generate View DDL for these objects by using the DDL Generation option.

```
RCVYXPRT V3R2 ----- Object Types Selection ----- 2021/01/13 12:56:12
Command ==>                                         Scroll ==> CSR
```

```
Line Commands: S - Select an object type
```

```
-----
Creator: USERID      NAME: TESTPROF                      SSID EA1A
-----
Row 1 of 1 +
```

```
Object Types
_All
_Stogroups
_Databases
_Tablespaces
_ Tables
_Indexes
_Views
_Synonyms
_Aliases
_Data Types
_ Triggers
_ Functions
_ Procedures
_ Sequences
_ Sequence Aliases
_ Roles
_ Plans
_ Packages
_ Global Variables
_ Auto Tool Profiles
```

1. Enter an **S** next to each of the object types that you want to include in the profile. Pressing Enter starts the selection process for each type of object that you selected. If you entered an **S** for more than one type of object, the selection process is driven for each type of object in the order that they appear on the panel.
2. The selection process consists of filtering and selection. A filter popup panel opens automatically for each type of object that you have selected for inclusion in the profile. Depending on the filtering that you specify, all or a portion of the objects for a specific type that reside on the Db2 subsystem are displayed in the selection panel. From the selection panel you select the specific objects for the profile. After selection, the filter and selection panels for the next set of object types opens. Filtering and selection continues for each object type that has been selected for the profile.

## Filtering the subsystem objects

You use the object type filter panel to limit the objects that are presented in the selection panels for each of the object types.

A database filter panel opens for each object type that is included in the profile or specification. Without filtering all objects found on the Db2 subsystem of that specific type are included in the selection panel.

1. The filter panel opens automatically for each type of object that is included in the profile or specification. The fields that are displayed on the filter panel for each object type varies slightly. An example of the filter panel for a Tablespace object is as follows:

Tablespace Filter	
Creator like	%
Name like	ARYDB010
Wildcard:	N (Yes/No) N
Include/Exclude	I (Include/Exclude)

2. Each object filter panel includes a filter field called **Creator like**. You specify the ID of the user who created the object that you would like to include in the application profile in the **Creator like** field. You can filter for a single user ID by specifying a specific ID in the field or for several users using wildcard characters. The wildcard character % indicates a global match. For example % will include all objects of this type and b% will include all objects that begin with a "b". The wildcard character \* indicates a single character match. For example abc\* will include all objects that start with abc.
3. Each object filter panel includes a name field that you can use to filter on the object name. Specify the name of the object that you would like to include in the application profile in the **object name like** field. You can filter for a single object by specifying a specific name in the field or for several objects using wildcard characters. The wildcard character % indicates a global match. For example % will include all objects of this type and b% will include all objects that begin with a "b". The wildcard character \* indicates a single character match. For example abc\* will include all objects that start with abc.
4. Most object filter panels include the **Wildcard** field. You specify whether a wildcard character is used in the **Wildcard** field to control the display of objects in the profile. Specify an **N** to indicate that the objects that meet the filter criteria that is specified in the **Creator** and **object name Like** fields are searched for immediately and listed in the Selection panel that opens automatically. Specify a **Y** to indicate that the filtering of the objects on the Db2 subsystem occurs at run time. In this case the selection panel is not displayed. The default value for this field is **N**.
5. Most object filter panels include the **Include / Exclude** field. You can further filter the objects that are displayed in the selection panel or included in the application profile using the **Include / Exclude** field. Specify **I** to include all the objects that meet the filter criteria. Specify an **E** to exclude all the objects that meet the criteria. The default is to include all the objects that fit the filtering criteria.
6. After specifying the filter criteria, press Enter. The filtering process selects the objects that meet the filtering criteria and displays them in the *Object* Selection panel. If you specified a **Y** in the **Wildcard** field, then the filtering occurs at run time and the **Update Profile Display** panel opens.

## Selecting the object

The *Object* Selection panel displays each of the objects for a particular object type that match the criteria specified in the *Object* Filter panel. From the *Object* Selection panel you will select the objects that are included in the application profile.

1. The *Object* Selection panel opens automatically after pressing Enter in the *Object* Filter panel and the **Wildcard** field from the *Object* Filter panel is set to **N**.

An example of the Selection panel for Tablespace objects follows:

```
RCVYXPRT V3R2 ----- Tablespace Selection ----- 2021/01/13 12:56:12
Command ==> Scroll ==> CSR
```

```
Line Commands: S - Select      V - Versions      P - Properties
-----
```

Name	DBname	Part	Status	Altered	Timestamp	Created
_ARYCONTX	ARYDB	ALL	Both	2021-08-19-14.26.53		
_ARYFA01	ARYDB	ALL	Both	2021-08-19-14.26.57		
_ARYFA02	ARYDB	ALL	Both	2021-08-19-14.26.56		
_ARYPLUXA	ARYDB	ALL	Both	2021-08-19-14.26.58		
_ARYPLUXB	ARYDB	ALL	Both	2021-08-19-14.26.46		
_ARYPLUXC	ARYDB	ALL	Both	2021-08-19-14.26.50		
_ARYROLES	ARYDB	ALL	Both	2021-08-19-14.26.54		
_ARYVRTS1	ARYDB	ALL	Both	2021-08-19-14.26.56		
_ARYVRTS1	ARYDB	ALL	Both	2021-08-19-14.26.38		
_ARYVRTS2	ARYDB	ALL	Both	2021-08-19-14.26.40		
_ARYVRTS3	ARYDB	ALL	Both	2021-08-19-14.26.55		
_ARYVRTS4	ARYDB	ALL	Both	2021-08-19-14.26.45		
_ARYVRTS5	ARYDB	ALL	Both	2021-08-19-14.26.41		
_ARYVRTS6	ARYDB	ALL	Both	2021-08-19-14.26.39		
_ARYVRTS7	ARYDB	ALL	Both	2021-08-19-14.26.42		
_ARYVRTS8	ARYDB	ALL	Both	2021-08-19-14.26.27		
_ARYVRTS9	ARYDB	ALL	Both	2021-08-19-14.26.16		

- Each of the filter values that you specified are displayed on the panel. You can change one or more of the filter values. If you change any one of the filter values, then the list of objects that meet the filter criteria is refreshed. The filter parameters vary depending on the type of object.
- Each line in the display section of the panel shows the fields that are unique to the type of object. For all object types the **Status** field shows if the object is only in the SLR (dropped), is just in the Db2 catalog (CatOnly), or in both the SLR and the Db2 catalog (Both).
- The overall structure of the display may vary depending on the object type. For example, for partitioned tablespaces and indexes, the display will show one line with the value **ALL** followed by a line for each partition. This allows you to select the **ALL** line or individual partitions.
- To select an object for inclusion in the application profile, specify **S** in the command line to the left of the object. Press Enter. The object is selected and included in the profile. The **Update Application Profile** panel opens. You can select more than one object by specifying an **S** in multiple command lines.
- To show all levels of the object that are in the repository, specify **V** in the command line to the left of the object. Press Enter. The *Object Definition Levels* panel opens. Each object level is displayed. Press the F3 function key to return to the *Object Selection* panel.

An example of the Tablespace Definition levels panel is as follows:

```

RCVYXPRT V3R2 ----- Tablespace Definition Levels----- 2021/01/13 12:56:12
Command ===> Scroll ===> CSR

Database name: ARYDb231 Tablespace name: ARYBXTN
-----
Creator: USERID NAME: TESTPROF SSID EA1A
Start Timestamp *----- End Timestamp *-----
----- Row 1 of 1 +

Qualifier Name Create Timestamp End Timestamp
ARY231DB ARYBXTN 2021-12-09-12.24.55

```

- To show the object and all its returned properties, specify **P** in the command line to the left of the object. Press Enter. The *Object Properties* panel opens where you can view the property information for the object. Press the F3 function key to return to the *Object Selection* panel.

An example of the Tablespace Properties is as follows:

```

RCVYXPRT V3R2 ----- Tablespace Properties ----- 2021/01/13 12:56:12
Command ===> Scroll ===> CSR

Database name: ARYDb231 Tablespace name: ARYBXTN
-----
Creator: USERID NAME: TESTPROF SSID EA1A
----- Row 1 of 1 +

Altered timestamp : 2021-12-09-12.24.55.498311
Created timestamp : 2021-12-09-12.24.55.498311
Creator           : USERID
DBIB:             : 651
Implicit          : N
OBID              : 312
Partition count  : 0
PSID              : 313
Repository status: Both repository and Db2 catalog
Status           : RW
Table count      : 1
Tablespace count :

```

## Viewing an application profile

From the **View Application Profile** panel you can view the details of a profile.

- From the **Application Profile Display** panel, specify a **V** in the **Cmd** line next to the profile that you want to view and press ENTER.

The View Application Profile panel opens.

```

RCVYXPRT V3R2 ----- View Application Profile ----- 2021/01/13 12:56:12
Command ===> Scroll ===> CSR

Line Commands: V - Versions P - Properties
-----
Creator: USERID NAME: TESTPROF SSID EA1A
Share Option N (Upd, View, No) Description:
View Image Copy Options N (Yes/No) View Recovery Options N (Yes/No)
LBDR N (Yes/No) Start: N/A End: N/A
----- Row 1 of 1 +

Obj Name Schema/Creator Part Wild Inc Status
Type DBName Card Exc
_TS ARYTS024 ARYDB024 All No Inc Both
_TS ARYTS025 ARYDB025 All No Inc Both
_TP ARYTS026 ARYDB026 All No Inc Both

```



2. From the **View Application Profile** panel you can view a list of all the objects that are included in the profile for recovery. From the **View Application Profile** you cannot make any changes. One or more of the following fields are displayed depending on the type of object:

**Obj Type**

The type of object is displayed as an abbreviation.

**Name**

The name of the object. Only the first 30 bytes of the object name will display. To see the full name enter a **P** next to the object and press Enter. The properties panel for the object opens where you can see all the property details for the object.

**Schema/Creator/DBName**

The name of the schema, creator, or database to which this object belongs. Only the first 20 bytes of the name will display. To see the full name enter a **P** next to the object and press Enter. The properties panel for the object opens where you can see all the property details for the object.

**Part**

The **Part** field is only present for table space or index objects. If the table space or index is partitioned, the partition number appears in this column. the value ALL in this column indicates that if you select that table space, all partitions will be included. A 0 in this column indicates that the table space or index is not partitioned.

**Wild Card**

The **Wild Card** field indicates whether the object was selected using wild cards. A Y indicates that the object was selected using a wildcard. An N indicates that a wild card was not used.

**Inc/Exc**

The **Inc/Exc** field indicates whether the selected object will be included in the profile or excluded from the profile.

**Status**

The **Status** field shows if the object is only in the SLR (dropped), is just in the Db2 catalog (CatOnly), or in both the SLR and the Db2 catalog (Both).

**Altered Timestamp**

The **Altered Timestamp** field specifies the date and time that the object was altered.

**Created Timestamp**

The **Created Timestamp** field specifies the date and time that the object was created.

**TB/IX/DBName**

This field displays the database name where the table or index object resides. This field only applies to table and index objects.

**TSName**

This field displays the table space name where the table object resides. This field only applies to table objects.

3. You can view the **Share Option** for the application profile. The current value is displayed. The value of **U** specifies that all users can update the profile. A value of **V** specifies that all users can view but not update the profile. A value of **N** specifies that no user other than you as the creator can update or view the profile.
4. To view the recovery options, enter Y in the **Update Recovery Options** field and press Enter. The **Recovery Options** panel opens. You can view recovery options, but cannot make any changes. Press PF3 to return to the **View Application Profile** panel.
5. To view the image copy options, enter Y in the **Image Copy Options** field and press Enter. The **Image Copy Options** panel opens. You can view all the image copy options. In addition there are several options that you can update from the panel. Press PF3 to return to the **View Application Profile** panel.
6. To view the versions for each object in the display list, specify **V** in the line next to the object and press Enter. The **Definition Levels** panel opens. Press PF3 to return to the **View Application Profile** panel.  
**Note:** This command is not available for wildcard objects.
7. To view the properties for each object in the display list, specify **P** in the line next to the object and press Enter. The **Properties** panel opens. Press PF3 to return to the **View Application Profile** panel.  
**Note:** This command is not available for wildcard objects.

## Updating an application profile

From the **Update Application Profile** panel, you can add objects to the application profile; remove objects from the profile; specify and update recovery plan options; update the profile's share option; and view object properties, versions, and include/exclude status.

1. The **Update Application Profile** panel opens automatically after all the objects for a profile have been selected using the **Objects Types Selection** panels.

In addition, the **Update Application Profile** panel opens when **Update** is entered for a profile listed in the **Application Profile Display** panel.

```
RCVYXPRT V3R2 ----- Update Application Profile ----- 2021/01/13 12:56:12
Command ==> Scroll ==> CSR

Line Commands: A - Add R - Remove V - Versions P - Properties U - Update
                I - Include E - Exclude X - Explode
-----
Creator: USERID NAME: TESTPROF SSID EA1A
Share Option N (Upd, View, No) Description:
Update IC Options N (Yes/No) Update Recovery Options N (Yes/No)
----- Row 1 of 1 +
Obj Name Schema/Creator Part Wild Inc Status
Type DBName Card Exc
_TS ARYTS024 ARYDB024 All No Inc Both
_TS ARYTS025 ARYDB025 All No Inc Both
_TP ARYTS026 ARYDB026 All No Inc Both
```

2. The fields that are displayed for each object are:

### Obj Type

The object type is displayed as an abbreviation.

### Name

The name of the object. Only the first 30 bytes of the object name will display. To see the full name enter a **P** next to the object and press Enter. The properties panel for the object opens where you can see all the property details for the object.

### Schema/Creator/DBName

The name of the schema, creator, or database to which this object belongs. Only the first 20 bytes of the name will display. To see the full name enter a **P** next to the object and press Enter. The properties panel for the object opens where you can see all the property details for the object.

### Part

The **Part** field is only present for Tablespace or Index objects. If the tablespace or index is partitioned, the partition number appears in this column. The value **ALL** in this column indicates that if you select that tablespace, all partitions will be included. A value of **0** in this column indicates that the tablespace or index is not partitioned.

### Wild Card

The **Wild Card** field indicates whether the object was selected with the wildcard filter function activated. A **Y** indicates that these objects were selected with the wildcard function active and they will be selected according to the specified filter criteria at run time. An **N** indicates that the objects were already selected using the Selection panel.

### Inc/Exc

The **Inc/Exc** field indicates whether the selected object will be included in the profile or excluded from the profile.

### Status

The **Status** field shows if the object is only in the SLR (dropped), is just in the Db2 catalog (CatOnly), or in both the SLR and the Db2 catalog (Both).

### Altered Timestamp

The **Altered Timestamp** field specifies the date and time that the object was altered.

### Created Timestamp

The **Created Timestamp** field specifies the date and time that the object was created.

### TB/IX DBName

This field displays the database name where the table or index object resides. This field only applies to table and index objects.

### Table TSName

This field displays the table space name where the table object resides. This field only applies to table objects.

3. You can modify the Share option for the application profile. The current value is displayed. Changing the value to **Upd** will allow all users to update the profile. Changing the value to **View** will allow all users to view but not update the profile. Changing the value to **N** will not allow any users other than yourself to update or view the profile.
4. To specify or update the recovery options, specify a **Y** in the **Update Recovery Options** field. Press Enter.  
The **Recovery Options** panel opens. Update the options and press F3. Control is returned to the **Update Application Profile** panel.
5. Specify an **A** in the command line next to the profile to which you want to add an object. Press Enter.  
The **Object Types Selection** panel opens. Follow the process of adding objects. When all selections are made, control is returned to the **Update Application Profile** panel.
6. Specify an **R** in the command line next to the object that you want to remove from the profile. Press Enter.  
The object is removed from the profile.
7. Specify a **V** in the command line next to the object that you want to view version information. Press Enter.  
The Definition Level panel that is specific to the type of object opens.
8. Type a **P** in the command line next to the object whose properties you want to view. Press Enter.  
The Properties panel that is specific to the type of object opens.
9. Type a **U** in the command line next to the object whose wildcard status you want to update. Press Enter.
10. Specify an **I** in the command line next to the object whose status you want to change to include (**Inc**). When the object's status is specified as **Inc**, it and all its dependent objects are included in the recovery or image copy job.
11. Specify an **E** in the command line next to the object whose status you want to change to exclude (**Exc**). You use this command to exclude the object from a larger set of objects that are to be recovered or image copied. For example, if you choose to include all objects that are found in a database with the exception of one of the objects in the database, then you would select the database and specify its status as **Inc**, and then select one of the objects in the database and specify its status as **Exc**.
12. You can use the Explode command for a masked object to see the actual objects that will be included in the recovery job. A masked object is one that was added to the profile using a wild card, the include/exclude option, or other processing specification. A masked object is a placeholder in the profile and indicates that one or more actual objects will be included when the job is built. To see the actual objects for a single masked object, enter an **X** on the line next to the masked object. To see all the objects for each masked object in the profile, enter **EXPLODE** in the Option command. The **Select PIT for Explode Objects** panel appears. This allows you to choose a PIT (point in time). You can enter a timestamp or RBA/LRSN, or you can enter **Y** in the **Select Recovery Point** field to display a selection list of possible recovery points. Make your selection, then press ENTER. The Explode Application Profile Display panel opens.
13. Press PF3 to return to the Application Profile Display panel.

## Performing quiet time analysis for an object

Using the **Log Analysis** panel you can find periods of time during which there is no activity for an object or set of objects that are included in a standard application profile.

1. From the **Application Profile Display** panel, specify Q in the **Cmd** line next to the application profile for which you want to perform log analysis looking for a quiet time.

The **Log Analysis** panel opens.

```
RCVYXPRT V3R2 ----- Log Analysis ----- 2021/01/13 12:56:12
Command ==>
-----
Creator: USERID      NAME: TESTPROF                      SSID EA1A
-----
Log Range Type           ==> T (Preceding/Timestamp)

Preceding Options:
Preceding Type           ==> H (Hours/Minutes)
Preceding Value          ==> 01 (00-99)
Use database location time ==> Y (Yes/No)

Timestamp Options
Beginning Timestamp      ==> 2021 - 11 - 23 - 14 - 50 - 56
End Timestamp            ==> 2021 - 11 - 23 - 15 - 50 - 56

Use SYSLGRNX             ==> N (Yes/No)
Minimum Quiet Time       ==> 00 : 02 : 00 (hh:mm:ss)
```

2. You must specify a time range within which Db2 Recovery Expert will search identifying the quiet times for an object. You can specify the time range as either **Preceding** or **Timestamp**.

### Preceding

A value of **P** in the **Log Range Type** field indicates that a specific time span preceding the current time will be used to specify where to begin and where to stop reading the log to find a quiet time. If you select this option, you must specify the time span details in the **Preceding Options** fields. Specify whether the preceding time span will be in hours or minutes in the **Preceding Type** field. Specify the number of hours or minutes in the **Preceding value** field. You can specify a value from 0 to 99. You can specify that the local time for the database will be used as the base time by specifying a **Y** in the **Use database location time** field. To use the local client time you can specify an **N** in the **Use database location time**. By default the time range is set to Preceding by 1 hour using the local client time.

### Timestamp

A value of **T** in the **Log Range Type** field indicates that a time value will be used to specify where to begin and where to stop reading the log to find a quiet time. If you select this option, you must specify the start and end time in the **Timestamp Options** fields. Specify the start time for the range in the **Beginning Timestamp** field and the end time for the range in the **End Timestamp** field. Timestamp values are entered as **YYYY - MM - DD - HH - MM - SS**.

3. Specify whether SYSLGRNX will be used when determining the log files to read. Db2 Recovery Expert in most cases uses the SYSLGRNX directory tables to optimize the selection of log files that must be read. Using these tables can add overhead to the analysis job, which in some situations can outweigh the savings that can be gained by using the SYSLGRNX tables. Specify a **Y** in the **Use SYSLGRNX** field to use the SYSLGRNX directory tables. Specify an **N** in the **Use SYSLGRNX** field to bypass using the SYSLGRNX directory tables.
4. The time value in the **Minimum Quiet Time** field specifies the minimum duration of a quiet time for it to be included in the output. The default value is set to 00:02:00 (two minutes).
5. After specifying the time range for the analysis, press Enter. All the fields are validated and if they validate successfully a **Build Job** dialog opens. You can choose to edit or run the log analysis job from the **Build Job** dialog.

## Recovery monitoring

Db2 Recovery Expert V3.2 provides recovery monitoring information for recoveries, jobs, and objects. Recovery monitoring shows you which jobs have run, which have completed, and which have failed, during recovery of Db2 objects.

This information includes:

- Job statuses
- For each job, the job status, and the job progress (%)
- For each object in a job, the progress (%) in size, the progress (%) in steps number

When you select **Recovery Monitoring** from the main menu, the **Enter Application Profile Selection Criteria** panel is displayed. Specify the SSID, name, and creator (or use a wildcard), to display the **Recoveries List** panel:

```
ARYGRMRL V3R2 ----- Recoveries List ----- 2021/12/28 13:08:20
Command ==>                                     Scroll ==> PAGE

Commands: CLEANUP - build a job for mass cleanup
Line Commands: J - Status of Jobs
                D - Delete
                R - Restart

-----
Creator Like *          Name Like *                      SSID: QC1B
Active Only N
-----
Row 1 of 15  +>
Creator  Name                Active Shr Start Timestamp
TS5463   ARY12730              N      U   2021-12-23-03.35.52.998327
TS5463   ARY12730              N      V   2021-12-23-03.31.18.995509
TS5463   ARY12730              N      N   2021-12-23-03.24.33.922051
TS6092   RECMON_NO             N      N   2021-12-21-10.15.47.560364
TS6288   PROF000X              Y      N   2021-09-10-03.47.25.000994
TS6288   PROF000X              Y      N   2021-09-08-10.22.43.833094
TS6288   PROF000X              Y      N   2021-09-08-09.30.14.813128
TS6288   PROF000X              Y      N   2021-09-08-04.26.35.337715
TS6288   PROF000X              Y      N   2021-09-04-10.50.58.444532
TS6288   PROF000X              Y      N   2021-09-04-10.26.59.121370
TS6288   PROF000X              Y      N   2021-09-04-10.13.44.299260
***** Bottom of data *****
F1=Help   F2=Split  F3=Exit   F4=Expand F5=Rfind  F7=Up     F8=Down
F9=Swap   F10=Left  F11=Right F12=Cancel
```

The **Recoveries List** panel lists all the recoveries that have monitoring information stored. You can change the name or wildcard in the **Creator Like**, **Name Like**, or **Active Only** fields to filter the recoveries that are listed.

The **Recoveries List** panel contains the following fields:

- **Name** shows the profile name.
- **Creator** shows the ID of the profile creator.
- **Active** indicates whether the recovery is in progress or has finished. Failed or aborted recoveries are considered in progress.
- **Shr** indicates how users other than the profile creator can use the monitoring record. A value of **U** specifies that others can view and delete the record. A value of **V** specifies that others can view but not delete the record. A value of **N** prevents others from viewing or deleting the record.
- **Start Timestamp** indicates the date and time when the recovery started.
- **End Timestamp** indicates the date and time when the recovery ended. This field may be empty if the recovery is in progress.
- **Plan Name** indicates the name of the recovery plan.

You can enter one of the following line commands in the **Cmd** column:

- **J** to show statuses of jobs for the recovery entry in the **Statuses of Jobs** panel. See [Monitoring recovery jobs and recovered objects](#) for more information.

- **D** to delete the recovery entry

To reduce the amount of information stored by the monitoring process, you can build a cleanup job with the **CLEANUP** command; see [Removing recovery monitoring entries](#).

## Removing recovery monitoring entries

Recovery monitoring information can stack up quickly. However, you can remove it with the **CLEANUP** command.

To delete a specific record, issue line command **D**. A confirmation panel will appear; confirm that you want to delete the record.

You can also perform mass recovery cleanup with the **CLEANUP** command. The **Build Monitoring Cleanup Job** panel will appear:

```
RCVYXPRT V3R2 ----- Build Monitoring Cleanup Job ----- 2021/10/05 14:32:59
Command ==>
-----
DB2 Subsystem ID QC1B      (? for subsystem list)
-----
More:      +
Select whether all records that are older than the specified time are to be
deleted or all records that fall within a period prior to the current time are
to be deleted.
Press enter to generate the JCL that can be used to delete the monitoring records.

Time is in GMT or Local Time ==> L      (GMT/Local)
Time Range Type              ==> P      (Period/Timestamp)
Period Options:
  Period Type                 ==> D      (Years/Months/Weeks/Days/Hours)
  Period Value                 ==> 60    (001-999)
Timestamp Options:
  Timestamp                    ==> 2020 - 10 - 05 - 00 : 00 : 00
Enforce Delete                ==> N    (Yes/No)
F1=Help      F2=Split   F3=Exit      F7=Backward  F8=Forward   F9=Swap
F12=Cancel
```

Specify the cleanup settings and press ENTER to build the monitoring cleanup job. Submit the job to perform the cleanup.

**Note:** The cleanup will only delete records that are no longer active; the end timestamp of the record will be considered when deleting the record. In the **Enforce Delete** field, specify **Y** to enforce delete on all records within specified period of time. This might delete obsolete monitoring records as well as monitoring records for ongoing recoveries. Specify **N** otherwise.

## Recovery Health

Db2 Recovery Expert analyzes the ability to recover objects for the specified period. This analysis is done for the objects which are part of the application profile.

Using the online processing or batch processing mode, you can generate a list of the timeframes where the objects are recoverable and unrecoverable. If a timeframe is recoverable, you can also view the details of the usable recovery resource.

### Selecting timeframe for recovery health

You can select a timeframe for recovery health analysis using the period type and period value options on the **Timeframe Selection** panel.

1. On the **Application Profile Display** panel, enter **H** for the profile.  
The **Timeframe Selection** panel is displayed.

```

                                Timeframe Selection
ARYGRHTP
Period Options:
  Period Type           ==> H   (Years/Months/Weeks/Days/Hours)
  Period Value          ==> 2
Processing method       ==> 0   (0 - Online, B - Batch)
F1=Help   F3=Exit   F12=Cancel

```

2. Enter the Period Type.  
Enter Y for years, M for months, W for weeks, D for days, and H for hours.
3. Enter the Period Value.  
The Period Value is the number of Period Type units. For example if Period Type = H and Period Value = 2 this means a period of 2 hours.
4. Specify the processing method.  
Enter **O** for online processing or **B** for batch mode processing.

## Selecting the processing method

You can process the Recovery Health analysis using the following two methods:

- Online processing
- Batch mode processing

### Online processing method

For online processing method, enter **O** for Processing method on the **Timeframe Selection** panel. The **Recovery Health Report** panel is displayed. The panel shows the object recoverability in different timeframes.

```

ARYGRHDP V3R2 ----- Recovery Health Report ----- 2023/07/09 14:28:27
Command ==>>                                     Scroll ==>> DATA

Show timeframes ==> A (All/Recoverable/Unrecoverable)

Line Commands: D - Details

Database name like: *           Tablespace name like: *
-----
Creator: TS6077   Name: HEALTH CHECK PROFILE           SSID: EC1B
-----
Row 1 of 34  +

Table space H0050D00.H0050S00
2023-07-09-14.23.53.864662 : Object creation
2023-07-09-14.23.54.355316 : LOAD LOG(NO)
_   There is a valid recovery event present in the range.

2023-07-09-14.23.54.355316 : LOAD LOG(NO)
2023-07-09-14.23.54.735386 : RECOVER
_   There is no valid recovery event present in the range.

2023-07-09-14.23.54.735386 : RECOVER
2023-07-09-14.23.56.100317 : LOAD LOG(NO)
_   There is a valid recovery event present in the range.

```

On this panel, items are grouped by the object name. All timeframes for an object are listed along with its status. Each timeframe has a start time, end time, and the status.

You can filter the timeframes using the following options:

- **A**: Show all timeframes for an object.
- **R**: Show only those timeframes where an object is recoverable.
- **U**: Show only those timeframes where an object is unrecoverable.

**Database name like** and **Tablespace name like** are masks for the object names. Wildcards are supported.

To view the resource details, enter **D** on a recovery event. The **Resource Details** panel is displayed.

```
Resource Details
ARYGRHRP
Type: Recover
Name: RSTEST.ARY32.EC1B.HCK0050.H0050S00.IC1
Timestamp: 2023-07-09-14.23.54.735386
F1=Help F3=Exit F12=Cancel
```

## Batch mode processing

For batch mode processing, enter **B** for Processing method on the **Timeframe Selection** panel. The **Recovery Health Batch Job Options** panel is displayed.

```
ARYGRHBP V3R2----- Recovery Health Batch Job Options ----- 2023/07/09 14:50:02
Command ==>
-----
Creator: TS6077 Name: HEALTH CHECK PROFILE SSID: EC1B
-----
Options for the recovery health batch job

Build job in Data set TS6077.ARY.CNTL.LARGE
Member RCVHLTH

Job Cards:
==> //HCHECK JOB TS6077,CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),
==> // USER=&SYSUID,NOTIFY=&SYSUID,REGION=0M
==> /*
==> /*
```

Once the batch processing is configured for a profile, the operating server and agents are not required to get the health check results.

Use the **Recovery Health Batch Job Options** panel to specify the following values for the batch job:

- **Data set name:** Enter the Data set name to store the generated job.
- **Member name:** Specify the member name if the data set is partitioned.
- **Job Cards:** Specify Job Cards which will be used in the generated job.

Press **Enter** to generate the recovery health batch job.



```

//HCHECK JOB TS6077,CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),
// USER=&SYSUID,NOTIFY=&SYSUID,REGION=0M
//*
//*
//RUN EXEC PGM=ARYBAHC
//STEPLIB DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.SARYLOAD
//DB2PARMS DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.CONTROL
//ARYEXPLN DD SYSOUT=*
//ARYRECVR DD SYSOUT=*
//ARYURCVR DD SYSOUT=*
//ARYOPT DD *
MACHINE RS28
SSID EC1B
OWNER TS6077
NAME HEALTH CHECK PROFILE
START-TS 2023-07-09-12.50.02.401228
/*
//ARYCFG DD *
<agent-config>
  <trace-csi>false</trace-csi>
  <trace-xml>false</trace-xml>
  <trace-sql>false</trace-sql>
  <trace-ifi>false</trace-ifi>
  <trace-db2-attachment>false</trace-db2-attachment>
</agent-config>
/*
//ARYSBACK DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.SYSBACK
//ARYSBOBJ DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.SYSBACK.OBJS
//ARYSBVOL DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.SYSBACK.VOLS
//ARYBSSD DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.SYSBACK.SSIDS
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//CEEDUMP DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*

```

Parameter description:

- **DD ARYOPT:** Used to specify the input parameters.
- **MACHINE:** Represents the LPAR name.
- **SSID:** Represents the name of the subsystem or a group.
- **OWNER:** Name of the application profile owner.
- **NAME:** Name of the application profile.
- **START-TS:** Shows the start time of the analysis. The end time is the current time.
- **DD ARYEXPLN:** Shows both recoverable and unrecoverable timeframes.
- **DD ARYRECVR:** Shows only the recoverable timeframes.
- **DD ARYURCVR:** Shows only the unrecoverable timeframes.

**Note:** The job must include at least one output DD.

Timeframes are grouped by the object name. For each object, all the timeframes with different status are listed. Each timeframe contains a start time, end time, and the status. If a timeframe is recoverable, details of the usable recovery resource is listed.

Example of the ARYEXPLN output:

```
Table space H0050D00.H0050S00
```

```
[Recoverable]
```

```
2023-07-09-14.23.53.864662 : Object creation
```

```
2023-07-09-14.23.53.864662 : Logs aren't found
```

```
There is a valid recovery event present in the range.
```

```
Object creation
```

```
2023-07-09-14.23.53.864662
```

```
[Unrecoverable]
```

```
2023-07-09-14.23.53.864662 : Logs aren't found
```

```
2023-07-09-14.23.54.146838 : Logs aren't found
```

```
Logs don't exist for the range.
```

```
[Recoverable]
```

```
2023-07-09-14.23.54.146838 : Logs aren't found
```

```
2023-07-09-14.23.54.146838 : Logs aren't found
```

```
There is a valid recovery event present in the range.
```

```
Full Image copy
```

```
RSTEST.ARY32.EC1B.HCK0050.H0050S00.IC1
```

```
2023-07-09-14.23.54.146838
```

```
[Unrecoverable]
```

```
2023-07-09-14.23.54.146838 : Logs aren't found
```

```
2023-07-09-14.23.54.735386 : Logs aren't found
```

```
Logs don't exist for the range.
```

## Recovery Suggestions

Db2 Recovery Expert performs different checks on an application profile. Recovery Suggestions provides suggestions on what could be improved to generate better and faster plans.

### Selecting timeframe for recovery suggestions

You can select a timeframe for recovery suggestions using the period type and period value options on the **Timeframe Selection** panel.

1. On the **Application Profile Display** panel, enter **S** for the profile.

The **Timeframe Selection** panel is displayed.

```

                Timeframe Selection
ARYGRSTP
Period Options:
  Period Type      ==> H   (Years/Months/Weeks/Days/Hours)
  Period Value     ==> 2
F1=Help   F3=Exit   F12=Cancel
```

2. Enter the Period Type.

Enter Y for years, M for months, W for weeks, D for days, and H for hours.

3. Enter the Period Value.

The Period Value is the number of Period Type units. For example if Period Type = H and Period Value = 2 this means a period of 2 hours.

4. Press **Enter**.

The **Recovery Suggestions Report** panel is displayed.

## Suggestion types

The **Recovery Suggestions Report** panel shows the suggestion types for an application profile to generate better and faster plans. Objects on this panel are grouped by the suggestion types.

```
ARYGRSDP V3R2----- Recovery Suggestions Report----- 2023/07/11 12:06:05
Command ==>
-----
Creator: TS6077   Name: RECOVERY SUGGESTIONS                SSID: EC1B
-----
Row 1 of 27

SLR cleanup
  Consider running SLR cleanup
  876954 records out of 902403 (97%) are outdated

MODIFY RECOVERY
  Consider running MODIFY RECOVERY.
  15380 records out of 18650 (82%) are outdated.

Deprecated objects
  Consider migrating following objects:
  Table space ARYUTDB.ARYLBCOL is deprecated
  Table space ARYUTDB.ARYLBCTX is deprecated
```

The following suggestion details are displayed on the panel:

- **Type:** The name of the suggestion.
- **Recommendation:** The recommended action to follow the suggestion.
- **Details:** The reason for the recommended suggestion.

The following type of suggestions are listed on the **Recovery Suggestions Report** panel.

- **SLR cleanup:** This suggestion type recommends cleaning the schema-level repository (SLR). For SLR, Db2 Recovery Expert compares the number of records within a specified timeframe against the total number of records. For information about cleaning the SLR, see [“Removing Records from the Db2 Recovery Expert Schema Level Repository \(SLR\)”](#) on page 211.  
**Note:** SLR is cleaned system-wise, so it is recommended to clean it only if you don't need the data before the specified timeframe.
- **MODIFY RECOVERY:** This suggestion type recommends running the MODIFY RECOVERY utility. For the SYSIBM.SYSCOPY table, Db2 Recovery Expert compares the number of records within the specified timeframe against the total number of records. The records in SYSIBM.SYSCOPY are cleaned using the MODIFY RECOVERY utility.  
**Note:** This suggestion type can sometimes be false-positive as it does not consider the objects present in the profile.
- **Deprecated objects:** This suggestion type recommends converting non-UTS tablespaces to UTS tablespaces. This recommendation is shown only for Db2 version 12, FL504 and later versions. By converting tablespace to UTS, you can use more utilities for the recovery.

## Creating ad-hoc recovery specifications

This section discusses ad hoc (log based and transaction) specifications. These have replaced log based and transaction profiles in Db2 Recovery Expert V3.2.

To create an application profile, see [“Creating application profiles”](#) on page 304.

### Ad-hoc Operations: Transaction specifications

Using the **Create Transaction Scan Range** panel, you specify the time range that is used to scan the Db2 logs for the transactions that you want to recover.

1. Select 3 (**Ad-hoc Operations**) from the main menu.
2. Select a subsystem from the **SSID Selection** panel.

3. Select 1 (**Transaction Recovery**) from the **Ad-hoc Operations** menu. The **Create Transaction Scan Range** panel opens.

```

RCVYXPRT V3R2 ----- Create Transaction Scan Range ----- 2021/01/13 12:56:12
Command ==> Scroll ==> CSR

Enter a time range to scan the Db2 log for transaction recovery.
Press enter from this screen to generate JCL that will scan the
log and populate the repository with the information needed
to recover the objects based on transaction criteria.

Log Range type                ==> P (Preceding/Timestamp/RBA/LRSN)

Preceding Options:
  Preceding Type               ==> H (Hours/Minutes)
  Preceding Value              ==> 01 (00-99)
  Use database location time   ==> Y (Yes/No)

Timestamp Options/RBA/LRSN Options:
  Beginning Timestamp          ==> 2021 - 06 - 02 - 10 : 39 :48
  End Timestamp                ==> 2021 - 06 - 02 - 11 : 39 :48
  Start/End RBA (URID)        ==> _____/_____
  Start/End LRSN              ==> _____/_____
-----

```

4. In the **Log Range Type** field specify the type of time range within which the search for transactions will occur.
  - Specify a **P** for **Preceding** to indicate that a specific time span preceding the current time will be used to specify where to begin and where to stop reading the log to find transactions. If you select this option, you must specify the time span details in the **Preceding Options** fields. By default the time range is set to **Preceding** by 1 hour using the local client time.
  - Specify a **T** for **Timestamp** to indicate that specific time values will be used to specify where to begin and where to stop reading the log to find transactions. If you select this option, you must specify the start and end time in the **Timestamp/RBA/LRSN Options** fields.
  - Specify an **R** for **RBA** to indicate that specific RBA values will be used to specify where to begin and where to stop reading the log to find transactions. If you select this option, you must specify the RBA start and end values in the **Timestamp Options/RBA/LRSN** fields.
  - Specify an **L** for **LRSN** to indicate that specific LRSN values will be used to specify where to begin and where to stop reading the log to find transactions. If you select this option, you must specify the start and end LRSN values in the **Timestamp Options/RBA/LRSN** fields.
5. If you specified a **P** in the **Log Range Type** field you must specify additional information using the **Preceding Options**. Specify whether the preceding time span will be in hours or minutes. Specify **H** for hours or **M** for minutes. Specify the number of hours or minutes in the **Preceding Value** field. You can specify a value from 0 to 99. Specify a **Y** in the **Use database location** field to indicate that the local time for the database will be used as the base time. Specify an **N** to use the local client's time as the base time.
6. If you specified a **T** in the **Log Range Type** field you must specify the start and stop times for the range using the **Timestamp Options/RBA/LRSN** fields. Specify the beginning time for the range in the **Beginning Timestamp** field. Specify the end time for the range in the **End Timestamp** field. Timestamp values are entered as **YYYY - MM - DD - HH - MM - SS**.
7. If you specified an **R** in the **Log Range Type** field you must specify the start and end RBA values for the range using the **Timestamp Options/RBA/LRSN** fields. Enter the start and end RBA values in the **Start/End RBA values (URID)** field. RBAs are relative byte addresses of log records. The RBA values can be specified in full hexadecimal display format with a length of 12, such as 0001ACCDEF02, or with a length of 20, such as 000000000001ACCDEF02.

You can also search for a specific Unit of Recovery Identifiers (URID). URIDs are commonly referred to as RBAs (which is the more generic term). If you wish to filter on a single URID, the start RBA can

be set equal to the URID, and the end RBA left as spaces. Only that specific URID will be reported on. For example, assume you specify the first URID = 001E668838B4 on a subsystem named D91A. The JCL generated will have a section as such:

```
//DATAIN DD *  
SSID =D91A  
START RBA =001E668838B4  
END RBA =000000000000  
/*
```

**Note:** You cannot use RBAs or URIDs to define a range if your Db2 subsystem is part of a data sharing group. RBAs have no uniqueness in a data sharing context, so if you wish to use them in such an environment, you can only do so going against a specific member of the group, not the group as a whole. The **Data Sharing Mode** field should be set to **Y** when using RBAs or a URID as input and the Db2 subsystem should reflect a specific member, otherwise results are unpredictable and unsupported.

8. If you specified an **L** in the **Log Range Type** field you must specify the start and end LRSN values for the range using the **Timestamp Options/RBA/LRSN** fields. Enter the start and end LRSN values in the **Start/End LRSN** field. The LRSN values can be specified in full hexadecimal display format with a length of 12, such as 0001ACCDEF02, or with a length of 20, such as 000000000001ACCDEF02.
9. Unless otherwise specified all the transactions that are found within the scan range are returned. To return a more specific set of transactions you can use the **MFILTER** command. Specify **MFILTER** to apply additional filtering criteria when searching for transactions within the specified time range. The **Update Miscellaneous Filters** panel opens. From this panel specify the additional search criteria and press PF3 to return to the **Create Transaction Scan Range** panel.
10. In the Use SYSLGRNX field specify whether SYSLGRNX will be used when determining the log files to read. In most cases the SYSLGRNX directory tables are used to optimize selecting which log files must be read. Using these tables can add overhead to the analysis job, which in some situations can outweigh the savings that is gained by using SYSLGRNX. Specify a Y to use SYSLGRNX directory tables. Specify an N to bypass using the SYSLGRNX directory tables.
11. Press Enter. A job is run that scans the log and discovers the transactions that ran during the specified time range. When the scan job completes the **Transaction Report Details** panel opens listing the transactions that were discovered. You select the transactions that are to be recovered from the **Transaction Report Details** panel.

## Applying additional filter criteria when scanning for transactions

From the **Update Miscellaneous Filters** panel you can specify additional filtering criteria that will be applied when searching for transactions within the specified time range.

1. Select **Ad-hoc Operations** from the main menu, then select a subsystem from the **SSID Selection** panel.
2. Select **Transaction Recovery**.
3. Specify the **MFILTER** command in the **Command** line of the **Create Transaction Scan Range** panel. The **Update Miscellaneous Filters** panel opens:

```

RCVYXPRT V3R2 ----- Update Miscellaneous Filters ----- 2021/01/13 12:56:12
Command ==> Scroll ==> CSR

Commands: CLEAR - remove all lines
Line Commands: I - Insert R - Remove D - Duplicate
-----
SSID Like EB1A
-----
Transaction Filter Options:
Conditional for filters ==> O (A - And, O - Or)

      A - Authid P - Plan Name J - Corr ID (jobname) I - Conn ID Exclude?
      C - Commit T - Conn Type U - Uniqueness value XP - Xappl Name (Y,
XU - Xuser L - LU Name XW - Xworkstation Name N - Network ID N,
Type XI - XID XA - Xacctg String (all values case-sensitive)
-----> -----
_ A TSIYSER
_ XU USER24

```

4. In the **Conditional for filters** field you specify the operator that is used to combine each line of filtering conditions.
5. To add a line of filtering criteria specify **I** in the line command.
6. Specify the filter type in the **Type** field.
  - A - Authorization ID
  - P - Plan name
  - J - Job name
  - I - Connection ID
  - T- Connection Type
  - N - Network ID (part of the LUWID)
  - LU - LU Name (part of the LUWID)
  - U - Uniqueness Value (part of the LUWID)
  - C - Commit count (part of the LUWID)
  - XP - Transaction application name
  - XU - Transaction user name
  - XW - Transaction workstation name
  - XID - Transaction ID
  - XA - Transaction accounting string
7. Next to the **Type** field specify the character value that identifies the transaction that you want to discover.
8. In the **Exclude?** field specify whether the transaction if discovered is included or excluded from the list of transactions.
9. Press Enter. The filter condition is added and a new line appears. You can repeat this process and add as many lines of filter criteria as you need.
10. To remove a line of filtering criteria specify **R** in the line command next to the filtering criteria that you want to remove.
11. To duplicate a line of filtering criteria specify **D** in the line command next to the filtering criteria that you want to duplicate.
12. Press PF3 when are finished. Control returns to the **Create Transaction Scan Range** panel.

## Selecting the transactions for recovery

From the **Transaction Report Details** panel you select one or more transactions that you want to recover and generate the JCL for the recovery job. You can also change the filtering options and rescan the Db2 log for additional transactions.

If the Db2 Recovery Expert Program Control File (PCF) has been updated, you must also update the current list of transactions in the **Transaction Report Details** panel before building a recovery job for the transactions. You can update the list by running the RESCAN command.

1. The **Transaction Report Details** panel opens after you specify the transaction scan range when you perform a transaction process. It lists the transactions that met the filter criteria that was specified. The **Transaction Report Details** panel also opens when you choose to Update a transaction specification from the **Ad-hoc Specification Display** panel.

```
RCVYXPRT V3R2 ----- Transaction Report Details ----- 2021/01/13 12:56:12
Command ===>                                         Scroll ===> CSR

Commands: ALL - select all visible items  CLEAR 0 clear selections
          RESCAN - rescan transaction log
          PFILTER - apply post filters
          OFILTER - apply object filters
          GENERATE - display all selected items for transaction recovery job
Line Commands: S - Select/Unselect  0 - Operations
-----
Creator: TWCONWA      Name: TRANS2                      SSID: EB1A
Share option: N (Upd, View, No)  Description_____
Group by 0 (Urid, Operation)
Scanned Log Range  Start: 2015-06-17-09.52.21      End: 2015-06-17-09.52.21
-----
URID:          TIMESTAMP          DBNAME  TSNAME  TABLE OWNER
0000000016FAC043AC  2015-06-16-13.33.02.930135  ARYADB32  ARYSPTS1  ARYADB32
0000000016FAC043AC  2015-06-16-13.33.02.930135  ARYADB32  ARYSPTS1  ARYADB32
0000000016FAC043AC  2015-06-16-13.33.02.930135  ARYADB32  ARYSPTS1  ARYADB32
ARYADB32
```

2. The transactions that met the original search criteria that was specified when the transaction recovery process was performed are listed in the Transaction Report Details panel. You can refresh the list of transactions by setting up new filter criteria and using the RESCAN command as follows:
  - You can use the **PFILTER** command to apply post filters. Specify **PFILTER** on the **Command** line. Press Enter. The **Transaction Post Filters panel** opens. Post filters allow you to change the beginning and end timestamp to a subset of the initial scan range. You can also add additional filters using the **MFILTER** command. When you finish specifying additional post filter criteria press Enter to return to the **Transaction Report Details** panel.
  - You can use the **OFILTER** command to apply object filters. Specify **OFILTER** on the **Command** line. Press Enter. The **Transaction Object Filters panel** opens. Object filters allow you to add, remove, update, include and exclude objects that were acted upon by the transaction. When you have finished selecting the objects control returns to the **Transaction Report Details** panel.
  - Specify RESCAN in the **Command** line. The Db2 log is re-scanned based on the new filter criteria. The list of qualifying transactions is refreshed.
3. You can view each of the actions that were performed by the transaction by specifying an **O** next to the transaction. Press Enter. The View Transaction Operations panel opens.
4. By default the transactions are listed in URID order. You can change how the transactions are listed using the **Group by** field. Specify **O** to group the transactions by the operation that is performed. Specify **U** to group the transactions by URID.
5. To include a transaction in the recovery specify an **S** next to the transaction. You can select more than one transaction. When you have finished selecting the transactions, press Enter. An asterisk appears in the command line for each transaction that you selected. To clear the selection, replace the asterisk with a blank.

You can also use the **All** command to select all the listed transactions for recovery and the **CLEAR** command to clear all the selected transactions.

- After you have selected the transactions that are to be included in the recovery job, specify **GENERATE** in the **Command** line to view the selected transactions and build the final transaction recovery job. The **Selected Transaction Operations** panel opens.

```
RCVYXPRT V3R2 ----- Selected Transaction Operations ----- 2021/01/13 12:56:12
Command ===> Scroll ===> PAGE

Commands: BUILD - build transaction recovery job
-----
Creator: TWCONWA      Name: TRANS2                      SSID: EB1A
Share option: N (Upd, View, No)  Description
Scanned Log Range  Start: 2015-06-17-09.52.21      End: 2015-06-17-09.52.21
-----
  URID:                TIMESTAMP                DBNAME  TSNAME  TABLE OWNER
0000000016FAC043AC  2015-06-16-13.33.02.930135  ARYADB32  ARYSPTS1  ARYADB32
0000000016FAC043AC  2015-06-16-13.33.02.930135  ARYADB32  ARYSPTS1  ARYADB32
0000000016FAC043AC  2015-06-16-13.33.02.930135  ARYADB32  ARYSPTS1  ARYADB32
```

- After reviewing the transactions specify **BUILD** on the **Command** line to build the JCL for the recovery job. Press Enter. The **Build Transaction Recovery Job** panel opens.
- Specify whether you want to review the job JCL before running the job by entering a Y in the **Edit Generated Job** field.
- Specify the data set and member name for the job in the **Build job in data set** and **Member** fields.
- Edit the job card information if necessary.
- Press Enter. If you selected to review the JCL, the transaction recovery job JCL opens in an ISPF edit session. If you did not choose to edit the JCL, the job is run.

## Sample transaction recovery job JCL and results

The following is a sample of a transaction recovery job:

```
//*****
//* Db2 Recovery Expert for z/OS
//*
//* Log Analysis Services - Execute Undo SQL Utility
//*
//* Generated by UserXX 2015-08-11 23.23.49
//*
//* SSID: EA1A
//*
//*
//*****
//* Execute DML Utility
//*****
//TXNR0001 EXEC PGM=ARY@FSP,
//      PARM='EA1A -F RSTEST.ARY32.EA1A.ARYLAS.SQLOUT.T0000101'
//STEPLIB DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.SARYLOAD
//      DD DISP=SHR,DSN=DSN.EA1A.SDSNEXIT
//      DD DISP=SHR,DSN=DSN.VA10.SDSNLOAD
//Db2PARMS DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.CONTROL
//SYSPRINT DD      SYSOUT=*
//ARYPRINT DD      SYSOUT=*
//CEEOPTS DD      *
//      STACK(1000K)
/*
//ARYCFG DD      *
//      RESTART AUTO
//      ON SQLERROR STOP
//      ON SQLWARN WARN
/*
,
```



The following is an example of the contents of the file EA1A -F RSTEST.ARY32.EA1A.ARYLAS.SQLOUT.T0000101:

```
000001 --UNDO SQL FOR SUBSYSTEM: EA1A
000002 --#00000001 *UNDO INSERT* URID:006BE3840E72 DATE/TIME:2015-08-11/23.22
000003
000004 DELETE FROM
000005 "ARYTEST"."ARYTEST_TBL07"
000006 WHERE
000007 "COL_1" = +4419
000008 ;
000009
000010 --#00000002 *UNDO INSERT* URID:006BE3840E72 DATE/TIME:2015-08-11/23.22
000011
000012 DELETE FROM
000013 "ARYTEST"."ARYTEST_TBL07"
000014 WHERE
000015 "COL_1" = +3319
000016 ;
000017
000018 --#00000003 *UNDO INSERT* URID:006BE3840E72 DATE/TIME:2015-08-11/23.22
000019
000020 DELETE FROM
000021 "ARYTEST"."ARYTEST_TBL07"
000022 WHERE
000023 "COL_1" = +2219
000024 ;
000025
000026 --#00000004 *UNDO INSERT* URID:006BE3840E72 DATE/TIME:2015-08-11/23.22
000027
000028 DELETE FROM
000029 "ARYTEST"."ARYTEST_TBL07"
000030 WHERE
000031 "COL_1" = +1119
000032 ;
000033
000034 --#00000005 *UNDO INSERT* URID:006BE3840E72 DATE/TIME:2015-08-11/23.22
000035 000036 DELETE FROM
000037 "ARYTEST"."ARYTEST_TBL07"
000038 WHERE
000039 "COL_1" = +119
000040 ;
000041
000042 --#00000006 *UNDO INSERT* URID:006BE3840E72 DATE/TIME:2015-08-11/23.22
000043
000044 DELETE FROM
000045 "ARYTEST"."ARYTEST_TBL07"
000046 WHERE
000047 "COL_1" = +19
000048 ;
```

## Saving a transaction specification

This topic explains how to save a transaction specification, after you have recovered a transaction.

After you have completed the transaction recovery process, the **Save Transaction Recovery Specification** panel opens. From the **Save Transaction Recovery Specification** panel, you save a transaction specification, which can be used to recover objects that have been changed by one or more transactions.

To save the specification, fill in the required fields and press **ENTER**.

```

Save Transaction Recovery Specification
Creator          USERID
Specification Name K82C OBJECTS
Description

Share Option U   (Update, View only, No access)
Press ENTER to save the Specification, F3 to exit

```

1. The **Creator** field is automatically filled with your user ID as the specification creator. To save the specification with a different user ID, type the new ID in this field.
2. Specify a name for the Specification in the **Specification Name** field. The name can consist of up to 30 characters.
3. Specify a description for the specification in the **Description** field.
4. In the **Db2 SSID** field, specify the SSID of the Db2 subsystem where the objects to be recovered currently reside. The transaction specification will also be stored at that SSID.
5. You control access to the specification using the **Share Option** field. Specify **U** to allow other users to update the specification. Specify **V** to allow other users to view but not update the specification. Specify **N** to deny other users access to the specification.
6. Press **ENTER** to save the specification or exit without saving.

## Ad-hoc Operations: Log based specifications

This topic explains how to create a log based ad-hoc specification. **Note:** Db2 V12 FL508 introduces a new SQL statement: ALTER TABLESPACE MOVE TABLE. This allows you to move individual tables from multi-table tablespace to separate UTS spaces. With PTF PH30785, Db2 Recovery Expert, handles this new SQL statement, with certain limitations; see [Using moved tables](#).

1. Select 3 (**Ad-hoc Operations**) from the main menu.
2. Select a subsystem from the **SSID Selection** panel.
3. Select 2 (**Log Based Recovery**) from the **Ad-hoc Operations** menu. The **LBDR Scanned Log Ranges** panel opens.

### Selecting an LBDR time range

The **LBDR Scanned Log Ranges** opens when you are performing a log-based specification. From the **LBDR Scanned Log Ranges** panel you select the time range in the Db2 log that is searched for dropped objects.

1. The **LBDR Scanned Log Ranges** opens when you specify **2** (Log-Based Recovery) in the **Ad-hoc Operations Menu** panel.

```
RCVYXPRT V3R2 ----- LBDR Scanned Log Ranges ----- 2021/01/13 12:56:12
Command ==> Scroll ==> CSR
```

```
Line Commands: C - Create D - Delete S - Select
```

```
-----
Creator: USERID      NAME: TESTPROF      SSID EA1A
-----
Start Timestamp      End Timestamp      Creator      LBDR ID      Row
2021-03-08-21.10.48 2021-03-08-21.15.48 Userid1      1            1 of 1 +
2021-03-09-15.03.32 2021-03-09-15.05.00 Userid1      5
2021-03-20-16.06.04 2021-03-20-17.06.04 Userid2      6
2021-03-22-14.34.40 2021-03-22-14.37.00 Userid2      7
2021-03-26-18.17.00 2021-03-26-18.17.55 Userid2      8
2021-05-09-00.27.30 2021-05-09-01.27.30 Userid1      9
2021-05-09-16.25.34 2021-05-09-17.25.34 Userid1     10
```

2. The following fields are displayed:

**Creator**

Specifies the creator of the specification.

**Name**

Specifies the name of the specification. The name of the specification is empty until you save the specification; it will be shown when the specification is updated.

**SSID**

Specifies the Db2 subsystem where the objects in the specification and the Db2 log reside.

**Start Timestamp**

Specifies the start time for the LBDR range.

**End Timestamp**

Specifies the end time for the LBDR range.

**LBDR ID**

Specifies the ID that has been assigned to the time range during the data collection.

3. To create a new time range, specify a **C** in the command line. The Create LBDR Scan Range opens. From this panel you specify a time range to scan the Db2 log for dropped objects. Press Enter. The new range is listed in LBDR Scanned Log Ranges panel.
4. To delete an existing LBDR scan range, specify a **D** next to the time range that you want to delete. Press Enter. A pop-up window requests confirmation of the deletion. Press **OK** and the time range is deleted.
5. To select the LBDR scan range for the specification, enter an **S** next to the time range that you want to use. Press **ENTER**.
6. The **Object Types Selection** panel opens where you select the objects that are included in the specification.

## Creating a new LBDR time range

From the **Create LBDR Scan Range** panel you create a new time range that can be used to scan the Db2 logs for dropped objects.

1. The **Create LBDR Scan Range** panel opens when you enter a **C** next to one of the ranges in the **LBDR Scanned Log Ranges** panel.

```

RCVYXPRT V3R2 ----- Create LBDR Scan Range ----- 2021/01/13 12:56:12
Command ==> Scroll ==> CSR

Enter a time range to scan the Db2 log for dropped object events.
Press enter from this screen to generate JCL that will scan the
log and populate the LBDR repository with the information needed
to recover the objects from the log.

Log Range type ==> P (Preceding/Timestamp)

Preceding Options:
  Preceding Type ==> H (Hours/Minutes)
  Preceding Value ==> 01 (00-99)
  Use database location time ==> Y (Yes/No)

Timestamp Options:
  Beginning Timestamp ==> 2021 - 06 - 02 - 10 : 39 :48
  End Timestamp ==> 2021 - 06 - 02 - 11 : 39 :48

```

2. In the **Log Range Type** field specify the type of time range within which the search for dropped objects will occur.
  - Specify a **P** for **Preceding** to indicate that a specific time span preceding the current time will be used to specify where to begin and where to stop reading the log to find dropped objects. If you select this option, you must specify the time span details in the **Preceding Options** fields. By default the time range is set to **Preceding** by 1 hour using the local client time.
  - Specify a **T** for **Timestamp** to indicate that specific time values will be used to specify where to begin and where to stop reading the log to find dropped objects. If you select this option, you must specify the start and end time in the **Timestamp Options** fields. Timestamp values are entered as *YYYY - MM - DD - HH - MM - SS*.
3. If you specified a **P** in the **Log Range Type** field you must specify additional information using the **Preceding Options**. Specify whether the preceding time span will be in hours or minutes. Specify **H** for hours or **M** for minutes. Specify the number of hours or minutes in the **Preceding Value** field. You can specify a value from 0 to 99. Specify a **Y** in the **Use database location** field to indicate that the local time for the database will be used as the base time. Specify an **N** to use the local client's time as the base time.
4. If you specified a **T** in the **Log Range Type** field you must specify the start and stop times for the range using the **Timestamp Options** fields. Specify the beginning time for the range in the **Beginning Timestamp** field. Specify the end time for the range in the **End Timestamp** field. Timestamp values are entered as *YYYY - MM - DD - HH - MM - SS*.
5. In the **Use SYSLGRNX** field specify whether SYSLGRNX will be used when determining the log files to read. In most cases the SYSLGRNX directory tables are used to optimize selecting which log files must be read. Using these tables can add overhead to the analysis job, which in some situations can outweigh the savings that is gained by using SYSLGRNX. Specify a **Y** to use SYSLGRNX directory tables. Specify an **N** to bypass using the SYSLGRNX directory tables.
6. Press Enter. A job is run that will scan the log and populate the LBDR repository with the information needed to recover the object from the log. Control returns to the **LBDR Scanned Log Ranges** panel where you can select the range.

## Selecting object types for profiles and specifications

From the **Object Types Selection** panel, you choose the types of objects that you want to recover and include in an application profile or a log based specification. Selecting the types of objects that will be recovered is the first step to selecting specific objects.

### Note:

- When setting up the recovery of an index space, Db2 Recovery Expert can only recover indexes when the table space data is still valid.

- Several object types may not produce recovery JCL when doing a recover to Current because they are non-data types. Non-data object types are Alias, Function, Global Variable, Procedure, Role, Sequence, Sequence Alias, Synonym, Trigger, and View. You can generate View DDL for these objects by using the DDL Generation option.

```

RCVYXPRT V3R2 ----- Object Types Selection ----- 2021/01/13 12:56:12
Command ==>                                         Scroll ==> CSR

Line Commands: S - Select an object type
-----
Creator: USERID      NAME: TESTPROF                      SSID EA1A
----- Row 1 of 1 +
Object Types
_All
_Stogroups
_Databases
_Tablespaces
_ Tables
_ Indexes
_ Views
_ Synonyms
_ Aliases
_ Data Types
_ Triggers
_ Functions
_ Procedures
_ Sequences
_ Sequence Aliases
_ Roles
_ Plans
_ Packages
_ Global Variables
_ Auto Tool Profiles

```

1. Enter an **S** next to each of the object types that you want to include in the profile. Pressing Enter starts the selection process for each type of object that you selected. If you entered an **S** for more than one type of object, the selection process is driven for each type of object in the order that they appear on the panel.
2. The selection process consists of filtering and selection. A filter popup panel opens automatically for each type of object that you have selected for inclusion in the profile. Depending on the filtering that you specify, all or a portion of the objects for a specific type that reside on the Db2 subsystem are displayed in the selection panel. From the selection panel you select the specific objects for the profile. After selection, the filter and selection panels for the next set of object types opens. Filtering and selection continues for each object type that has been selected for the profile.

## Filtering the subsystem objects

You use the object type filter panel to limit the objects that are presented in the selection panels for each of the object types.

A database filter panel opens for each object type that is included in the profile or specification. Without filtering all objects found on the Db2 subsystem of that specific type are included in the selection panel.

1. The filter panel opens automatically for each type of object that is included in the profile or specification. The fields that are displayed on the filter panel for each object type varies slightly. An example of the filter panel for a Tablespace object is as follows:

#### Tablespace Filter

Creator like	%
Name like	ARYDB010
Wildcard:	N (Yes/No) N
Include/Exclude	I (Include/Exclude)

- Each object filter panel includes a filter field called **Creator like**. You specify the ID of the user who created the object that you would like to include in the application profile in the **Creator like** field. You can filter for a single user ID by specifying a specific ID in the field or for several users using wildcard characters. The wildcard character % indicates a global match. For example % will include all objects of this type and b% will include all objects that begin with a "b". The wildcard character \* indicates a single character match. For example abc\* will include all objects that start with abc.
- Each object filter panel includes a name field that you can use to filter on the object name. Specify the name of the object that you would like to include in the application profile in the **object name like** field. You can filter for a single object by specifying a specific name in the field or for several objects using wildcard characters. The wildcard character % indicates a global match. For example % will include all objects of this type and b% will include all objects that begin with a "b". The wildcard character \* indicates a single character match. For example abc\* will include all objects that start with abc.
- Most object filter panels include the **Wildcard** field. You specify whether a wildcard character is used in the **Wildcard** field to control the display of objects in the profile. Specify an **N** to indicate that the objects that meet the filter criteria that is specified in the **Creator** and **object name Like** fields are searched for immediately and listed in the Selection panel that opens automatically. Specify a **Y** to indicate that the filtering of the objects on the Db2 subsystem occurs at run time. In this case the selection panel is not displayed. The default value for this field is **N**.
- Most object filter panels include the **Include / Exclude** field. You can further filter the objects that are displayed in the selection panel or included in the application profile using the **Include / Exclude** field. Specify **I** to include all the objects that meet the filter criteria. Specify an **E** to exclude all the objects that meet the criteria. The default is to include all the objects that fit the filtering criteria.
- After specifying the filter criteria, press Enter. The filtering process selects the objects that meet the filtering criteria and displays them in the *Object* Selection panel. If you specified a **Y** in the **Wildcard** field, then the filtering occurs at run time and the **Update Profile Display** panel opens.

## Selecting the object

The *Object* Selection panel displays each of the objects for a particular object type that match the criteria specified in the *Object* Filter panel. From the *Object* Selection panel you will select the objects that are included in the application profile.

- The *Object* Selection panel opens automatically after pressing Enter in the *Object* Filter panel and the **Wildcard** field from the *Object* Filter panel is set to **N**.

An example of the Selection panel for Tablespace objects follows:

```
RCVYXPRT V3R2 ----- Tablespace Selection ----- 2021/01/13 12:56:12
Command ==> Scroll ==> CSR
```

```
Line Commands: S - Select      V - Versions      P - Properties
-----
```

Name	DBname	Part	Status	Altered	Timestamp	Created
_ARYCONTX	ARYDB	ALL	Both	2021-08-19-14.26.53		
_ARYFA01	ARYDB	ALL	Both	2021-08-19-14.26.57		
_ARYFA02	ARYDB	ALL	Both	2021-08-19-14.26.56		
_ARYPLUXA	ARYDB	ALL	Both	2021-08-19-14.26.58		
_ARYPLUXB	ARYDB	ALL	Both	2021-08-19-14.26.46		
_ARYPLUXC	ARYDB	ALL	Both	2021-08-19-14.26.50		
_ARYROLES	ARYDB	ALL	Both	2021-08-19-14.26.54		
_ARYVRTS1	ARYDB	ALL	Both	2021-08-19-14.26.56		
_ARYVRTS1	ARYDB	ALL	Both	2021-08-19-14.26.38		
_ARYVRTS2	ARYDB	ALL	Both	2021-08-19-14.26.40		
_ARYVRTS3	ARYDB	ALL	Both	2021-08-19-14.26.55		
_ARYVRTS4	ARYDB	ALL	Both	2021-08-19-14.26.45		
_ARYVRTS5	ARYDB	ALL	Both	2021-08-19-14.26.41		
_ARYVRTS6	ARYDB	ALL	Both	2021-08-19-14.26.39		
_ARYVRTS7	ARYDB	ALL	Both	2021-08-19-14.26.42		
_ARYVRTS8	ARYDB	ALL	Both	2021-08-19-14.26.27		
_ARYVRTS9	ARYDB	ALL	Both	2021-08-19-14.26.16		

- Each of the filter values that you specified are displayed on the panel. You can change one or more of the filter values. If you change any one of the filter values, then the list of objects that meet the filter criteria is refreshed. The filter parameters vary depending on the type of object.
- Each line in the display section of the panel shows the fields that are unique to the type of object. For all object types the **Status** field shows if the object is only in the SLR (dropped), is just in the Db2 catalog (CatOnly), or in both the SLR and the Db2 catalog (Both).
- The overall structure of the display may vary depending on the object type. For example, for partitioned tablespaces and indexes, the display will show one line with the value **ALL** followed by a line for each partition. This allows you to select the **ALL** line or individual partitions.
- To select an object for inclusion in the application profile, specify **S** in the command line to the left of the object. Press Enter. The object is selected and included in the profile. The **Update Application Profile** panel opens. You can select more than one object by specifying an **S** in multiple command lines.
- To show all levels of the object that are in the repository, specify **V** in the command line to the left of the object. Press Enter. The **Object Definition Levels** panel opens. Each object level is displayed. Press the F3 function key to return to the **Object Selection** panel.

An example of the Tablespace Definition levels panel is as follows:

```

RCVYXPRT V3R2 ----- Tablespace Definition Levels----- 2021/01/13 12:56:12
Command ==> Scroll ==> CSR

Database name: ARYDb231 Tablespace name: ARYBXTN
-----
Creator: USERID NAME: TESTPROF SSID EA1A
Start Timestamp *----- End Timestamp *-----
----- Row 1 of 1 +

Qualifier Name Create Timestamp End Timestamp
ARY231DB ARYBXTN 2021-12-09-12.24.55

```

- To show the object and all its returned properties, specify **P** in the command line to the left of the object. Press Enter. The *Object Properties* panel opens where you can view the property information for the object. Press the F3 function key to return to the *Object Selection* panel.

An example of the Tablespace Properties is as follows:

```

RCVYXPRT V3R2 ----- Tablespace Properties ----- 2021/01/13 12:56:12
Command ==> Scroll ==> CSR

Database name: ARYDb231 Tablespace name: ARYBXTN
-----
Creator: USERID NAME: TESTPROF SSID EA1A
----- Row 1 of 1 +

Altered timestamp : 2021-12-09-12.24.55.498311
Created timestamp : 2021-12-09-12.24.55.498311
Creator           : USERID
DBIB             : 651
Implicit         : N
OBID             : 312
Partition count  : 0
PSID             : 313
Repository status : Both repository and Db2 catalog
Status           : RW
Table count      : 1
Tablespace count :

```

## Generating recovery DDL for an object

From the **Generate DDL** panel you can update recovery options, choose a recovery point, and generate the DDL to recover the objects in an application profile.

Db2 Recovery Expert generates one recovery plan that produces a job (JCL) containing the Data Definition Language (DDL) for the selected objects and all of their dependent objects. For example, if you choose a table object, the recovery DDL for the table and any indexes, views, synonyms, aliases, data types, triggers, functions, procedures, sequences, and roles dependent on that table is generated. Db2 Recovery Expert generates the DDL to create the objects but it does not generate DROP statements if the objects already exist. The generated DDL is placed in a job that can be executed. This job fails if the selected object (for which the DDL has been generated) already exists.

You can further control the DDL generation for an object and its dependent objects using the recovery option **DDL Generation Options**.

- From the **Application Profile Display** panel (for an application profile), or from the **Ad-hoc Specification Display** panel (for a specification), specify a **G** in the **Cmd** line next to an application profile or a log based specification for which you want to generate recovery DDL.

The **Generate DDL** panel opens.



```

RCVYXPRT V3R2 ----- Generate DDL ----- 2021/01/13 12:56:12
Command ==>
-----
Creator: USERID      NAME: TESTPROF                      SSID EA1A
-----
Update Recovery Options ==> N (Yes/No)

Choose the desired recovery point. You can enter a timestamp or RBA/LRSN
here or enter "Y" for "Select Recovery point" to display a selection list
of possible recovery points.

Recovery Point          ==> 1 (1-Current, 2-RBA/LRSN, 3-Timestamp)
Recovery RBA/LRSN      ==> -----
Recovery Timestamp     ==> -----
Select Recovery Point  ==> N (Yes/No)

```

2. To update the **DDL Generation Options** or any of the recovery options, specify **Y** in the **Update Recovery Options** field. Press Enter.

The **Recovery Options** panel opens. Edit the options that you want to change. Upon completion, press PF3 to return to the **Generate DDL** panel. See [“Generating object recovery plans” on page 334](#) for more information.

3. You have three options for specifying a recovery point. Select from one of the following options:

- **Current:** To select the current recovery point, enter a **1** in the **Recovery Point** field. Any data entered in the **RBA/LRSN** or **Timestamp** fields will be cleared.

**Note:** When performing redirected recovery, selecting **Current** recovers the object using the latest image copy of the object. Any recovery information that is included in the log data is not applied.

- **RBA/LRSN:** To select a RBA/LRSN recovery point enter a **2** in the **Recovery Point** field. The value of the current RBA/LRSN is entered in the **Recovery RBA/LRSN** field. To change that value enter a **Y** in the **Select Recovery Point** field.
- **Timestamp:** To select a timestamp recovery point enter a **3** in the **Timestamp** field. The current timestamp is automatically entered in the **Recovery Timestamp** field. To change that value enter a **Y** in the **Select Recovery Point** field.

4. Depending on your selection of recovery point options, you must enter values for one or more of the following fields:

#### Recovery RBA/LRSN

If you entered a **2** in the **Recovery Point** field, you can either specify a different value in the **Recovery RBA/LRSN** field or enter a **Y** in the **Select Recovery Point** field where you can select the recovery point in the Recovery Point Selection panel.

#### Recovery Timestamp

If you entered a **3** in the **Recovery Point** field, you can either specify a new timestamp value in the **Recovery Timestamp** field or specify a **Y** in the **Select Recovery Point** field where you can select the recovery point in the Recovery Point Selection panel. The timestamp value must be entered as *YYYY - MM - DD - HH - MM - SS - MMMMMM*.

#### Select Recovery Point

If you entered a **3** in the **Recovery Point** field or you entered a **2** in the **Recovery Point** field, you can change the values in the **Recovery Timestamp** or the **Recovery RBA/LRSN** fields by entering a **Y** in the **Select Recovery Point** field. Press Enter. The Recovery Point Selection panel opens where you can select an object definition level, a recovery history event, a quiet time, or an image copy data set as the recovery point.

5. After specifying the recovery point press Enter. All the fields are validated and the DDL is generated. The **Recovery Plans** panel opens. From this panel you can select the recovery plan and generate the JCL that can be used to recover the object or objects in the application profile.

## Generating object recovery plans

Db2 Recovery Expert will generate one or more recovery plans that you can select from to recover the objects that have been included in the application profile or log based specification.

Using the **Generate Recovery Plans** panel you can specify recovery options, choose a recovery point, and generate recovery plans that can be used to recover the objects that are included in the application profile or log based specification.

### Note:

- If you are recovering a dropped object that is part of an implicit table space, Db2 Recovery Expert issues a warning during recovery plan generation to let you know the ZPARM parameter IMPDSDEF must be set to YES before running the recovery job. This ZPARM parameter can be dynamically changed with the Db2 SET SYSPARM command.
- Several object types may not produce recovery JCL when doing a recover to Current because they are non-data types. Non-data object types are Alias, Function, Global Variable, Procedure, Role, Sequence, Sequence Alias, Synonym, Trigger, and View. You can generate View DDL for these objects by using the DDL Generation option.

1. There are three ways to reach the **Generate Recovery Plans** panel:

- From the **Application Profile Display** panel, specify **P** in the **Cmd** line next to the application profile for which you want to generate the recovery plans.
- From the **Specification Display** panel, specify **P** in the **Cmd** line next to the log based specification for which you want to generate the recovery plans.
- From the **Ad-hoc Operations** panel, select SSID, **2. Log Based Recovery, Set LBDP Scanned Log Range, Select objects**, and press **F3**.

The **Generate Recovery Plans** panel opens:

```
RCVYXPRT V3R2 ----- Generate Recovery Plans ----- 2021/01/13 12:56:12
Command ==>
-----
Creator: USERID      NAME: TESTPROF                      SSID EA1A
-----
Update Recovery Options ==> N (Yes/No)
Redirected Recovery     ==> N (Yes/No/Update)
Generation Method      ==> B (Online/Batch)

Choose the desired recovery point. You can enter a timestamp or RBA/LRSN
here or enter "Y" for "Select Recovery point" to display a selection list
of possible recovery points.

Recovery Point          ==> 1 (1-Current, 2-RBA/LRSN, 3-Timestamp)
Recovery RBA/LRSN      ==> -----
Recovery Timestamp     ==> -----
Select Recovery Point  ==> N (Yes/No)
```

2. To update the recovery options for the profile or specification, specify **Y** in the **Update Recovery Options** field. Press Enter.

The **Recovery Options** panel opens. Edit the options that you want to change. Upon completion, press PF3 to return to the **Generate Recovery Plans** panel. See [“Specifying recovery options” on page 335](#) for more information on recovery options.

3. Specify **Y** in the **Redirected Recovery** field to initiate redirected recovery for the objects in the application profile or log based specification. When you press **ENTER**, the **Select Target SSID for Recovery** panel will open. From this panel, you will select the target Db2 subsystem where you want to recover the objects and specify whether you will rename the object.

Redirected Recovery is only available if you are recovering database, table space or table objects.

4. Specify **O** to create recovery plans and JCL by manually editing a sample JCL batch job), or **B** to generate recovery plans and JCL batch job code automatically via ISPF. When you press ENTER, if the

Redirected Recovery field is set to **Y**, the **Build Jobs Options** panel opens. If Redirected Recovery is set to **N**, the **Batch Plans Generation Options** panel opens instead.

5. There are three options for specifying a recovery point. Select from one of the following options:
  - **Current**: To select the current recovery point, enter a **1** in the **Recovery Point** field. Any data entered in the **RBA/LRSN** or **Timestamp** fields will be cleared.  
**Note:** When performing redirected recovery, selecting **Current** recovers the object using the latest image copy of the object. Any recovery information that is included in the log data is not applied.
  - **RBA/LRSN**: To select a RBA/LRSN recovery point enter a **2** in the **Recovery Point** field. The value of the current RBA/LRSN is entered in the **Recovery RBA/LRSN** field.
  - **Timestamp**: To select a timestamp recovery point enter a **3** in the **Timestamp** field. The current timestamp is automatically entered in the **Recovery Timestamp** field.
6. Depending on your selection of recovery point options, you may enter values for one or more of the following fields:

#### **Recovery RBA/LRSN**

If you entered a **2** in the **Recovery Point** field, you can either specify a different value in the **Recovery RBA/LRSN** field or enter a **Y** in the **Select Recovery Point** field to open the Recovery Point Selection panel. From the Recovery Point selection panel, you can select an object definition level, a recovery history event, or a quiet time for the recovery point. You can also specify a specific image copy data set name.

#### **Recovery Timestamp**

If you entered a **3** in the **Recovery Point** field, you can either specify a new timestamp value in the **Recovery Timestamp** field or specify a **Y** in the **Select Recovery Point** field where you can select the recovery point in the Recovery Point Selection panel. The timestamp value must be entered as **YYYY - MM - DD - HH - MM - SS - MMMMMM**.

#### **Select Recovery Point**

If you entered a **3** in the **Recovery Point** field or you entered a **2** in the **Recovery Point** field, you can change the values in the **Recovery Timestamp** or the **Recovery RBA/LRSN** fields by entering a **Y** in the **Select Recovery Point** field. Press Enter. The Recovery Point Selection panel opens where you can select an object definition level, a recovery history event, a quiet time, or an image copy data set as the recovery point.

7. After specifying the recovery point press Enter. All the fields are validated and the available recovery plans are shown in a list on the **Batch Plans Generation Options** panel. See [Selecting a recovery plan](#) for more information.

## **Specifying recovery options**

You use the Recovery Options panel to specify the options that control the creation of the recovery JCL or DDL for the objects in an application profile or a log based specification.

**Note:** Starting with Db2 Recovery Expert V3.1 you no longer need to set recovery options that specify whether you want to use system level backups, image copies, or VSAM image copies for recovery. Db2 Recovery Expert V3.2, Db2 Recovery Expert examines all recovery resources that are available when generating the recovery plans.

1. From the **Generate Recovery Plans** panel, specify **Y** in the **Update Recovery Options** field. Press Enter.

The **Recovery Options** panel opens. In this panel use PF8 to scroll down and see all the options. Use PF7 to return to the top of the panel.

```

RCVYXPRT V3R2 ----- Recovery Options ----- 2021/01/13 12:56:12
Command ==>
-----
Creator: USERID      NAME: TESTPROF                      SSID EA1A
-----
MORE:      +

General Options:
  Stop if restricted objects          ==> Y (Yes/No)
  Generate CHECK Utilities            ==> Y (Yes/No)
  Include RI related objects          ==> Y (Yes/No/Relations only)
  Allow LOAD from FIC recreated tables ==> N (Yes/No)
  Use workfiles for Undo/Redo SQL     ==> N (Yes/No)
  Ignore ALTER statements             ==> N (Yes/No)
  Allow copies from previous versions ==> N (Yes/No)
  Notify if Data Capture Changes enabled ==> N (Yes/No)
  Action for unrecoverable objects    ==> E (Ignore/Create/Load/Error)
  Action for missing recovery resources ==> I (Ignore/Warning/Error)

Index Rebuild Options:
  Limit of tablespaces per step ==> 30 (0-30)
  Reuse existing data sets      ==> N (Yes/No)

Recover Options:
  Recover unchanged objects        ==> N (Yes/No)
  Number of Tape Drives           ==> 4 (1-99)
  Site                            ==> D (Default/Local site/Recovery site)
  Limit of objects per step       ==> 30 (0-30)
  Reuse existing data sets        ==> Y (Yes/No)

Log read and log apply options
  Update Log Options              ==> Y (Yes/No)

Statistics Options:
  Copy statistics                  ==> Y (Yes/No/Update)

Copy Options:
  Image Copies after recover       ==> N (No/Tablespaces/Indexes and tablespaces)
  Local Site Primary               ==> N (Yes/No)
  Local Site Backup                ==> N (Yes/No)
  Remote Site Primary              ==> N (Yes/No)
  Remote Site Backup               ==> N (Yes/No)
  Number of Tape Drives           ==> 4 (1-99)
  Check Pages                      ==> N (Yes/No)
  Use DFSMSdss Concurrent Copy     ==> N (Yes/No)
  Automatic Image Copies           ==> N (Yes/No/Update)

Parallel Job Options:
  Number of Parallel jobs         ==> 0 (0=99)
  Number of concurrent jobs       ==> 1 (1-99)
  Execute on multiple LPARs       ==> N (Yes/No/Update)

Authorization Options
  Generate Grants                  ==> Y (Yes/No)

Bind Options
  Generate Binds                   ==> N (None/Packages/Both Plans and Packages)
  Bind Action                       ==> A (Add/Replace)
  Add DBRMLIB1
  Add DBRMLIB1
  Add DBRMLIB1
  Add DBRMLIB1

DDL Generation Options

```

## 2. Specify or edit one or more the following **General Options**:

### **Stop if restricted objects**

Specify **Y** to stop the recovery if any restricted objects are encountered. Specify **N** to skip the restricted object if one is encountered and continue the recovery.

### **Generate CHECK utilities**

Specify an **N** to indicate that steps for the Check Data, Check Index and Check Lob Utilities for recovered objects should not be generated.

**Include RI related objects**

Specify **Y** to automatically include objects that are related to the selected objects (due to referential integrity) in the recovery process. Specify **N** to exclude those objects. Specify **R** to include relations only (create relations, but do not include the related objects themselves in the object recovery plan). The default value is **Y**.

**Allow LOAD from FIC recreated tables**

Specify **Y** to allow a **LOAD from a full image copy** recovery plan to be used for recreated tables. Specify **N** to prevent a **LOAD from a full image copy** recovery plan from being used for recreated tables. Using this recovery plan for recreated tables may fail in some cases.

**Use workfiles for Undo/Redo SQL**

The **Use workfiles for Undo/Redo SQL** option specifies whether workfiles are used when running Undo/Redo SQL recovery plans. Specify **Y** to use workfiles. Specify **N** to use 64 bit storage. Using workfiles may impact performance and should only be selected when scanning more than 500 Db2 logs for activity.

**Ignore ALTER statements**

The **Ignore ALTER statements** option lets you specify **Y** to ignore ALTER statements during recovery plan generation. Please use with caution: enabling it may cause invalid plans if ignored ALTER affects data row format or other parameters important for recovery (for example, ALTER TABLE ALTER COLUMN). On the other hand, it allows you to generate additional plans for some scenarios with other ALTER statements (for example, ALTER TABLE APPEND YES/NO) and avoid some Unrecoverable object errors.

**Allow copies from previous versions**

This option allows users to select an image copy that is different from the current image copy version and use that image copy for the recovery. Specify **Y** to use an image copy created for versions other than the one being recovered.

**Notify if Data Capture Changes enabled**

This option specifies whether a warning message is issued if Data Capture Changes is enabled on the table that is being recovered. Specify **Y** to issue the message. Specify **N** to prevent the message from being issued.

**Action for unrecoverable objects**

Specify **I** to skip any unrecoverable objects in profile and generate recovery plans only for all recoverable objects. Specify **C** to recreate all unrecoverable objects that were dropped or altered, do nothing for existing unrecoverable objects, and generate recovery plans for recoverable objects. Specify **L** to recreate all unrecoverable objects that were dropped or altered, delete all data from existing unrecoverable objects by **LOAD REPLACE**, and generate recovery plans for recoverable objects. Specify **E** to abort the plan generation for the whole profile if any unrecoverable object is found.

**Action for missing recovery resources**

This option specifies what action to take when a unrecoverable resource, such as a Db2 log or image copy, is detected. Specify **I** (Ignore) to prevent Db2 Recovery Expert from checking data sets for unrecoverable resources. Specify **W** (Warning) to continue recovery plan generation and issue a warning message for unrecoverable resources. Specify **E** (Error) to issue an error message for unrecoverable resources and exclude those resources from plan generation.

**3. Specify or edit one or more the following Index Rebuild Options:****• Limit of tablespaces per step**

This specifies the maximum number of tablespaces that can be processed in a single Rebuild Index step. If you have more objects to recover in a plan/job, several consecutive steps will be generated. Specify **O** to disable the limit. The default is 30.

**• Reuse existing data sets**

Specifies whether to use existing data sets without deleting and redefining them. Specify **Y** to reset and use existing data sets. Specify **N** to delete and redefine data sets.

**4. Specify or edit one or more the following Recover Options:**

**Recover Unchanged Objects**

Specify whether all objects, both changed and unchanged, are included in the recovery. Specify **Yes** to include all objects. Specify **No** to exclude objects that have not changed. Excluding objects saves processing time during recovery.

**Number of Tape Drives**

Specify the number of tape drives that are used in the recovery.

**Site**

Specify the recovery site that is used for recovery. Specify D to use the subsystem default; specify L to use the local site; or R to use the recovery site.

**Limit of objects per step**

Specify the maximum number of objects that can be processed in a single Recover utility step. If you have more objects to recover in a plan/job, several consecutive steps will be generated. Specify **0** to disable the limit. The default is 30.

**Reuse existing data sets**

Specifies whether to use existing data sets without deleting and redefining them. Specify **Y** to reset and use existing data sets. Specify **N** to delete and redefine data sets.

5. The **Log Read and Log Apply options** are used when performing a Redirected Recovery plan or an Advanced Recover plan. Specify **Y** in the **Update Log Options** field to update the options. Press Enter. The Log Read and Log Apply Options panel opens.
6. **Statistics Options: Copy statistics** lets you specify whether statistics should be copied from statistics source objects to corresponding target objects. Temporary datasets required for this process will be allocated according to the parameters in the **Statistics Options** panel. The following options are available:

- Y - Yes
- N - No
- U - Update

If you choose **Y** or **U**, the generated job will copy or update statistics from source to target objects. Selecting **U** also opens the **Statistics Options** (Statistics data set allocation options) panel, which enables you to specify dataset allocation options such as device type, track or cylinder, and other settings.

If you choose **N**, the generated job will not copy statistics from source to target objects.

7. Specify or edit one or more the following **Copy Options**:

**Image Copies after recover**

Specify the image copy options that will occur after recovery. Specify N to not perform image copies after recovery; specify T to image copy only the table spaces after recovery; or specify I to image copy both table spaces and indexes after the recovery.

**Note:** If **Image Copies after recover** is set to N, the four fields beneath it are automatically set to N, since no image copies are being made. If **Image Copies after recover** is set to T or I, then **Local Site Primary** changes to Y and is editable; **Local Site Backup** and **Remote Site Primary** are set to N and are editable; and **Remote Site Backup** is set to N and is not editable unless **Remote Site Primary** is changed to Y. Additionally, the Local/Remote Primary/Backup image copies can be specified via templates; these templates are set on the **Subsystem parameters** panel, under [Register Db2 Subsystems](#) on the Administration Menu.

**Local Site Primary**

Specify Y to perform a local site primary image copy.

**Local Site Backup**

Specify Y to perform a local site backup image copy.

**Remote Site Primary**

Specify Y to perform a remote site primary image copy.

**Remote Site Backup**

Specify Y to perform a remote site backup image copy.

### Number of Tape Drives

Specify the number of tape drives that will be used for image copies.

### Check Pages

Specify Y to run the check utility on each page.

### Use DFSMSdss concurrent copy

Specify whether concurrent copies will be performed. Specify Y to use concurrent copy to perform the image copies. Specify N to perform the image copies without using concurrent copy.

### Automatic Image Copies

Specifies whether image copies for the dropped objects will be created automatically from a system level backup (SLB) during the recovery plan generation.

If this option is set to Y, and image copies for dropped objects do not exist and a system level backup does exist, then image copies for these objects will be created automatically from the SLB during the recovery plan generation. The default value is Y.

**Note:** Db2 Recovery Expert does not create image copies of encrypted objects (created with nonempty KEY LABEL).

Specify U to open the Automatic Image Copy Options panel where you specify or update the options that are used to create the automatic image copies:

- **Creator** specifies the ID of the user who created the profile.
- **Name** specifies the name of the profile.
- **SSID** specifies the name of the DB2 subsystem where the profile resides and the objects will be recovered to.
- **Update DSN Specification:** Specify Y in this field to specify or update the copy data set name template.

The Image Copy Data Set Options are as follows:

- **Unit Type:** Specify a valid unit where the data set will be written.
- **Data Class:** If your site uses SMS to manage data sets, specify the SMS Data Class that should be used.
- **Storage Class:** If your site uses SMS to manage data sets, specify the SMS Storage that should be used.
- **Management Class:** If your site uses SMS to manage data sets, specify the SMS Management Class that should be used.
- **Work Storage Class:** If the work volume(s) specified are SMS-managed, specify an SMS storage class.

For **Work Volumes**, specify the work volumes to use during the creation of the image copies. You must specify at least one, up to a maximum of six volumes.

**Note:** If Db2 has striping on, you must use SMS managed work volumes.

The **Tape Specific parameters** apply only if the unit type is a tape device.

- **Stack Copies on Tape:** Specify whether you want to stack image copies on a single tape when possible.
- **Tape Stack Limit:** If stacking image copies, enter the number of image copies that you want to stack on one tape before dismounting the tape.
- **Expiration Date:** Enter either the tape expiration date in YYYYDDD format, or the tape retention period in number of days.
- **Retention Period:** Enter either the tape expiration date in YYYYDDD format, or the tape retention period in number of days.
- **Maximum Tapes:** Specify the maximum number of tapes for each image copy.

8. Specify or edit one or more the following **Parallel Job Options**:

### Number of parallel jobs

Specifies the maximum number of jobs in a parallel job group. You can specify a value from 0 to 99.

### Number of concurrent jobs

Specify the maximum number of jobs that the agent processes in parallel. This represents the maximum number of jobs that can run at any given point. You can specify a value from 1 to 99.

### Execute on multiple LPARs

Specify whether you want the recovery to be spread across multiple LPARs. This can only be done for objects that reside in a Db2 data sharing group. Redirected Recovery must be disabled, or the target subsystem must be the same as the subsystem you are recovering. You can specify Y, N, or U (Update). If you select U, the **LPAR Selection** panel appears:

```
RCVYXPRT  V3R2  ----- LPAR Selection ----- 2021/01/13 12:56:12
Command  ===>
-----
Line Commands: S - Select/Unselect P - Properties
-----
   LPAR  Configured Subsystems
-  LPAR1  Y      SSID1
-  LPAR2  Y      SSID2
-  LPAR3  N      SSID3,SSID4
```

This panel shows all known subsystems of the specified data sharing group, grouped by LPAR. You can select (or de-select) any combination of configured LPARs. Generated jobs will be spread across the selected LPARs.

The line command P (Properties) opens the **LPAR Recovery Execution Details** panel. From here, you can specify LPAR job card information:

```
RCVYXPRT  V3R2  ----- LPAR Recovery Execution Details ----- 2021/01/13 12:56:12
Command  ===>
-----
Line Commands: A - Add D - Delete
-----
   LPAR  Jobcards
  LPAR1  SYSAFF=LPAR1
  LPAR2  SYSTEM=LPAR2
  LPAR3  SYSAFF=(LPAR3),SCHENV=ENV3
```

You can specify additional job card parameters such as SYSAFF, SYSTEM, SCHENV, for each LPAR. These values are global for all users and are stored in the product control file. When the JCL is generated, these job cards are appended to the last JOB statement you have specified. In this example job card, the generated JCL will produce the following parameter if the LPAR details are defined as SYSAFF=LPAR1:

```
----- Build Job -----
Build job in Data set TSINB.ARY.JCLLIB.LARGE
Use job name as member name N (Yes/No)
      Use member prefix RECOV
      Generate SYSAFF N (Yes/No)

Job Cards:
==> //ARYJOB JOB USER,CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),
==> // USER=&SYSUID,NOTIFY=&SYSUID,REGION=0M
==> //*
==> //*
      F1=Help  F3=Exit  F12=Cancel
```

```
//ARYJOB JOB USER,CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),
// USER=&SYSUID,NOTIFY=&SYSUID,REGION=0M,
// SYSAFF=LPAR1
```



```
//*  
//*
```

**Note:** Make sure that the job cards are less than the maximum length, to leave room for a comma in the last line. If job cards are updated for an LPAR, this change will be used automatically by all profiles using this LPAR; you will not need to select the LPAR again for recovery or other actions in Db2 Recovery Expert.

9. Specify or edit one or more the following **Authorization Options:**

**Generate Grants**

Specify Y to generate authorization statements when recovering objects. Specify an N to bypass generating authorization statements when recovering objects. The value Y is the default.

10. Specify or edit one or more the following **Bind Options:**

**Generate Binds**

Use this option to generate package or plan bind statements. Specify N to indicate that no bind statements are to be generated. This is the default value. Specify P to indicate that bind statements are to be generated only for packages. Specify B to indicate that bind statements are to be generated for both packages and plans.

**Bind Action**

Specify Add to indicate that the named package does not exist, and a new package is to be created. If the package already exists, the job stops, and a diagnostic error message is returned. Specify Replace to indicate that the existing package is to be replaced by a new one with the same package name and creator. Replace is the default value for the **Bind Action** option.

**Add DBRMLIB1 – 4**

Specify the DBRM libraries to be used for the bind jobs. You can specify up to 4 DBRM libraries.

11. When generating recovery DDL for an object, Db2 Recovery Expert generates recovery DDL for the selected object and all its lower level dependent objects. You can use the **DDL generation Options** to control the generation of DDL for any object type. By specifying an N for an object type, you inhibit the generation of DDL for that type of object and all its dependent objects. You can edit the following **DDL Generation Options:**

**Storage Group**

Specify Y to generate DDL for **Storage Group** object types. Specify N to skip generating the DDL for this data type.

**Database**

Specify Y to generate DDL for **Database** object types. Specify N to skip generating the DDL for this data type.

**Tablespace**

Specify Y to generate DDL for **Tablespace** object types. Specify N to skip generating the DDL for this data type.

**Table**

Specify Y to generate DDL for **Table** object types. Specify N to skip generating the DDL for this data type.

**Index**

Specify Y to generate DDL for **Index** object types. Specify N to skip generating the DDL for this data type.

**View**

Specify Y to generate DDL for **View** object types. Specify N to skip generating the DDL for this data type.

**Synonym**

Specify Y to generate DDL for **Synonym** object types. Specify N to skip generating the DDL for this data type.

**Alias**

Specify Y to generate DDL for **Alias** object types. Specify N to skip generating the DDL for this data type.

**Data Type**

Specify Y to generate DDL for **Data Type** object types. Specify N to skip generating the DDL for this data type.

**Trigger**

Specify Y to generate DDL for **Trigger** object types. Specify N to skip generating the DDL for this data type.

**Function**

Specify Y to generate DDL to generate DDL for **Function** object types. Specify N to skip generating the DDL for this data type.

**Procedure**

Specify Y to generate DDL for **Procedure** object types. Specify N to skip generating the DDL for this data type.

**Sequence**

Specify Y to generate DDL for **Sequence** object types. Specify N to skip generating the DDL for this data type.

**Role**

Specify Y to generate DDL for **Role** object types. Specify N to skip generating the DDL for this data type.

**Sequence Alias**

Specify Y to generate DDL for **Sequence Alias** object types. Specify N to skip generating the DDL for this data type.

**Global Variable**

Specify Y to generate DDL for **Global Variable** object types. Specify N to skip generating the DDL for this data type.

**Use SQLID for DDL**

By default, the generated DDL for a recreated object uses the SQLID that was specified when the object was originally created. To override the default you can specify a different SQLID in the **SQLID for DDL** field and it will be used when generating the DDL for the recreated objects.

12. Press PF3 to return to the **Generate Recovery Plans** panel.

## Performing redirected recovery

Use redirected recovery to recover an object to a target Db2 subsystem that is the same as or different from the object's source Db2 subsystem. Redirected recovery is available for use through the Db2 Recovery Expert for z/OS web interface, or through the ISPF interface. Redirected recovery is only available if you are recovering database, table space, table or index objects.

Before running redirected recovery, set the defaults for all relevant Db2 subsystems. For more information, see [“Registering Db2 subsystems”](#) on page 206.

1. On the IBM Db2 Recovery Expert for z/OS main menu panel, enter 2 (Application Operations) on the **Option** line and press Enter.

```

RCVYXPRT V3R2      -----  IBM DB2 Recovery Expert for z/OS  -----
Option  ===>  -----

                                           2018/06/11  15:18:13
                                           User: TS5866  -  ARY

-----

0. Administration
1. System Operations
2. Application Operations
3. Ad-Hoc Operations
X. Exit

```

2. On the Application Operations Menu panel, enter 1 (Application Profiles) on the **Option** line and press Enter.

```

RCVYXPRT V3R2      -----  Application Operations Menu  -----
Option  ===>  -----

                                           2018/06/11  15:20:17
                                           User: TS5866  -  ARY

-----

1. Application Profiles
2. Application Groups
3. Coordinated Application Profiles

```

3. On the Enter Application Profile Selection Criteria panel, select the Db2 subsystem where the redirected recovery application profile resides or where you will create a redirected recovery application profile.

To list only a specific redirected recovery application profile in the Application Profile display panel, use the filter criteria **Stored on SSID**, **Name Like**, and **Creator Like** fields. You can also use the filter criteria to limit the number of profiles included in the Application Profiles display list.

4. If you have not already created an application profile that defines the objects for redirected recovery, do so now. For more information, see [“Creating application profiles” on page 304](#).

**Note:** Redirected recovery is not supported for versioned objects.

Ensure that your application profile does not contain these objects before proceeding.

5. On the **Application Profile Display** panel, specify a **P** in the **Cmd** line next to the redirected recovery application profile for which you want to generate the recovery plans.

```
RCVYXPRT V3R2 ----- Application Profile Display ----- 2018/06/14 09:00:11
Command ==> Scroll ==> PAGE
```

```
Line Commands: C - Create U - Update Q - Quiet Time V - View
                D - Delete R - Rename G - DDL Generation X - Copy
                M - Import E - Export P - Recovery Plans I - Image Copy
                H - Recovery Health S - Recovery Suggestions
```

```
-----
Creator Like *          Name Like *          SSID Like EB1A
-----
Row 1 of 76  +>
```

Name	Creator	SSID	Updt	Description
AAAAA	TS5444	EB1A	U	
APG0120A	TSQQZ	EB1A	U	
APG0120B	TSQQZ	EB1A	U	
APG0120C	TSQQZ	EB1A	U	
ARYDBM66	PDPITT	EB1A	U	
ARYJCL	TSINB	EB1A	N	
ARYJCL	TS6077	EB1A	N	
ARY2741	TSTYY	EB1A	U	
ARY4277	TSTYY	EB1A	U	
ARY5962_DB	PDPITT	EB1A	U	
ARY5962_DB2	PDPITT	EB1A	U	

- On the Generate Recovery Plans panel, specify Y or U for the **Redirected Recovery** option to perform redirected recovery. For **Generation Method**, specify **B** to generate batch JCL by using ISPF panels; see “Building recovery plan batch jobs in ISPF” on page 381. Specify **O** to create batch JCL by editing a JCL sample; see “Building recovery plan batch jobs by editing JCL samples” on page 378.

```
RCVYXPRT V3R2 ----- Generate Recovery Plans ----- 2021/01/13 12:56:12
Command ==>
```

```
-----
Creator: USERID          NAME: TESTPROF          SSID EA1A
-----
```

```
Update Recovery Options ==> N (Yes/No)
Redirected Recovery      ==> N (Yes/No/Update)
Generation Method       ==> B (Online/Batch)
```

Choose the desired recovery point. You can enter a timestamp or RBA/LRSN here or enter "Y" for "Select Recovery point" to display a selection list of possible recovery points.

```
Recovery Point          ==> 1 (1-Current, 2-RBA/LRSN, 3-Timestamp)
Recovery RBA/LRSN       ==> -----
Recovery Timestamp      ==> -----
Select Recovery Point   ==> N (Yes/No)
```

Before pressing Enter, specify one of the following values for the **Recovery Point** option:

- Specify 1 to select the current recovery point. Selecting 1 recovers to object using the latest image copy of the object. Any recovery information that is included in the log data is not applied.
- Specify 2 to select a RBA/LRSN recovery point. Selecting 2 recovers the object to the RBA/LRSN specified in the **Recovery RBA/LRSN** field.
- Specify 3 to select a timestamp recovery point. Selecting 3 recovers the object to the timestamp specified in the **Recovery Timestamp** field.

For more information, see “Generating object recovery plans” on page 334.

- Press Enter. The Select Target SSID for Recovery panel opens if you selected Y or U for **Redirected Recovery**. On the Select Target SSID for Recovery panel, select the target subsystem for the redirected recovery action by specifying S on the **Cmd** line next to the desired subsystem.

```

RCVYXPRT V3R2 ----- Select Target SSID for Recovery ----- 2018/06/18 13:05:47
Command ==> Scroll ==> PAGE

Line Commands: S - Select P - Properties T - Status
-----
Creator: TS5866 Name: FS.TEST Source SSID: EB1A
Target SSID: EB1A
Row 1 of 49 +
-----
SSID Status
DA1A Active
DB1A Active
DB1B Active
DB1C Active
DBA2 Active
DBA5 Active
DBA7 Active
DBA9 Active
DBB5 Active
DBB7 Active
DC1A Active
DCA1 Active
DCC1 Active

```

**Note:** The target subsystem can be the same subsystem as the source, or it can be a different subsystem, with the exception of LBDR profiles; for LBDR profiles, redirected recovery of dropped objects is allowed only to the same subsystem or to the subsystem that is in the same data sharing group.

However, although the target subsystem may be the same version, mode and function level as a source, or different from the source, there are limitations with Redirected Recovery. If you are performing Redirected Recovery between different versions, modes or function levels, recovery may not be successful, especially when recovered objects cannot be correctly recreated on the target subsystem. For example, tablespaces created with the KEYLABEL keyword in Db2 V12 Function Level 502 or later cannot be correctly recovered on a V11 or V12 FL500 subsystem, because KEYLABEL is not supported on such a subsystem.

- The Object Translation panel opens automatically after selecting the target subsystem from the Select Target SSID for Recovery panel. To define a new name for an object, specify an I in any **Cmd** line. A new line displays, where you will specify an additional source-target object relationship.

```

RCVYXPRT V3R2 ----- Object Translation ----- 2021/01/13 12:56:12
Command ==> Scroll ==> Page

Commands: CREATE - Create object translation on base of objects
          CLEAR - Clear object translation
          Validate - Validate object translation

Line Commands: I - Insert line R - Remove line D - Duplicate line
-----
Creator: USERID NAME: TESTPROF Source SSID: EA1A
Target SSID: DB1B

Object Types: CR - Creator DB - Database TS - Tablespace TB - Table
              IX - Index VW - View AL - Alias VC - VCAT
              SG - Storage group TR - Trigger

Single character wildcards: Arbitrary string wildcards:
-----
Obj
_ Type Source Name Target Name
_ SG SGdefault SGnew
_ DB DBTest DBnew

```

**Note:** You may enter VALIDATE on the **Command** line to identify objects in the application profile that have no translations specified for them. Objects without translations will not be recovered during redirected recovery if recovering to the same subsystem or to the subsystem that is in the same data sharing group, and will be listed on the Untranslated Objects panel that displays after entering the VALIDATE command. Press PF3 to return to the **Object Translation** panel.

- a) In the **Obj Type** field specify the type of object that you want to rename.
  - b) In the **Source Name** field specify the original name of the object that is being recovered.
  - c) In the **Target Name** field specify the new name for the object that will be used on the target Db2 subsystem.
9. Press PF3. The Redirected Recovery Options panel opens. Specify information on the Redirected Recovery Options panel.  
For more information, see [“Specifying redirected recovery options” on page 348](#).
  10. Press PF3 when you are satisfied with your redirected recovery options specifications. All the fields are validated and the recovery plans are generated. The **Generate Recovery Plans** panel opens.
  11. From the Generate Recovery Plans panel you can optionally update recovery options by specifying Y in the **Update Recovery Options** field. After updating these options press, PF3 to return to the panel.

**Note:** By default, the target objects for a redirected recovery are created at the first step of redirected recovery JCL generation. The DDL for these objects is generated based on the DDL of the source objects. You can, however, disable DDL generation, by disabling all object types in the **DDL Generation Options** section of the **Recovery Options** panel. If you do this, the target names may point to existing objects created outside of Db2 Recovery Expert. If you do this, it's important to be aware that the target objects are not validated during the process of generating the recovery plan and JCL. You will have to know that the target objects exist in the target Db2 subsystem and that the source and target tables have the same data formats (number of columns, column sizes and data types, etc.). If not, recovery may produce unexpected results, for example:

- Target indexes that do not exist in the source will not be rebuilt
- If source and target tables have different data formats, recovered data may be corrupted and target table may be unusable

For more information on specifying recovery options, see [“Specifying recovery options” on page 335](#).

12. Press Enter on the Generate Recovery Plans panel. Once your request is processed the Recovery Plans panel opens.
13. Specify B on the **Cmd** line next to the generated redirected recovery plan to build the JCL. The Build Job panel opens.
14. Press Enter. The Confirm Action panel opens.
15. Confirm that the information on the Confirm Action panel is correct and specify Y in the **Continue** field. Press Enter.
16. Submit the JCL to execute redirected recovery.

For more detailed information on selecting the target SSID for redirected recovery, specifying names for object translation, or specifying redirected recovery options, see the following topics:

- [“Selecting the target SSID for redirected recovery” on page 346](#)
- [“Specifying object names for redirected recovery” on page 347](#)
- [“Specifying redirected recovery options” on page 348](#)

## Selecting the target SSID for redirected recovery

Redirected recovery allows you to recover objects to a Db2 subsystem that is different from the original subsystem where the object was stored. From the Select Target SSID for Recovery panel you select the target SSID to which the objects in the application profile are recovered.

1. From the **Generate Recovery Plans** panel specify a Y in the **Redirected Recovery** field. The **Select Target SSID for Recovery** panel opens.

```

RCVYXPRT V3R2 ----- Select Target SSID for Recovery ----- 2021/01/13 12:56:12
Command ===> Scroll ===> Page

Line Commands: S - Select P - Properties T - Status
-----
Creator: USERID NAME: TESTPROF Source SSID: EA1A
Target SSID: DB1B
-----
  SSID Status
- DB1A Active
- DB1B Active
- EA1B Active
- EB1A Active
- EB1B Active
- QA1A Active

```

2. To view the properties of the Db2 subsystems that are listed specify **P** in the line command next to the SSID. The Db2 Subsystem Properties panel opens. From this panel you can view the properties of the subsystem. Press PF3 to return to the **Select Target SSID for Recovery** panel.
3. To view the Db2 subsystem's status properties specify **T** in the line command next to the SSID. The Db2 Subsystem Status panel opens. From this panel you can view the status properties of the subsystem. Press PF3 to return to the **Select Target SSID for Recovery** panel.
4. To select a Db2 subsystem as the target subsystem where the object will be recovered to, specify an **S** in the line command next to the SSID. Press Enter. An asterisk displays in the command line next to the SSID.

**Note:** If you are performing redirected recovery of an object across LPARS, the object is recovered on the different LPAR using the latest image copy of the source object. Any recovery information that is included in the data log is not applied.

5. Press Enter. The Object Translation panel opens. From the Object Translation panel you will specify the target name for the objects in the redirected recovery.

## Specifying object names for redirected recovery

Redirected recovery allows you to recover an object using a name that is different from the original object name. From the Object Translation panel you specify the name that will be given to the object(s) that are recovered using redirected recovery.

1. The **Object Translation** panel opens automatically after you select the target SSID from the **Select Target SSID for Recovery** panel.

```

RCVYXPRT V3R2 ----- Object Translation ----- 2021/01/13 12:56:12
Command ===> Scroll ===> Page

Commands: CREATE - Create object translation on base of objects
          CLEAR  - Clear object translation
          Validate - Validate object translation

Line Commands: I - Insert line R - Remove line D - Duplicate line
-----
Creator: USERID NAME: TESTPROF Source SSID: EA1A
Target SSID: DB1B

Object Types: CR - Creator DB - Database TS - Tablespace TB - Table
              IX - Index  VW - View    AL - Alias      VC - VCAT
              SG - Storage group TR - Trigger

Single character wildcards: Arbitrary string wildcards:
-----
  Obj
- Type Source Name Target Name
- SG SGdefault SGnew
- DB DBTest DBnew

```

2. To define a new name for an object, specify an **I** in any line command. A new line displays.

3. In the **Obj Type** field specify the type of object that you want to rename. You can select from the following object types:

- CR - Creator
- DB - Database
- TS - Tablespace
- TB - Table
- IX - Index
- VW - View
- AL - Alias
- VC - VCAT
- SG - Storage Group
- TR - Trigger

4. You can use either of the wildcard options when specifying a name in the **Source Name** or **Target Name** fields:

- **Single character wildcards**

Specifies a character that is treated as a wildcard for a single character in the **Source Name** or **Target Name** field. The default characters are a question mark (?) or an underscore (\_). The single wildcard character will match any single character. For example, if you enter the string ?xyz in the **Source Name** or **Target Name** field, it will match axyz, bxyz or cxyz. If you enter the string xyz\_, it will match xyza, xyzb, or xyzc.

- **Arbitrary string wildcards**

Specifies a character that is treated as a wildcard for a string of characters in the **Source Name** or **Target Name** field. The default characters are the asterisk (\*) or percent sign (%). The arbitrary string wildcard character is used to search for a match with one or more characters. For example, if you enter the string \*xyz in the **Source Name** or **Target Name** field, it will match firstxyz, secondxyz or thirdxyz. If you enter the string xyz% , it will match xyzfirst, xyzsecond, or xyzthird.

5. In the **Source Name** field specify the original name of the object that is being recovered.

6. In the **Target Name** field specify the new name for the object that will be used on the target Db2 subsystem.

7. To remove a line of object rename specifications, specify an **R** on the line that you want to remove.

8. To duplicate a line of object rename specifications, specify a **D** on the line that you want to duplicate.

## Specifying redirected recovery options

From the Redirected Recovery Options panel you specify or update the options that are used with redirected recovery.

1. The **Redirected Recovery Options** panel opens automatically after you specify object translation parameters.



```

RCVYXPRT V3R2 ----- Redirected Recovery Options ----- 2021/01/13 12:56:12
Command ==> Scroll ==> Page
-----
Creator: USERID      NAME: TESTPROF                               Source SSID: EA1A
                                           Target SSID: DB1B
-----

Enter Recovery Options to associate with this Application profile:
Recovery Method      ==> B      (Recover/Change accumulation/Both)
SYSCOPY Scan Operating Mode ==> Z      (Local/Recover/Zparm/User)
SYSCOPY Selection Pref ==> LPLBRPRBFC (LPLBRPRBFC in any order)
Log Apply            ==> N      (Yes/No)
Detailed JCL comments ==> Y      (Yes/No)
Sort Data Pages      ==> Y      (Yes/No)

Log read and log apply options
Update Log Options   ==> Y      (Yes/No)

```

2. The Recovery Method specifies whether Db2 Recovery Expert should use the IBM RECOVER utility, change accumulation, or both. Specify **R** to use only the RECOVER utility. If an object cannot be recovered by RECOVER, it will be marked as unrecoverable. Specify **C** to use only the Change Accumulation process (Advanced Recovery). This method has fewer restrictions than RECOVER. Specify **B** to use any utility appropriate for an object. The RECOVER utility is preferred; if an object can be recovered by RECOVER, this utility will be used. Otherwise, Change Accumulation will be used. An object is marked as unrecoverable if neither method is suitable for the object. The default setting is **B**. The RECOVER utility is available only for the Redirected Recovery to the same subsystem, so if the target subsystem is different from the source, the only available value for this field is **C**. All options below on this panel are related only to the Change Accumulation method, so if **R** is specified, these options should not be used. **Note:** this option may be not honored, if **Allow to use RECOVER for Redirected Recovery** is disabled at the subsystem level, in the **Log Read and Log Apply Defaults** panel, which describes this panel). The **Allow to use RECOVER for Redirected Recovery** option should only be enabled after applying the corresponding Db2 APAR, PH27043. **Recovery Method** option should not be set to **R** if application profile contains XML or LOB tablespaces.
3. The SYSCOPY Scan Operating Mode specifies which SYSCOPY rows to consider when finding a starting point for processing. You can specify one of the following:
  - Specify L to scan in local mode. Local mode uses the Local Primary and Local Backup rows to find a starting point for processing. Local mode includes the LOCAL SITE keyword in the syntax.
  - Specify R to scan in recover mode. Recover mode uses the Recovery Primary and Recovery Backup rows to find a starting point for processing. Recover mode includes the RECOVERY SITE keyword in the syntax.
  - Specify Z to scan in Zparm mode. Zparm mode detects the operating mode Db2 is running under and automatically inserts the corresponding control card. This option omits the LOCAL SITE, RECOVER SITE, and IMAGE COPY PREFERENCE control cards and uses the value found in ZPARMS on the Db2. Zparm mode is the default mode.
  - Specify U to scan in user mode. User mode uses the user-specified scan preference defined in the **SYSCOPY Selection Pref** field to find a starting point for processing. User mode includes the IMAGE COPY PREFERENCE keyword in the syntax.
4. The **SYSCOPY Selection Pref** field specifies the order in which the image copy types are scanned in SYSCOPY for a starting point. This selection preference is only applied if the **SYSCOPY Scan Operating Mode** field is set to User.

You can specify the following image copy types in any order:

- Local Primary (LP) scans for Local Primary type image copies in SYSCOPY.
- Local Backup (LB) scans for Local Backup type image copies in SYSCOPY.
- Recovery Primary (RP) scans for Recovery Primary type image copies in SYSCOPY.
- Recovery Backup (RB) scans for Recovery Backup type image copies in SYSCOPY.
- Flash Copy (FC) uses Db2 Recovery Expert managed flash copy data sets in addition to Db2 V11 and higher flash copy data sets as image copy starting points in the processing.

- The **Log Apply** field indicates whether Log Apply and incremental copies will be used. If **Log Apply** is enabled (**Y**), Log Apply is performed and incremental copies are used. If not, recovered data will be taken only from the specified full image copy, not from logs or incremental copies.
- The **Detailed JCL comments** field specifies whether generated jobs include detailed comments describing the function of each job step in the JCL. Specify **Y** to include comments. Specify **N** to exclude comments.
- The **Sort Data Pages** field specifies whether to sort data pages during redirected recovery. The default setting is **Y**. Setting this field to **N** is not recommended unless directed by IBM customer support.
- The **Log Read and Log Apply options** are used when performing a Redirected Recovery plan (Using Change Accumulation) or an Advanced Recovery plan. Specify **Y** in the **Update Log Options** field to update the options. Press Enter. The Log Read and Log Apply Options panel opens.
- Press PF3 to return to the Generate Recovery Plans panel.

## Specifying statistics options

From the **Statistics Options** (Statistics data set allocation options) panel, you specify or update the statistics options.

- The **Statistics Options** (Statistics data set allocation options) panel opens automatically after you specify **U** for **Statistics Options: Copy Statistics** from the **Recovery Options** panel.

```
RCVYXPRT V3R2  ----- Statistics Options ----- 2021/01/13 12:56:12
Command ==>                               Scroll ==> Page
-----
Creator: USERID      NAME: TESTPROF                               Source SSID: EA1A
-----

Statistics data set allocation options:
Device type           ==> (DISK, CART, or etc.)
Track or cylinder    ==> (Trk/Cyl)
Primary quantity     ==> (1-16777215, disk only)
Secondary quantity   ==> (1-16777215, disk only)
SMS data class       ==> (1-8 characters or blank)
SMS storage class    ==> (1-8 characters or blank)
SMS management class ==> (1-8 characters or blank)
```

- Specify the following **Statistics data set allocation options**:

### Device type

Specifies the device type that is used for the RTS utility temporary data sets.

### Track or cylinder

Specifies the unit type (track or cylinder) for the primary and secondary quantity allocation.

### Primary quantity

Specifies the primary quantity that is used for the allocation of temporary data sets.

### Secondary quantity

Specifies the secondary quantity that is used for the allocation of temporary data sets.

### SMS data class

Specifies the SMS data class that is used for the allocation of temporary data sets.

### SMS storage class

Specifies the SMS storage class that is used for the allocation of temporary data sets.

### SMS management class

Specifies the SMS management class that is used for the allocation of temporary data sets.

- Press PF3 to return to the Generate Recovery Plans panel.

## Specifying Log Read and Log Apply recovery options

From the **Log Read and Log Apply options** panel, you specify the options that are used when generating Advanced Recovery or Redirected Recovery (Using Change Accumulation) plans. These include the Log read and log apply options, and the XML translate options.

1. To open the **Log Read and Log Apply options** panel:

- Specify Y in the **Update log options** field on the Recovery Options panel.
- Specify Y in the **Update log options** field on the Redirected Recovery Options panel.

```
RCVYXPRT V3R2 ----- Log Read and Log Apply Options ----- 2021/01/13 12:56:12
Command ==> Scroll ==> Page
-----
Creator: USERID      NAME: TESTPROF                      Source SSID: EA1A
-----

These options are applicable to the Advanced Recover
and Redirected Recovery plans:
Log Reader Copy Preference ==> R1R2A1A2 (R1R2A1A2 in any order)
Bypass SYSIBM.SYSLGRNX Proc ==> N (Yes/No)
Continue on Errors ==> N (Yes/No)
Number of PARALLEL log read ==> 0 (0-16 tasks)
Number of PARALLEL log apply ==> 1 (1-10 tasks)
Reuse VSAM Data Set ==> Y (Yes/No)

XML translate options
XML jobs data set ==>
XML jobs member prefix ==>
XML template data set ==>
XML template member ==>
```

**Note:** Log Apply cannot be disabled for LBDR profiles, because Redirected Recovery of dropped objects is allowed only with Log Apply enabled. Additionally, for source and target SSIDs on different LPARs, Log Apply must be enabled.

2. The **Log Reader Copy Preference** field specifies the order in which the archive and active log lists in the BSDS are to be scanned when searching for log records. Scans the archive logs first and uses archive logs when the same range exists in an archive and active log.
3. The **Bypass SYSIBM.SYSLGNX** field specifies whether reading SYSIBM.SYSLGRNX is bypassed and only the Db2 logs are read. A value of **Y** skips reading SYSIBM.SYSLGRNX and only reads the Db2 logs. A value of **N** does not skip reading SYSIBM.SYSLGRNX.
4. The **Continue on Errors** field specifies whether errors higher than RC=4 will stop processing. A value of **Y** specifies that if a RC=4 occurs, it will be overridden, reported, and the job will not fail. A value of **N** specifies that if a RC=4 occurs, the job will fail.
5. The **Number of PARALLEL log read** field specifies the number of parallel log read tasks that can run at the same time. Valid values are integers 0 to 16. A value of 0 specifies that a maximum of 1 task per data sharing group member can run at the same time. A non-zero value specifies the number that is the maximum number of parallel tasks that can run at the same time. If there are more logs to read than the number of parallel tasks specified, a task to read the of parallel tasks specified, a task to read the remaining logs is launched as soon as a running task finishes. This will occur until all necessary logs have been read.
6. The **Number of PARALLEL log apply** field specifies the number of parallel log apply tasks that can run at the same time. Valid values are integers 1 to 10. If a single GROUP set is present in the control cards, the value in the **Number of PARALLEL log apply** field is used to break up the job into multiple GROUP sets and start a log apply task for each set. Valid values are:
  - A value of 1 indicates a single group starts a single log apply task.
  - A value of 2 to 10 indicates multiple group starts.

If there is a single GROUP, the code will internally break down the SPACE sets into a maximum of **Number of PARALLEL log apply** GROUP sets and will start one log apply task per GROUP. For example, if you specify a value of 10 and there are only 5 SPACE sets, the syntax is divided into 5 GROUP sets and 5 log apply tasks.

If you specify a value of 5 for **Number of PARALLEL log apply**, the number of spaces between the groups are divided evenly and then, if there are leftovers after attempting to divide them evenly among the allotted number of GROUP sets, those leftovers go in the last GROUP set. One log apply task is then generated for each GROUP set.

7. The **Reuse VSAM Data Set** field indicates whether a VSAM data set can be reused on WRITE TO VSAM or WRITE TO BOTH jobs. If **Reuse VSAM Data Set** is set to N (No), a VSAM data set is newly allocated (with new extent structure) and the NO REUSE keyword is included in the JCL on a Job Profile build. If **Reuse VSAM Data Set** is set to Y (Yes), an existing VSAM data set will be reused (thus preserving the data set size and extent structure) and the NO REUSE keyword is excluded from the JCL on a Job Profile build. **Note:** If some of the recovered objects are encrypted (created with nonempty **KEYLABEL** keyword), the Reuse VSAM Data Set field must be set to N. You must have at least READ access to the STGADMIN . SMS . ALLOW . DATASET . ENCRYPT security profile in the FACILITY class is required; otherwise, the recovered data set will be created non-encrypted.
8. The **XML translate options** are used when performing redirected recovery of a table object that includes XML and the target system is part of a data sharing environment. Specify the following options to set up redirected recovery for table objects that include XML:

#### **XML jobs data set**

Specifies the name of a data set where the JCL for the jobs that are required to complete the redirected recovery of table objects with XML are stored as members.

**Note:** XML objects require an automatically generated sequence number for each row. The jobs generated to this data set update the Db2 catalog for consistency with the translated XML data that includes the automatically generated sequence numbers. After recovery completes, you must manually run the jobs that are included in this data set. These jobs will use the prefix specified in the **XML jobs member prefix** field and the SSID of the LPAR member in the data sharing environment. You must update the jobs with a SYSAFF card and run on the LPAR that matches the SSID in the job name.

#### **XML jobs member prefix**

Specifies the prefix that is used in the automatically generated names of each member added to the XML jobs data set. Following the prefix, the generated name includes the SSID.

#### **XML template data set**

Specifies the name of a data set where the common job template is stored as a member during the plan generation for the redirected recovery of a table object that includes XML.

#### **XML template member**

Specifies the name of the member that is added to the XML template data set.

XML objects require an automatically generated sequence number for each row. The jobs generated to this data set update the Db2 catalog for consistency with the translated XML data. After recovery completes, you must manually run the jobs that are included in **XML jobs data set** data set. These jobs will use the prefix specified in the XML jobs member prefix field and the SSID of the LPAR member in the data sharing environment. You must update the jobs with a SYSAFF card and run the job on the LPAR that matches the SSID in the job name.

**Note:** If you have specified Sort Data Pages = N on the **Redirected Recovery Options** panel, only the **XML template data set** field will be active; the other three options will be disabled.

9. Press PF3 to return to the Redirected Recovery Options panel.

## Selecting a recovery point

From the **Recovery Point Selection** panel you choose the type of recovery point. You may select an object definition level, a recovery history event, a quiet time, or an image copy data set.

1. The **Recovery Point Selection** panel opens when a **Y** is entered in the **Select Recovery Point** field of the **Generate Recovery Plans** panel.

```
RCVYXPRT V3R2 ----- Recovery Point Selection ----- 2021/01/13 12:56:12
Command ===>                                         Scroll ===> PAGE

Line Commands: S - Select
-----
Creator: USERID      NAME: TESTPROF                      SSID EA1A
-----Row 1 of 3
 Recovery Point Type
 _Object Definition Levels
 _Recovery History Events
 _Quiet Times
 _Copy with Specific Data Set
Name
```

2. Specify an S next to one of the following available recovery point types:

- **Object Definition Levels** - Specify an **S** next to this field to choose an object definition level for a recovery point. Press Enter. The **Object Definition Level Selection** panel opens. A given object can have many versions over time. The versions are referred to as object definition levels. The available definition levels that can be used as a recovery point are listed in the in the **Object Definition levels** panel. Object definition levels are not available for selection when using a log RBA or LRSN point in time.
- **Recovery History Events** - Specify an **S** next to this field to choose a recovery history event for a recovery point. Press Enter. The **Recovery History Event** panel opens listing the history events available to use as a recovery point. History events for any of the selected objects are listed from the SYSIBM.SYSCOPY table, the schema repository's SYSCOPY table, and the DLC.SYSCOPY\_V11 table (if present).
- **Quiet Times** - Specify an **S** next to this field to choose a quiet time range for a recovery point. Press Enter. The **Quiet Times Range Selection** panel opens. Each time range that is listed represents a period of inactivity for the object. Quiet times are listed from the quiet time tables.
- **Copy with Specific Data Set Name** - Specify an **S** next to this field to specify the data set name of an image copy that will used for the recovery point. Press Enter. The **Enter Copy Data Set Name** panel opens. Specify the name of the image copy data set. Press Enter. The time for the specified image copy is entered in the **Recovery Timestamp** field of the Generate Recovery Plans panel.

**Note:** If a specified data set is a SHRLEVEL CHANGE copy, PIT\_RBA is used as the recovery logpoint. Otherwise, START\_RBA is used.

3. Press PF3 to return to the **Generate Recovery Plans** panel.

## Selecting an object definition level for a recovery point

Objects can have many versions over time and each version is referred to as an object definition level. From the **Object Definition Levels Selection** panel you can choose one of the object definition levels for a recovery point.

1. To open the **Object Definition Levels Selection** panel enter an **S** next to the **Object Definition Levels** field in the **Recovery Point Selection** panel. Press Enter. The **Object Definition Levels Selection** panel opens.

```
RCVYXPRT V3R2 ----- Object Definition Levels Selection ----- 2021/01/13 12:56:12
Command ==> Scroll ==> PAGE
```

```
Line Commands: S - Select
```

```
-----
Creator: USERID      NAME: TESTPROF      SSID EA1A
Start Timestamp *      End Timestamp:
```

```
-----Row 1 of 40
Type Qualifier Name      Create Timestamp      End Timestamp
_DB      ARYDB073      2021-11-22-01.17.24      2021-11-22-23.49.11
_DB      ARYDB073      2021-11-22-23.49.11      2021-11-22-23.50.04
_DB      ARYDB073      2021-11-22-23.50.04      2021-11-22-23.57.21
_DB      ARYDB073      2021-11-22-23.57.21      2021-11-22-23.59.37
_DB      ARYDB073      2021-11-22-23.59.37      2021-11-22-00.06.13
_DB      ARYDB073      2021-11-23-00.06.13      2021-11-23-00.07.39
_DB      ARYDB073      2021-11-23-00.07.39      2021-11-23-00.09.22
_DB      ARYDB073      2021-11-23-00.09.22      2021-11-23-00.10.56
_DB      ARYDB073      2021-11-23-00.10.56      2021-11-23-00.14.57
_DB      ARYDB073      2021-11-23-00.14.57      2021-11-23-00.15.41
_DB      ARYDB073      2021-11-23-00.15.41      2021-11-23-00.27.19
_DB      ARYDB073      2021-11-23-00.27.19      2021-11-23-00.31.20
_DB      ARYDB073      2021-11-23-00.31.20      2021-11-23-00.32.49
_DB      ARYDB073      2021-11-23-00.32.49      2021-11-23-00.41.57
```

2. You can filter the displayed object definition levels using the **Start Timestamp** and **End Timestamp** fields. You can enter a specific start or end timestamp value or use a wild card character such as an asterisk which will display all the object definition level recovery points. Press Enter. The list of object definition level recovery points will vary depending on the filter criteria that you specified.
3. Enter an **S** next to the object definition level that you want to use as a recovery point. You can only choose one object definition level recovery point. Press Enter.
4. The selected recovery point is validated and saved. Control returns to the **Generate Recovery Plans** panel.

## Selecting a history event for a recovery point

From the **Recovery History Events Selection** panel, you can choose a history event for a recovery point. History events are listed from the SYSIBM.SYSCOPY table, the schema repository's SYSCOPY table, and the DLC.SYSCOPY\_V11 table. System Level backups created by Db2 Recovery Expert and snapshots fetched by LDRM are also shown as history events for any object.

1. To open the **Recovery History Events Selection** panel enter an **S** next to the **Recovery History Events** field in the **Recovery Point Selection** panel. Press Enter. The **Recovery History Events Selection** panel opens.

```
RCVYXPRT V3R2 ----- Recovery History Events Selection ----- 2021/01/13 12:56:12
Command ==> Scroll ==> PAGE
```

```
Line Commands: S - Select
```

```
-----
Creator: USERID      NAME: TESTPROF      SSID EA1A
Allow TOCOPY recovery for SHRLEVEL CHANGE copies: N (Yes/No)
Show non-consistent points: N (Yes/No)
Start Timestamp *      End Timestamp:
```

```
-----Row 1 of 40
Timestamp      Start      Database Space      Space Type Sec Share
                RBA
2021-11-22-01.28.45 000D627B5F9F ARYDB073 ARYTS073 T      Q      W
2021-11-22-01.28.45 000D627B5F9F ARYDB073 ARYTS073 T      F      R
2021-11-22-01.25.43 000D625E1000 ARYDB073 ARYTS073 T      Q      W
2021-11-22-01.25.34 000D625E1000 ARYDB073 ARYTS073 T      F      R
2021-11-22-01.22.37 000D62504DBF ARYDB073 ARYTS073 T      Q      W
2021-11-22-01.22.37 000D62504DBF ARYDB073 ARYTS073 T      F      R
2021-11-22-01.18.00 000D6247C08C ARYDB073 ARYTS073 T      Q      W
2021-11-22-01.17.59 000D6247C08C ARYDB073 ARYTS073 T      F      R
2021-11-22-01.07.38 000D6217A764 ARYDB073 ARYTS073 T      F      R
2021-11-22-01.07.37 000D6217A764 ARYDB073 ARYTS073 T      F      R
2021-11-22-01.07.37 000D6217A764 ARYDB073 ARYTS073 T      F      R
2021-11-22-01.07.37 000D6217A764 ARYDB073 ARYTS073 T      F      R
```

2. You can use the PF10 and PF11 function key to scroll left and right. Scrolling right will display all the fields for each event recovery point. The fields that are displayed for each recovery point are:

**Timestamp**

This field specifies the date and time of the event.

**Start RBA**

The start RBA of the event.

**Database**

The name of the database.

**Space**

The name of the space.

**Space Type**

The type of space.

**Type**

The type of operation. The following values may be displayed:

- A indicates ALTER
- B indicates REBUILD INDEX
- D indicates CHECK DATALOG(NO) (no log records for the range are available for RECOVER utility)
- F indicates COPY FULL YES
- I indicates COPY FULL NO
- P indicates RECOVER TOCOPY or RECOVER TORBA (partial recovery point)
- Q indicates QUIESCE
- R indicates LOAD REPLACE LOG(YES)
- S indicates LOAD REPLACE LOG(NO)
- V indicates REPAIR VERSIONS utility
- W indicates REORG LOG(NO)
- X indicates REORG LOG(YES)
- Y indicates LOAD LOG(NO)
- Z indicates LOAD LOG(YES)
- T indicates TERM UTILITY command (terminated utility)

**Sec Type**

Displays the secondary type.

**Share**

Displays the SHRLEVEL parameter on COPY (for TYPE F or I only). The values may be:

- C for Change
- R for Reference
- Blank indicates an image copy that is not described or was migrated from Version 1 Release 1 of Db2.

**DSNUM**

Data set number within the table space.

**File Seq**

The tape file sequence number of the copy.

**Dev Type**

The device type that the copy is on.

**Data Set Name or SLB profile**

The data set name for an image copy, or the SLB profile name for an SLB, or snapset name for LDRM integration.

**Site**

The site name.

**Media Type**

The media type.

**PIT RBA**

The stop location (RBA) of a point-in-time recovery.

**GroupMember**

The Db2 data sharing member name of the Db2 subsystem that performed the operation. This column is blank if the Db2 subsystem was not in a Db2 data sharing environment at the time the operation was performed.

**Note:** Only three columns contain non-empty values for SLB rows: **Timestamp**, **Start RBA**, and **Data Set Name or SLB Profile**.

3. The **Allow TOCOPY recovery for SHRLEVEL CHANGE copies** field controls which RBA/LRSN value is used when SHRLEVEL CHANGE copy is selected. Specify **N** to use PIT\_RBA (default recommended value). The TOLOGPOINT recovery will be generated. Specify **Y** to use START\_RBA. The TOCOPY recovery will be generated.
4. The **Show non-consistent points** field controls whether or not events that are not suitable points of consistency for recovery are shown (for example, other than quiesce events or SHRLEVEL NONE or SHRLEVEL REFERENCE image copies.) Specify an **N** to exclude non-consistent points from the display. Specify a **Y** to include non-consistent points. Press Enter. The display of recovery points will be updated based on your specification.
5. You can also filter the recovery points that are included in the display using the **Start Timestamp** and **End Timestamp** fields. You can enter a specific start or end timestamp value or use a wild card character such as an asterisk which will display all the event recovery points. Press Enter. The list of recovery points will vary depending on the filter criteria that you specified.
6. Enter an **S** next to the event that you would like to use as a recovery point. You can only choose one recovery point. Press Enter.
7. The selected recovery point is validated and saved. Control returns to the **Generate Recovery Plans** panel.



## Selecting a quiet time recovery point

From the **Quiet Times Range Selection** panel you can choose a quiet time range for a recovery point.

Db2 Recovery Expert discovers quiet time ranges by analyzing the Db2 log to determine periods of time during which there is no activity for an object or set of objects. These quiet times can then be used for a recovery point. Quiet time ranges are saved in the quiet time tables. The default quiet time tables are SYSTOOLS.ARYQTG and SYSTOOLS.ARYQT.

1. To open the **Quiet Times Range Selection** panel enter an **S** next to the **Quiet Times** field in the **Recovery Point Selection** panel. Press Enter. The **Quiet Times Range Selection** panel opens.

```
RCVYXPRT V3R2  ----- Quiet Times Range Selection  ----- 2021/01/13 12:56:12
Command  ===>                                     Scroll  ===> PAGE

Commands: REPORT
Line Commands: S - Select

-----
Creator: USERID      NAME: TESTPROF                      SSID EA1A
Start Timestamp *           End Timestamp:
-----Row 1 of 40
Timestamp      End Timestamp
_2021-11-22-13.58.10  2021-11-22-14.58.10
```

2. You can filter the recovery points that are included in the display using the **Start Timestamp** and **End Timestamp** fields. You can enter a specific start or end timestamp value or use a wild card character such as an asterisk which will display all the event recovery points. Press Enter. The list of recovery points will vary depending on the filter criteria that you specified.
3. Enter an **S** next to the quiet time range that you would like to use as a recovery point. You can only choose one recovery point. Press Enter.
4. The selected recovery point is validated and saved. Control returns to the **Generate Recovery Plans** panel.

## Recovery plan generation

Db2 Recovery Expert generates Recovery plans by following several steps. The result is a JCL job that can then be run to recover database objects. See [Understanding recovery plans](#) for more information.

### Purpose

As a database administrator, you may need to be able to determine which database objects are recoverable so that you can generate a plan to recover the ones you need.

### Object selection

To begin, Db2 Recovery Expert determines the set of recoverable objects. This includes not only objects explicitly specified in a profile/specification, but also any other objects required for successful recovery. For example: tablespaces for a database; indexes, views and RI-related tables for a table. So if a table is selected in a profile, all dependent indexes and views will also be recovered. Backward relations are also tracked, if necessary. For example, if a dropped tablespace to be recovered resided in a database that is also dropped, the database is also added to the set of recovered objects and will be recreated during the recovery.

Information about all objects and relationships between objects is retrieved from the Db2 catalog, ARY SLR repository (for application profiles) or ARY LBDR repository (for LBDR specifications). Appropriate source or sources for each object are chosen automatically.

The most important recovery options affecting this step are: **Include RI related objects (Yes/No/Relations Only)** and **Use DB2 System Catalog Only (Yes/No)**. Each of these options disables

unnecessary retrieval of any information about some type of objects. For example, if **Use DB2 System Catalog Only (Yes/No)** is set to **Y**, any information for objects not residing in the Db2 catalog (but residing in other repositories) will not be retrieved. By default, all objects are retrieved from all repositories.

## Resource selection

Next, Db2 Recovery Expert obtains information about the required recovery resources, including three main types: image copies, system level backups and Db2 log data sets:

- Information about available image copies is retrieved from the Db2 catalog (table SYSIBM.SYSCOPY), ARY SLR repository (for application profiles), or ARY LBDR repository (for LBDR specifications). Appropriate source for each object is chosen automatically.
- Information about system level backups is retrieved from the ARY SLB repository and can be browsed in the **Restore System Display** panel. Only backups with **Enable Obj Restore** enabled may be used for object recovery purposes.
- Information about the Db2 log datasets is retrieved from the BSDS.

The most important recovery options affecting this step are: **Action for missing recovery resources (Ignore/Warning/Error)** and **Automatic Image Copies (Yes/No)**. The first option allows you to validate the physical existence of retrieved image copies and log data sets:

- By default (**Ignore**), nothing is validated. Any image copy or log data set recorded in the catalog/ repository table or BSDS may be used for the recovery. If a data set doesn't exist (e.g., if it has been deleted), it will most likely cause some errors during execution of the generated recovery job.
- If **Error** is selected, for each retrieved data set, Db2 Recovery Expert will determine if the data set is cataloged or if it has been un-cataloged or deleted. Data sets that have been un-cataloged or deleted will be ignored during plan generation. As a result (if no appropriate alternatives are found), some recovery methods may become blocked and some objects may be shown as unrecoverable.
- If **Warning** is selected, all retrieved data sets are also searched in the catalog. If a data set is not found there, it will not be ignored and still may be used for the recovery but a warning message will be shown indicating that some plans may be incorrect because of missing resources.

The **Automatic Image Copies** option is the simplest way to recover dropped objects when you are using system level backups (SLBs). By default, SLBs can be used only for existing objects (plan **Restore from SLB and Recover logonly**), but it cannot be used for dropped objects. A possible solution is to create an image copy of the dropped object from any available SLB (option **I-Image Copies** on the **Restore System Display** panel) and then generate a plan using this copy. This approach requires some additional manual work that may be avoided by using **Automatic Image Copies**. If a dropped object has no available image copy, but an appropriate SLB exists and **Automatic Image Copies** is enabled, an additional job will be automatically generated and executed in the background during plan generation. This job will create an image copy of the dropped object from the SLB, and this copy will be registered in the ARY SLR or LBDR repository and used on the following steps of plan generation.

**Note:** Db2 Recovery Expert does not create image copies of encrypted objects (created with nonempty KEY LABEL).

## Choosing recovery methods

Possible recovery methods are determined for every object. Different recovery methods are based on different utilities and may or may not be applicable depending on conditions such as a specified recovery point, type and parameters of recovered objects, available resources and some user-specified options. A list of applicable methods is determined for every recovered object. The same list will be shown on the **Recovered Objects** panel (command **D-Details** on the corresponding line of the **Recovery Plans** panel).

```

RCVYXPRT V3R2 ----- Recovery Plans ----- 2021/01/13 12:56:12
Command ==>
The following is a list of objects that will be recovered. Under each
object is a list of the possible recovery plans and if the plan could
not be generated, the primary reason it could not be generated.

    Show objects ==> A (All/Recoverable/Unrecoverable)
Line commands: P -
Properties
-----
Creator: USERID      NAME: TESTPROF                      SSID EA1A
-----
_ Database ARU0000
  ARYJ040I - The object is not eligible for data recovery.
* Tablespace ARY0000.ARY0000
  Using DSN1COPYH
  ARYJ060I - Log processing not allowed with this method.
  Using DSN1COPY and RECOVER LOGONLY
  ARYJ100I - Estimated number of CPU milliseconds:      6
  Using DSN1COPY of IC and redo SQL
  ARYJ100I - Estimated number of CPU milliseconds:     5016
  Using DSN1COPY of IC and undo SQL
  ARYJ056I - Last image copy after point in time unavailable or LOG NO even
  Using DSN1COPY of full IC and undo SQL
  ARYJ058I - Full image copy after point in time unavailable or LOG NO even
  Using RECOVER TOCOPY
  ARYJ060I - Log processing not allowed with this method.
  Using RECOVER
  ARYJ100I - Estimated number of CPU milliseconds:      6
  Using RECOVER to IC and undo SQL
  ARYJ056I - Last image copy after point in time unavailable or LOG NO
even

```

The message lines starting with **ARYJ** in this illustration show the estimated cost, if the recovery method can be used to recover the object, or if the object cannot be recovered by this method, the condition preventing recovery. This list may be filtered to show only recoverable or only unrecoverable objects. An ‘unrecoverable’ object is one that cannot be recovered by any method; a ‘recoverable’ object can be recovered by at least one method. Next, a set of recovery plans is generated for the whole set of recoverable objects. Each plan is based on a certain recovery method. For example, IBM RECOVER is a ‘base’ method for the **Using RECOVER** plan but may also include other methods for some objects. The general rules are the following:

- If a ‘base’ method of a plan is applicable to the object, it is always used;
- If a ‘base’ method of a plan is not applicable to the object, then the best (having the lowest estimated cost) method of the remaining applicable methods is used.
- If a ‘base’ method of a plan is not applicable to any recovered objects, this plan is considered ‘unusable’ and will not be shown in the list of generated plans.

The most important recovery option affecting this step is **Action for unrecoverable objects (Ignore/Create/Load/Error)**. It determines the desired action for objects that cannot be recovered by any method:

- By default (**Error**), plan generation for the whole profile is aborted if any unrecoverable objects are found. The **Recovery Plans Error Details** panel (very similar to the **Recovered Objects** panel) is shown instead of a list of available plans. All unrecoverable objects can be found there, along with the reasons why they are not recoverable.
- **Ignore**: plans are generated for all recoverable objects. If any unrecoverable objects exist, warning message **ARYJ133W (Unrecoverable objects are skipped)** is shown. All objects, both recoverable and unrecoverable, are shown on the **Recovered Objects** panel.
- **Create**: like **Ignore**, but any dropped unrecoverable objects are recreated (without any data). It helps to prevent SQL errors when unrecoverable objects have some dependent objects (e.g. view on the unrecoverable table).
- **Load**: like **Create**, but any non-dropped unrecoverable object will be made empty by the dummy LOAD REPLACE.

## Generating recovery utilities

Finally, recovery utilities are generated for all chosen recovery methods. Different objects recovered by the same utility may be grouped into one common call. Depending on the specified number of parallel jobs, generated utilities will be grouped into one job or several jobs that can be run in parallel.

## Selecting a recovery plan

The Recovery Plans panel displays the recovery plans that are available to recover the object or set of objects that are included in the application profile.

**Note:** If you are recovering a dropped object that is part of an implicit table space, Db2 Recovery Expert issues a warning during recovery plan generation to let you know the ZPARM parameter IMPDSDEF parameter must be set to YES before running the recovery job. This ZPARM parameter can be dynamically changed with the Db2 SET SYSPARM command.

1. The **Recovery Plans** panel opens automatically when you press Enter from the Generate Recovery Plans panel and at least one recovery plan can be generated.

```
RCVYXPRT V3R2 ----- Recovery Plans ----- 2021/01/13 12:56:12
Command ==>

Line Commands: V - Validate P - Properties D - Details B - Build JCL
-----
Creator: USERID      NAME: TESTPROF                      SSID EA1A
-----
Plan Name                                                    Cost
_Using Restore from System Level Backup and RECOVER LOGONLY  26.52
_Using RECOVER                                                52.60
_Using DSN1COPY and RECOVER LOGONLY                          52.72
_Using DSN1COPY of IC and redo SQL                           569.30
_Recovered objects                                           n/a
```

2. The following fields are displayed in the panel:

### Creator

Displays the ID of the user who created the profile.

### Name

Displays the name of the profile.

### SSID

Displays the assigned ID for the Db2 subsystem where the objects and the profile reside.

### Plan Name

Lists the recovery plans that can be used to recover the objects in the application profile. One of the plans that is listed is called the Recovered Objects plan. This plan lists the objects that can be recovered and each of the plans that can be used successfully to recover the object. Only the **D** line command can be used with this plan.

### Cost

Displays the recovery plan cost. Each generated recovery plan has an associated cost. The plan with the lowest cost appears first in the list of recovery plan. You can see the detailed information that is used to calculate the cost of the plan by entering a **P** next to the recovery plan.

3. Enter a **P** next to a recovery plan to view the properties of the recovery plan. From the Recovery Plan Properties panel you can see the detailed information that is used to calculate the cost of a recovery plan. The **P** command is not a valid command for the plan with the name Recovered Objects.
4. Enter a **D** next to a recovery plan to view the details of the recovery plan. From the Recovery Plan Details panel you can see each of the objects that are included in the application profile. You can also access property information for each of the objects.
5. Enter a **V** next to a recovery plan to validate the recovery plan. You might select the validate option to check that the conditions of the plan still apply. If an error is found, the **Recovery Plan Validation**

**Error** panel opens. When a successful validation occurs there is a message that makes it explicitly clear that although no validation errors were discovered, the recovery plan could have unforeseen errors that would impact a successful recovery. Such errors may include missing resources or lack of authorizations to access resources. The **V** command is not a valid command for the Recovered Objects plan. For more information, see [Recovery plan validation](#).

6. Enter a **B** next to a recovery plan to build the JCL that can be used to recover the objects in the application profile according to the properties and details of the recovery plan. The **B** command is not a valid command for the plan with the name Recovered Objects.
7. Press Enter. The Build Job Panel opens.

```
Build job in Data set TEST.ARY.CNTL
Use job name as member name N (Yes/No)
    or use member prefix RCVRJ
    Generate SYSAFF N (Yes/No)
Job Cards:

==> //ARYJOB JOB TEST,CLASS=A,NOTIFY=&SYSUID,MSGCLASS=X
==> //*
==> //
```

8. Specify one or more of the following fields and then press Enter.

#### **Build job in Data set**

Specify the name of a PDS data set name in which the job will be built.

#### **Use job name as member name**

Specify **Y** to use generated job names as PDS member names. When saving generated jobs as new members in a PDS, member names will be the same as the generated job names. Any existing members with these names will be overwritten. Specify appropriate job names to avoid possible loss of necessary data in existing members. Specify **N** to generate member names using the member prefix in the **Use member prefix** field.

#### **Use member prefix**

Specifies the prefix which will be used with a unique, automatically generated 3-digit suffix to create a new member name.

The suffix consists of two parts: group number (1 digit, counting from 0), and job number in a group (two digits). For example, if the prefix is PREFIX, generated names will be:

- PREFIX001 - first job of group 0
- PREFIX101 - first job of group 1
- PREFIX102 - second job of group 1
- PREFIX201 - first job of group 2 and so on.

Group number may be used to submit jobs manually in the correct order. Every job in the same group can be submitted in parallel. This field is ignored if you specify **Y** in the **Use job name as member name** field.

#### **Generate SYSAFF**

Specify **Y** to include SYSAFF on the job card. Including SYSAFF on the job card ensures that the job runs on the same system (LPAR) as the target Db2 system to which the objects will be recovered.

9. Enter the information. Press ENTER.

The information entered in this dialog is verified. The data set name must be a PDS with a valid member name. When all the data has been verified, the Generate Recovery Plan JCL request is executed. The Recovery Jobs window opens.

## Recovery plan validation

After generating a recovery plan, you can have Db2 Recovery Expert perform additional validation by selecting the **V - Validate** line command on the **Recovery Plans** panel. Validation has several different purposes, including verifying resources and detecting changed plan conditions.

### Verifying resources

During plan validation, Db2 Recovery Expert searches the catalog for all recovery resources used by the plan (image copy and log data sets). If a data set is deleted or un-cataloged, an error message is displayed: **ARYW010E - The data set DSNNAME is not cataloged**. This check is similar to the validation performed at the plan generation step if **Action for unrecoverable objects** is set to **Error** or **Warning**. Having the plan validated at the generation stage saves time; however, this additional validation step is available as an option.

### Detection of changed conditions

Some changes affecting recovered objects may occur after a plan is generated. As a result, generated plans may become obsolete and fail to recover the object correctly. Plan validation lets you detect such changes and determine if the plan is no longer relevant. Db2 Recovery Expert makes another attempt to generate the plan under the current conditions and compares the new plan with the previously generated plan. If the two plans are completely equal (that is, they include the same objects and steps in the same order), the validation is successful, and this message appears: **ARYR868I - Validation was successful for plan <Plan Name>**. (Note: This does not guarantee successful execution.)

If the new plan does not include exactly the same objects and steps, the old plan is reported as invalid: **ARYJ033I - PLAN IS INVALID**.

Some differences between old and new plans may be unimportant. For example, two objects may be recovered in the same step but in different order. In most cases, such small changes do not prevent successful recovery by the old plan, even though they are reported by plan validation. So the "Plan is invalid" message does not necessarily mean that current plan will cause problems, just that it looks at least slightly different. On the other hand, successful validation does not guarantee that the recovery job generated for the plan will be successful. There are still some conditions that can cause a problem, such as:

- Running a recovery job by a user without required authorizations
- Objects or resources modified or dropped after the validation, during the JCL generation stage

## No usable recovery plans generated

You might encounter a situation where Db2 Recovery Expert does not generate any recovery plans.

Understanding why you do not have any viable recovery plans or cannot recover an object as expected requires an understanding of how Db2 Recovery Expert attempts to perform a recovery using the available resources and supported utilities.

### Resources

Image copies (IC), active logs, and archive logs provide the application data to be recovered. Image copies are recorded in the Db2 System Catalog (DSC) and optionally in the Schema Level Repository (SLR). Logs are recorded only in the Boot Strap Data Set (BSDS). Regular SLR updates preserve information that would otherwise be lost from the DSC when objects are dropped or altered. Frequent image copies, especially after any successful recovery or significant update, reduce potential conflicts with un-logged updates and other limitations with log processing.

### Utilities

- RECOVER, REBUILD INDEX, LOAD, and DSN1COPY are Db2 utilities.

- RESTORE DATASET is a DFSMSdss function command.
- Log Analysis is included with Db2 Recovery Expert to generate redo and undo SQL.

## No objects to recover error (ARYZ017E)

If you encounter error message ARYZ017E informing you of a no objects to recover error, you must ensure that you have selected objects that can be recovered. Certain object types such as plans, packages, and Automation Tool profiles are used only to select other recoverable object types. These object types themselves are never directly recovered. This type of indirect selection can result in no objects to recover. Common issues with indirect selection include:

- a plan that uses only a pack list, that has no direct dependencies
- a storage group that is not used by any table space partitions or index partitions

## No usable recovery plans warning (ARYR913W)

In the ISPF user interface, if you encounter error message ARYR913W informing you that there are no usable recovery plans for certain database objects, the **Recovery Plans Error Details** panel appears. This panel is very similar to the **Recovered Objects** panel shown for successfully generated plans. By default, only unrecoverable objects (objects that have no available recovery options) are shown, but you can change this with the **Show objects** field, which allows you to show all objects, recoverable objects only, or unrecoverable objects only.

In the Recovery Advisor (graphical) user interface, if you encounter error message ARYR913W informing you that there are no usable recovery plans for certain database objects, the **Recovery Plans** panel shows the unrecoverable objects in the **Plans** subpanel, while the **Properties** subpanel shows messages indicating why a given recovery plan cannot be used to recover the selected object.

There are many possible reasons why Db2 Recovery Expert generates message ARYR913W. To resolve the situation, you must understand what Db2 Recovery Expert is attempting to do and determine what factor is preventing Db2 Recovery Expert from generating a recovery plan.

## Recovery methods

The recovery methods are described by:

1. The utility that is used to acquire the beginning data.
2. The resource for the data that is used.
3. The second utility, if necessary, that is required to modify the data.
4. The direction of log processing that is required to modify the data. (redo or undo SQL)
5. The location of the starting point for the log range.
6. The location of the point in time (PIT) that you specified.

The following table outlines the possible recovery methods that are examined by Db2 Recovery Expert:

*Table 26. Possible recovery methods*

First utility	Data resource	Second utility	Log	Starting location	PIT
DSN1COPY	Last Image Copy	n/a	n/a	n/a	= Last IC
DSN1COPY	Last IC	RECOVER	Redo	Last IC	> Last IC
DSN1COPY	Last IC	Log Analysis	Redo	Last IC	> Last IC
DSN1COPY	Last IC	Log Analysis	Undo	Last IC	< Last IC
DSN1COPY	Full IC	Log Analysis	Undo	Full IC	< Full IC
RECOVER	Last IC	n/a	n/a	n/a	= Last IC

Table 26. Possible recovery methods (continued)

First utility	Data resource	Second utility	Log	Starting location	PIT
RECOVER	Last IC	n/a	Redo	Last IC	> Last IC
RECOVER	Last IC	Log Analysis	Redo	Last IC	> Last IC
RECOVER	Last IC	Log Analysis	Undo	Last IC	< Last IC
RECOVER	Full IC	Log Analysis	Undo	Full IC	< Full IC
Change Accumulation	Last IC	n/a	Redo	Last IC	> Last IC
LOAD	Full IC	n/a	n/a	n/a	= Full IC
LOAD	Full IC	Log Analysis	Redo	Full IC	> Full IC
LOAD	Full IC	Log Analysis	Undo	Full IC	< Full IC
Log Analysis	SQL from log	n/a	Undo	Current	< Current
REBUILD	Current TS Data	n/a	n/a	n/a	= Current
RESTORE	Full IC	n/a	n/a	n/a	= Full IC
RESTORE	Full IC	RECOVER	Redo	Full IC	> Full IC
RESTORE	Full IC	Log Analysis	Redo	Full IC	> Full IC
RESTORE	Full IC	Log Analysis	Undo	Full IC	< Full IC
SLB	System-Level Backup	RECOVER	Redo	Determined by Recover Utility	=SLB
SLB and RECOVER LOGONLY	System-Level Backup	RECOVER	Redo	Determined by Recover Utility	> SLB

The recovery point in time (PIT) always affects which methods are relevant for each object, and is typically compared with the most recent image copies both before and after the PIT. If the last image copy is incremental, then a full image copy before the PIT is required.

The log range required for a recovery method cannot contain objects with any of the following parameters:

- CHECK DATA with LOG(NO)
- LOAD with LOG(NO)
- REORG with LOG(NO)

## Constraints

- Recreated tables are not supported by RECOVER, RESTORE, or Undo SQL from current.
- DSN1COPY does not support user-managed spaces defined as NOREUSE.
- Image copies created with the CONCURRENT option are supported only by RECOVER and RESTORE.
- Image copies created without the CONCURRENT option are supported by every utility except RESTORE.
- RECOVER might not require a last image copy if the object is newer than the oldest recorded log, otherwise the full image copy must be recorded in the DSC.
- LOAD uses only full image copies to avoid duplicate rows from partially updated windows on incremental copies.
- Log Analysis does not support:



- Tables that have a user defined data type.
- Column names, table name, or creator that cannot be translated into EBCDIC (CCSID 37)
- Objects that are LOG NO or have a related object that is LOG NO.
- Dropped objects with XML columns
- Cloned tables.
- REBUILD is used as the first utility only when the parent table is not being recovered, and only when recovering to current.
- The utilities used for recovery are typically either un-logged or limit log processing. Frequent image copies help to ensure a recoverable environment.
- Recovery constraints for using SYSIBM.SYSCOPY RECOVER events as a base:
  - Only applicable to plans: 'Using RECOVER', 'Using Advanced Recovery', 'Using Redirected Recovery' and 'Using Redirected Recovery (Change Accumulation)'.
  - Only 'Using RECOVER' and 'Using Redirected Recovery' plans support log ranges containing RECOVER TOLOGPOINT events.
  - RECOVER with TOCOPY to an incremental image copy is not used as starting recovery point if Log Apply is disabled.
  - If certain intersections exist between PARTLEVEL image copies and image copies for whole space, RECOVER TOCOPY might be considered as LOG NO event for 'Using Advanced Recovery' and 'Using Redirected Recovery (Change Accumulation)' plans.

## Submitting the recovery plan jobs for the application group

The **Recovery Plan Jobs** panel displays job or jobs that can be used to recover the objects in the application profiles of the application group.

Multiple job groups could be generated for an application group. For the manual recovery, you must submit jobs going from top to bottom. Jobs named **Parallel Job #** could be submitted simultaneously if they belong to the same **Parallel Job Group**.

**Note:** If you are recovering a set of objects to a prior version (existing objects must be dropped and then recreated) and one of the tables has the RESTRICT ON DROP clause active, you will have to alter that table to remove this restriction before running the recovery plan job. Upon completion of the recovery plan job you can reactivate the clause for the table.

1. The **Recovery Plan Jobs** panel opens after you select a recovery plan from the **Recovery Plans** panel and specify **B** to build the job.

An example of the panel is shown below:

```

ARYGRPJS V3R2  ----- Recovery Plans Jobs ----- 2021/01/13 12:56:12
Command  ===>

Line Commands:  B - Browse      E - Edit      V - View      S - Submit

Plan Name: Using Recover
-----
Creator: USERID      NAME: TESTPROF                               SSID EA1A
-----

_Recover Job Group
_Serial Job Group
- Serial Job 1 - TEST.ARY.CNTL(ARYJB101)
- Parallel Job Group
- Parallel Job 2 - TEST.ARY.CNTL(ARYJB201)
- Parallel Job 3 - TEST.ARY.CNTL(ARYJB202)
_Serial Job Group
- Serial Job 4 - TEST.ARY.CNTL(ARYJB301)

```

The following fields are displayed:

**Plan Name**

Lists the name of the recovery plan for one or more jobs that have been built.

**Creator**

Displays the ID of the user who created the application group.

**Name**

Displays the name of the application group.

**SSID**

Displays the assigned ID for the Db2 subsystem where the objects, the application profiles, and the group information reside.

**Recovery Plan jobs**

Lists the jobs that have been built for this plan.

2. To browse the recovery plan job JCL, enter **B** next to a recovery job. Using browse, you cannot edit or save the JCL.
3. To view and edit the recovery plan job JCL, enter **V** next to a recovery job. Using view you cannot save the JCL upon exit.
4. To edit the recovery plan job JCL and save your changes upon exit, enter **E** next to a recovery plan.
5. To run the recovery plan job JCL, enter **S** next to the recovery job. You will not see the JCL before the job is submitted.

**Automatic online recovery**

To run recovery automatically and see real-time progress, press **S** on the first job group. See [“Monitoring recovery jobs and recovered objects” on page 366](#) for more information.

## Monitoring recovery jobs and recovered objects

Monitoring panels are available if the line command **S** was used on the first job group on the **Recovery Plan Jobs** panel. The **Statuses of Jobs** panel displays the real-time job information: return codes, start and end timestamps. Press **Enter** to refresh the panel.

The following information is available from the **Statuses of Jobs** panel:

- Status of a recovery job
- Objects recovered by a recovery job
- Total number of recovery steps of a recovery job
- Number of finished recovery steps of a recovery job

```

ARYGMJSP V3R2 ----- Statuses of Jobs -----
2024/03/01 11:23:12
Command
===>
Scroll ===> 0010

Line Commands: D - Details S - Statistics

Plan Name: USING DSN1COPY AND RECOVER LOGONLY
Size Recovered: 3.46 MB Elapsed Time: 7s
Size Total: 3.46 MB Total CPU: 00:00:02.46
Progress: 100% Total zIIP: 00:00:00.00
-----
Creator: ARYTEST Name: STD6230 SSID:
DD1A
-----
----- Row 1 of 1 -----
Size
Size Elapsed
Jobs and Job Groups Start Timestamp End Timestamp Status Max-RC Recovered Total
Progress Time Total CPU
ARY7063(J0282854) 2024-03-01-09.42.54 2024-03-01-09.43.14 WARNING 4 3.46 MB 3.46 MB
100% 7s 00:00:02.46
***** Bottom of data *****
*****

```

The header section contains the following fields:

- **Plan name:** The name of the plan used for recovery.
- **Size Recovered:** The current number of units recovered across all jobs.
- **Size Total:** The total number of units required for full recovery across all jobs.
- **Progress:** The percentage ratio of recovered size to total size.

**Note:** Utility History monitoring is enabled for Db2 v13 subsystems, FL501 and later versions, and UTILITY\_HISTORY subsystem parameter is set to UTILITY or OBJECT.

The following additional fields are displayed in the header section when Utility History monitoring is enabled:

- **Elapsed Time:** The overall duration for the recovery utilities executed in the plan.
- **Total CPU:** The cumulative CPU time spent for the recovery utilities executed in the plan.
- **Total zIIP:** The cumulative zIIP time spent for the recovery utilities executed in the plan.

The dynamic area contains the following columns:

- **Jobs and Job Groups:** Information about the job (name and JES ID).
- **Start Timestamp:** The time when the job was submitted.
- **End Timestamp:** The time when the job was finished.
- **Status:** The status of the job.
- **Max-RC:** The return code of the job.
- **Size Recovered:** The number of units recovered in the job.
- **Size Total:** The number of units required for recovery of all objects in the job.
- **Progress:** The percentage ratio of recovered size to total size of the job.
- **Elapsed Time:** The overall duration for the recovery utilities executed in the job. This may be marked as 'Not Available' (N/A) in case the related information is absent from the SYSIBM.SYSUTILITIES table.
- **Total CPU:** The cumulative CPU time spent for the recovery utilities executed in the job. This may be marked as 'Not Available' (N/A) in case the related information is absent from the SYSIBM.SYSUTILITIES table.

Use the line command **D** to see more details for any job on this panel, including recovered objects and the number of steps required for every object. The following **Statuses of Objects** panel will be displayed:

ARYGMOSP V3R2 ----- Statuses of Objects ----- 2024/03/01 11:52:23  
 Command ==> Scroll ==> 0010

Job Name: ARY7063 Start Timestamp: 2024-03-01-09.42.54  
 Job Id: J0282854 End Timestamp: 2024-03-01-09.43.14  
 Job Status: WARNING

Steps Completed: 8 Size Recovered: 3.46 MB Elapsed Time: 7S  
 Steps Total: 8 Size Total: 3.46 MB Total CPU: 00:00:02.46  
 Steps Progress: 100% Size Progress: 100% Total zIIP: 00:00:00.00

----- Row 1 of 8

Label	Steps Done	Steps Total	Size Recovered	Size Total	Progress
TS S6230D00.S6230S00	1	1	138.00 KB	138.00 KB	100%
TS S6230D00.S6230S01	1	1			
TS S6230D00.S6230S02	1	1			
TP S6230D00.S6230S00.1	1	1	1.45 MB	1.45 MB	100%
TP S6230D00.S6230S01.0	1	1	240.00 KB	240.00 KB	100%
TP S6230D00.S6230S02.0	1	1	240.00 KB	240.00 KB	100%
IX ARYTEST.S6230X02	1	1	720.00 KB	720.00 KB	100%
IX ARYTEST.S6230X03	1	1	720.00 KB	720.00 KB	100%

\*\*\*\*\* Bottom of data \*\*\*\*\*

The header section contains the following fields:

- **Job name:** The name of the job.
- **Job Id:** JES ID of the job.
- **Job Status:** The status of the job.
- **Start Timestamp:** The time when the job was submitted.
- **End Timestamp:** The time when the job was finished.
- **Steps Completed:** The number of steps completed in the job.
- **Steps Total:** The number of steps required for recovery of all objects in the job.
- **Steps Progress:** The percentage ratio of steps completed to steps total.
- **Size Recovered:** The number of units recovered in the job.
- **Size Total:** The number of units required for recovery of all objects in the job.
- **Size Progress:** The percentage ratio of recovered size to total size for the job

The following additional fields are shown in the header section when Utility History monitoring is enabled:

- **Elapsed Time:** The overall duration for the recovery utilities executed in the job.
- **Total CPU:** The cumulative CPU time spent for the recovery utilities executed in the job.
- **Total zIIP:** The cumulative zIIP time spent for the recovery utilities executed in the job.

The dynamic area contains the following columns:

- **Label:** The fully qualified object name.
- **Steps Done:** The number of completed steps for the object.
- **Steps Total:** The total number of steps required for recovery of the object.
- **Size Recovered:** The number of units recovered for the object.
- **Size Total:** The number of units required for recovery of the object.
- **Progress:** The percentage ratio of recovered size to total size for the object.

**Note:** At this time, web-based UI for Db2 Recovery Expert does not include this functionality. The **Statuses of Jobs** panel is also not available when recovery jobs are submitted manually, for example for the batch JCL generation utility.

Use the line command **S** to see recovery statistics grouped by utility name. The following **Job Statistics** panel will be displayed:

```

ARYGMJTP V3R2 ----- Job Statistics ----- 2024/03/01 13:18:51
Command ==>                                     Scroll ==> 0010

Job Name:   ARY7063      Start Timestamp: 2024-03-01-09.42.54
Job Id:     J0282854    End Timestamp:   2024-03-01-09.43.14
Job Status: WARNING

Steps Completed: 8      Size Recovered: 3.46 MB      Elapsed Time: 7S
Steps Total:     8      Size Total:     3.46 MB      Total CPU:     00:00:02.46
Steps Progress: 100%   Size Progress: 100%        Total zIIP:   00:00:00.00
-----
Utility                               Number of Number of Elapsed CPU                               Row 1 of 6
                                       Executions Objects Time      Time                               zIIP
-----
CHECK DATA                            1           5           1s      00:00:00.06 00:00:00.00
CHECK LOB                              2           2           1s      00:00:00.12 00:00:00.00
COPY                                    1           3           1s      00:00:00.01 00:00:00.00
DSN1COPY                               3           3           1s      00:00:00.02 00:00:00.00
REBUILD INDEX                          2           4           4s      00:00:02.14 00:00:00.00
RECOVER                                1           5           3s      00:00:00.10 00:00:00.00
***** Bottom of data *****

```

The header section contains the following fields:

- **Job name:** The name of the job.
- **Job Id:** JES ID of the job.
- **Job Status:** The status of the job.
- **Start Timestamp:** The time when the job was submitted.
- **End Timestamp:** The time when the job was finished.
- **Steps Completed:** The number of steps completed in the job.
- **Steps Total:** The number of steps required for recovery of all objects in the job.
- **Steps Progress:** The percentage ratio of steps completed to steps total.
- **Size Recovered:** The number of units recovered in the job.
- **Size Total:** The number of units required for recovery of all objects in the job.
- **Size Progress:** The percentage ratio of recovered size to total size for the job.

The following additional fields are displayed in the header section when Utility History monitoring is enabled:

- **Elapsed Time:** The overall duration for the recovery utilities executed in the job.
- **Total CPU:** The cumulative CPU time spent for the recovery utilities executed in the job.
- **Total zIIP:** The cumulative zIIP time spent for the recovery utilities executed in the job.

The dynamic area contains rows only when Utility History monitoring is enabled. This dynamic area contains the following columns:

- **Utility:** The name of the executed utility.
- **Number of Executions:** The total number of utility executions in the current job.
- **Number of Objects:** The total number of objects processed by the recovery utility.
- **Elapsed Time:** The execution duration of the recovery utility.
- **CPU Time:** The CPU time spent for the recovery utility.
- **zIIP Time:** The zIIP time spent for the recovery utility.

## View finished recoveries

All recoveries including finished are available by selecting **Recovery Monitoring** from the Db2 Recovery Expert main menu. For more information, see [Recovery Monitoring](#).

## Building application profiles in batch

You can build an application profile in batch that can be used to recover objects. The objects that are to be recovered can be read from a data set or supplied inline using the ARYIN DD statement.

1. Edit the sample JCL batch job: [“Sample build application profile batch job”](#) on page 375.
2. Add the following keywords to the ARYOPT DD statement to specify the application profile location and name:

```
MACHINE LPAR-name
SSID Db2-subsystem-ssid
OWNER application-profile-creator
NAME application-profile-name
```

3. Add the REPLACE keyword to the ARYOPT DD statement to specify whether duplicate objects will be replaced if they already exist in the application profile. Specify N to add the objects to the application profile regardless of whether they already exist in the profile. Specify Y to replace the existing objects in the application profile with the objects specified in the ARYIN DD statement. The default value is N. An example of the REPLACE keyword is:

```
REPLACE Y/N
```

4. Add the DEBUG keyword to the ARYOPT DD statement to specify whether debug tracing will be enabled. Specify Y to enable debug tracing. Specify N to disable debug tracing. The default value is N. An example of the DEBUG keyword is as follows:

```
DEBUG Y/N
```

5. Add the objects that you want to include in the application profile in the ARYIN DD statement. The format for the ARYIN DD object keywords is as follows.

```
TYPE FQ-NAME INC Y/N WILDCARD Y/N
```

- *TYPE* Specifies the type of object that is to be recovered. You can specify one of the following types (selecting ALL object types is not supported in batch):
  - SG to recover stogroup objects
  - DB to recover database objects
  - TS to recover tablespace objects
  - TB to recover table objects
  - TP to recover table partition objects
  - IX to recover index objects
  - VW to recover view objects
  - SN to recover synonym objects
  - AL to recover alias objects
  - DT to recover data type objects
  - TR to recover trigger objects
  - RT to recover function objects (see note below)
  - RT to recover procedure objects (see note below)
  - SQ to recover sequence objects
  - AQ to recover sequence alias objects
  - RO to recover role objects
  - PL to recover plan objects
  - PK to recover package objects
  - VA to recover global variable objects

- OP to recover Auto Tool Profile objects
  - *FQ-NAME* - Specifies the fully qualified name of the object.
  - *INC* - Specifies whether the object will be included in the application or excluded. Specify Y to include the object. Specify N to exclude the object.
  - *WILDCARD* Specifies when object filtering will occur. Specify a Y to indicate that the filtering of the objects on the Db2 subsystem occurs at run time. Specify an N to indicate that the filtering will occur when the application profile is created. The default value for this field is N.
6. Specify the recovery options as keywords in the ARYROPT DD statement. The recovery options are specified in XML format. See “[Specifying recovery options for application profile batch job](#)” on page 371 for more information on the recovery options.
  7. Run the job.
  8. After the utility has finished successfully the application profile is included in **Application Profiles** panel in ISPF client with the correct list of objects included in the profile.

The following are additional examples of the ARYIN DD object keywords:

```
TS ARYDB012.ARYTESTR INC N WILDCARD N
TB ARYSCH01.ARY% INC Y WILDCARD Y
```

For the function and procedure object types, the object mask uses a different syntax, as shown in the following examples.

- Function:

```
RT ARYSCH01.ARYFUNC (F) INC Y WILDCARD N
```

- Procedure:

```
RT ARYSCH01.ARYPROC (P) INC Y WILDCARD N
```

## Specifying recovery options for application profile batch job

The recovery options for the application profile batch job are not specified as keywords in the ARYROPT DD statement. The recovery options are specified in XML format. You do not need to include any recovery option statements in the JCL stream unless you want to change the default values.

Most of the recovery options work the same in a batch job as when they are specified in ISPF from the **Recovery Options** panel. The copy-scope keyword in batch corresponds to the **Image Copies after recover** option in ISPF. Underneath, the Local and Remote options have their own batch equivalents:

- Local Site Primary (ISPF) → copy-local-primary (batch)
- Local Site Backup (ISPF) → copy-local-backup (batch)
- Remote Site Primary (ISPF) → copy-recovery-primary (batch)
- Remote Site Backup (ISPF) → copy-recovery-backup (batch)

The settings work in the following ways:

- If copy-scope is set to N, the four options underneath (copy-local-primary, copy-local-backup, copy-recovery-primary, copy-recovery-backup) are also set to N and cannot be changed. If you mistakenly set copy-scope to N and one of the other four options to Y, the latter will be ignored.
- If copy-scope is set to Y and copy-local-primary (**Local Site Primary**) is set to N, all of the options will be treated as if they were set to N; they will be ignored.
- If copy-scope is set to T (Tablespaces) or I (Indexes and Tablespaces), then **Local Site Primary** is set to Y by default but can be changed with copy-local-primary; **Local Site Backup** and **Remote Site Primary** are both set to N but can be changed with copy-local-backup and copy-recovery-primary, respectively; **Remote Site Backup** is set to N and cannot be changed. **Remote Site Backup**

can only be changed to Y if copy -scope is set to Y and then copy -recovery -primary (**Remote Site Primary**) has also been set to Y.

```
<recover-options>
  <options>
    <!-- optional -->

    <!-- RECOVER Recovery Options -->

    <recover-parallel>integer</recover-parallel>
    <!-- Specifies the maximum number of jobs in a parallel -->
    <!-- job group. Valid values are 0 - 99. Default is 0. -->

    <recover-concurrent-max>integer</recover-concurrent-max>
    <!-- Specifies the maximum number of jobs that the agent can -->
    <!-- process in parallel. Valid values are 1 to 99. Default is 1 -->

    <recover-tape-units>integer</recover-tape-units>
    <!-- Specifies the number of tape drives to allocate for the -->
    <!-- recovery. Valid values are 1 to 99. Default is 0 specifying -->
    <!-- that Db2® will determine the number of tape drives to allocate. -->

    <recover-site>blank | L | R</recover-site>
    <!-- Specifies the site from which RECOVER should use image copies -->
    <!-- L = Local, R = Recovery -->
    <!-- blank = Subsystem default based on configuration -->

    <recover-changed-only> Y | N </recover-changed-only>
    <!-- Y = Recover changed objects only -->
    <!-- N = Recover all objects (default) -->

    <!-- COPY Recovery Options -->

    <copy-scope>N | T | I</copy-scope>
    <!-- N = Do not create image copies after recovery -->
    <!-- T = Copy table spaces only -->
    <!-- I = Copy table spaces and indexes -->
    <!-- If you do not include this option the default is not to -->
    <!-- create an image copy. Leaving it blank also specifies not to -->
    <!-- create an image copy. If you specify T or I you must specify -->
    <!-- whether local primary, local backup, recovery primary, -->
    <!-- recovery backup copies are created. -->

    <copy-local-primary>Y | N</copy-local-primary>
    <!-- Y = Create local primary image copy, N = Do not create -->
    <!-- local primary image copy. The default value is N. -->

    <copy-local-backup>Y | N</copy-local-backup>
    <!-- Y = Create local backup image copy, N = Do not create -->
    <!-- local backup image copy. The default value is N. -->

    <copy-recovery-primary>blank | Y | N</copy-recovery-primary>
    <!-- Y = Create recovery primary image copy. N = Do not create -->
    <!-- recovery primary image copy. The default value is N. -->

    <copy-recovery-backup>blank | Y | N</copy-recovery-backup>
    <!-- Y = Create recovery backup image copy. N = Do not create -->
    <!-- recovery backup image copy. The default value is N. -->

    <copy-tape-units>integer</copy-tape-units>
    <!-- Specifies the number of tape drives to use for image copies. -->
    <!-- Valid values are 1 to 99. Default is 0 specifying that Db2® -->
    <!-- will determine the number of tape drives to allocate. -->

    <copy-check-page>Y | N</copy-check-page>
    <!-- Y - Check utility will be run on each page -->
    <!-- N = Check utility will not be run for each page. -->
    <!-- N is the default value. -->

    <copy-concurrent>Y | N</copy-concurrent>
    <!-- Y = Use DFSMSdss concurrent copy to perform the image copies. -->
    <!-- N = Do not use DFSMSdss concurrent copy. Default is N. -->

    <!-- Parallel Options -->

    <copy-parallel>integer</copy-parallel>
    <!-- Specifies the maximum number of jobs in a parallel job group. -->
    <!-- You can specify a value from 0 to 99. Default value is 4. -->
```



```

<!-- General Options -->

<permit-restricted>true/false</permit-restricted>
<!-- true = If any restricted objects are encountered      -->
<!--         recovery is stopped. True is the default value. --
>

<!-- false = If any restricted objects are encountered     -->
<!--         the object is skipped and recovery continues. -->

<check-data>true/false</check-data>
<!-- true = Run the Check Data utility. True is the default. -->
<!-- false = Do not run the Check Data utility.           -->

<allow-load-from-full-ic-recreated-tb>true/false
  </allow-load-from-full-ic-recreated-tb>
<!-- true = Recover recreated tables using the LOAD      -->
  from full IC recovery plan.                            -->
<!--         True is the default value.                  -->
<!-- false = Do not use the LOAD from full IC recovery plan. -->

<include-related-objects relations="true/false">
  true/false
</include-related-objects>
<!-- true = Include related objects in recovery.         -->
<!--         True is the default.                        -->
<!-- false = Do not include related objects in the recovery. -->
<!-- The "relations" attribute does not affect processing if -->
<!-- the value of include-related-objects is true. If the   -->
<!-- value is false, but relations is true, then related   -->
<!-- objects are not included, but relations themselves are -->
<!-- included. The default value for relations is false.   -->

<!-- Authorization Options -->

<grants>true/false</grants>
<!-- true = Generate authorization statements when recovering -->
<!--         objects. Default is true.                   -->
<!-- false = Do not generate authorization statements.      -->

<!-- Bind Related Options -->

<binds>packages/both/none</binds>
<!-- packages = Bind statements are generated only for packages. -->
<!-- both = Bind statements are generated for packages and plans. -->
<!-- none = Bind statements are not generated for either      -->
<!--         packages or plans.                            -->

<bind-action>add/replace</bind-action>
<!-- These two options are only available when the Binds      -->
<!-- options is packages or both.                             -->
<!-- add = Named package does not exist. A new package       -->
<!--         is to be created.                               -->
<!-- replace = Existing package is to be replaced by a new one -->
<!--         with the same package name and creator.         -->

<bind-dbrmlibs>
  <dbrmlib>string</dbrmlib>
  <dbrmlib>string</dbrmlib>
  <dbrmlib>string</dbrmlib>
  <dbrmlib>string</dbrmlib>
  <dbrmlib>string</dbrmlib>
</bind-dbrmlibs>
<!-- Up to five dbrmlibs may be specified -->

<!-- DDL options -->
<!-- One or more of these may be specified to restrict DDL -->
<!-- generation for specific types of objects. Specify true -->
<!-- to generate DDL for all the objects of that type.      -->
<!-- Specify false to not generate the DDL. True is the     -->
<!-- default value for each.                                 -->

<storage-groups>true/false</storage-groups>
<databases>true/false</databases>
<table-spaces>true/false</table-spaces>
<tables>true/false</tables>
<indexes>true/false</indexes>
<views>true/false</views>
<synonyms>true/false</synonyms>
<aliases>true/false</aliases>
<data-types>true/false</data-types>
<triggers>true/false</triggers>
<functions>true/false</functions>

```

```

<stored-procedures>>true/false</stored-procedures>
<sequences>>true/false</sequences>
<roles>>true/false</roles>
<sequence-aliases>>true/false</sequence-aliases>
<variables>>true/false</variables>
<sql-id>string</sql-id>

<!-- Redirected-recovery options -->

<syscopy-scan>L | R | Z | ?</syscopy-scan>
<!-- Specifies which SYSCOPY rows to consider when finding -->
<!-- a starting point for processing. -->
<!-- L = Uses the Local Primary and Local Backup rows -->
<!-- to find a starting point for processing. Includes -->
<!-- the LOCAL_SITE keyword in the syntax. -->
<!-- R = Uses the Recovery Primary and Recovery Backup rows -->
<!-- to find a starting point for processing. Includes -->
<!-- the RECOVERY_SITE keyword in the syntax. -->
<!-- Z = Detects the operating mode Db2 is running under -->
<!-- and automatically inserts the corresponding -->
<!-- control card. This option omits the LOCAL_SITE, -->
<!-- RECOVER_SITE, and IMAGE_COPY_PREFERENCE control -->
<!-- cards and uses the value found in the -->
<!-- ZPARMs on the Db2. -->
<!-- ? = Uses the user-specified scan preference defined -->
<!-- in the SYSCOPY Selection Preference field to find -->
<!-- a starting point for processing. Includes the -->
<!-- IMAGE_COPY_PREFERENCE keyword in the syntax. -->

<syscopy-selection>LPLBRPBFBC</syscopy-selection>
<!-- Specifies the order in which the image copy types are -->
<!-- scanned in SYSCOPY for a starting point. This selection -->
<!-- preference is only applied if the SYSCOPY Scan Operating -->
<!-- Mode is set to User. -->
<!-- LP - Local Primary LB = Local Backup RP = Remote Primary -->
<!-- RB = Remote Backup FC = FlashCopy -->

<log-reader-copy>R1R2A1A2</log-reader-copy>
<!-- Specifies the order in which the archive and active log -->
<!-- lists in the BSDS are to be scanned when searching for -->
<!-- a log to satisfy a need for log records. -->
<!-- R1, R2, A1 and A2 can be in any order. -->

<bypass-syslgrnx>>true/false</bypass-syslgrnx>
<!-- Y = Skip reading SYSIBM.SYSLGRNX and only read Db2 logs. -->
<!-- N = Do not skip reading SYSIBM.SYSLGRNX. -->

<continue-on-errors>>true/false</continue-on-errors>
<!-- true = Most errors are ignored and the processing continues. -->
<!-- Errors higher than RC=4 are overridden, a RC=4 is -->
<!-- reported, and the job will not fail. Serious issues -->
<!-- (I/O, out-of-memory) still cause aborts. -->

<parallel-log-reads>integer</parallel-log-reads>
<!-- Specifies the number of parallel log read tasks that can run -->
<!-- at the same time. Valid values are integers, 0-16. A value -->
<!-- of 0 specifies that a maximum of 1 task per data sharing -->
<!-- group member can run at the same time. A non-zero value -->
<!-- specifies the number that is the maximum number of parallel -->
<!-- tasks that can run at the same time. -->

<parallel-log-apply>integer</parallel-log-apply>
<!-- Specifies the number of parallel log apply tasks that can run -->
<!-- at the same time. Valid values are integers, 1-10. -->
<!-- If a single GROUP(...) set is present in the control cards, -->
<!-- the value in the Number of PARALLEL log apply field is used -->
<!-- to break up the job into multiple GROUP(...) sets and start a -->
<!-- log apply task for each set. Valid values are: -->
<!-- 1: A single group starts a single log apply task. -->
<!-- 2-10: If there is a single GROUP(...) , the code will -->
<!-- internally break down the SPACE(...) sets into a maximum of -->
<!-- Number of PARALLEL log apply GROUP(...) sets and will start -->
<!-- one log apply task per GROUP(...). -->

<reuse-vsam-dataset>>true/false</reuse-vsam-dataset>
<!-- true = An existing VSAM data set will be reused (thus -->
<!-- preserving the data set's size and extent structure). -->
<!-- false = A VSAM data set is newly allocated with a new extent -->
<!-- structure. -->

</options>

```

```

<redirected-recovery enabled="true|false">
  <rename-masks>
    <rename-mask>
      <!-- may repeat n times -->
      <type>
        <!-- one of the following object types:
              alias-object
              creator-object
              database-object
              index-object
              index-space-object
              table-object
              table-space-object
              view-object
              volume-catalog-object
              storage-group-object
            -->
      </type>
      <source-mask>string</source-mask>
      <target-mask>string</target-mask>
    </rename-mask>
  </rename-masks>
</redirected-recovery>
</recovery-options>

```

## Sample build application profile batch job

The following is a sample of the Build Application Profile in Batch job.

```

//ARYOPGEN JOB PDUSER,CLASS=A,NOTIFY=&SYSUID,
//          MSGCLASS=X,REGION=0M
/*JOBPARM SYSAFF=RS27
//*
//STEP01 EXEC PGM=ARYJOGEN
//STEPLIB DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.SARYLOAD
//Db2PARMS DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.CONTROL
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//CEEDUMP DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//ARYOPT DD *
OBJECT-COLLECTION
MACHINE RS27
SSID EA1A
OWNER PDUSER
NAME BATCH APPLICATION PROFILE
REPLACE Y
DEBUG N
/*
//ARYIN DD *
TS DB0.TS0 INC Y WILDCARD N
TS DB1.TS1 INC Y WILDCARD N
TS Db2.TS2 INC Y WILDCARD N
TS DB3.TS3 INC Y WILDCARD N
TS DB4.TS4 INC Y WILDCARD N
TS DB5.TS5 INC Y WILDCARD N
TS DB6.TS6 INC Y WILDCARD N
TS DB7.TS7 INC Y WILDCARD N
TS DB8.TS8 INC Y WILDCARD N
TS DB9.TS9 INC Y WILDCARD N
/*
//ARYRPOPT DD DISP=SHR,DSN=PDUSER.JCL(RECOPT)
//*

```

## Building log based specifications in batch

You can build a log based specification in batch, which can be used to recover dropped objects. The objects to be recovered can be read from a dataset or supplied inline using the ARYIN DD statement.

Building a log based specification batch job uses the same syntax used in building an application profile batch job. However, there are several fields specific to a log based specification.

1. Edit the [sample JCL job](#).

2. Add the following keywords to the ARYOPT DD statement to specify the log based specification location and name:

```
MACHINE LPAR-name
SSID Db2-subsystem-ssid
OWNER specification-creator
NAME specification-name
```

3. Add the REPLACE keyword to the ARYOPT DD statement to specify whether duplicate objects will be replaced if they already exist in the specification. Specify N to add the objects to the application regardless of whether they already exist in the specification. Specify Y to replace the existing objects in the specification with the objects specified in the ARYIN DD statement. The default value is N. An example of the REPLACE keyword is:

```
REPLACE Y
```

4. Add the DEBUG keyword to the ARYOPT DD statement to specify whether debug tracing will be enabled. Specify Y to enable debug tracing. Specify N to disable debug tracing. The default value is N. An example of the DEBUG keyword is as follows:

```
DEBUG N
```

5. Add the objects that you want to include in the specification in the ARYIN DD statement. The format for the ARYIN DD object keywords is as follows.

```
TYPE FQ-NAME INC Y/N WILDCARD Y/N
```

- *TYPE* Specifies the type of object that is to be recovered; in the example JCL batch job, the TS type is shown. You can specify one of the following types (selecting ALL object types is not supported in batch):
  - SG to recover stogroup objects
  - DB to recover database objects
  - TS to recover tablespace objects
  - TB to recover table objects
  - TP to recover table partition objects
  - IX to recover index objects
  - VW to recover view objects
  - SN to recover synonym objects
  - AL to recover alias objects
  - DT to recover data type objects
  - TR to recover trigger objects
  - RT to recover function objects (see note below)
  - RT to recover procedure objects (see note below)
  - SQ to recover sequence objects
  - AQ to recover sequence alias objects
  - RO to recover role objects
  - PL to recover plan objects
  - PK to recover package objects
  - VA to recover global variable objects
  - OP to recover Auto Tool objects
- *FQ-NAME* - Specifies the fully qualified name of the object.
- *INC* - Specifies whether the object will be included in the application or excluded. Specify Y to include the object. Specify N to exclude the object.

- WILDCARD Specifies when object filtering will occur. Specify a Y to indicate that the filtering of the objects on the Db2 subsystem occurs at run time. Specify an N to indicate that the filtering will occur when the application is created. The default value for this field is N.
6. Specify the recovery options as keywords in the ARYRPOPT DD statement. The recovery options are specified in XML format. See “Specifying recovery options for application profile batch job” on page 371 for more information on the recovery options. They work the same way in a log based specification as in an application profile.
  7. Specify the options specific to log based recovery in the ARYLBDR DD statement, as in this example:

```
//ARYLBDR DD *
<lbr>
  <scan-start-timestamp> 2019-08-14-06.32.00.000000 </scan-start-timestamp>
  <scan-end-timestamp> 2019-08-14-06.32.25.000000 </scan-end-timestamp>
  <use-syslgrnx> 0 </use-syslgrnx>
</lbr>
/*
```

Where *scan-start-timestamp* and *scan-end-timestamp* specify scan range, *use-syslgrnx* specifies whether to use SYSLGRNX directory tables or not.

If you want to avoid re-scanning logs, use the following syntax, where *lbr-id* is the ID of the log scan:

```
//ARYLBDR DD *
<lbr>
  <lbr-id> 135 </lbr-id>
</lbr>
/*
```

Building LBR specification in the batch will submit a sub job for log scanning. You can use the following JCL code to define values for this job.

Job cards:

```
//ARYJCARD DD *
//LBRSCAN JOB , 'SAMPLE' , CLASS=A, MSGCLASS=X,
//          NOTIFY=&SYSUID, REGION=0M
/*JOBPARM S=RS27
/*
```

Skeleton library:

```
//ARYSLIB DD DISP=SHR, DSN=RSQA.ARY320.IBMTAPE.SARYSLIB
```

Load library:

```
//ARYLOAD DD DISP=SHR, DSN=RSQA.ARY320.IBMTAPE.SARYLOAD
```

8. Run the job.
9. After the utility has finished successfully the log based specification is included in the **Ad-hoc Specification Display** panel in ISPF.

The following are additional examples of the ARYIN DD object keywords, using the TS and TB object types:

```
TS ARYDB012.ARYTESTR INC N WILDCARD N
TB ARYSCH01.ARY% INC Y WILDCARD Y
```

For the function and procedure object types, the object mask uses a different syntax, as shown in the following examples.

- Function:

```
RT ARYSCH01.ARYFUNC (F) INC Y WILDCARD N
```

- Procedure:

## Sample build log based specification batch job

The following is a sample of the build log based specification in batch job.

```
//ARYOPGEN JOB , 'SAMPLE', CLASS=A, MSGCLASS=X,
//          NOTIFY=&SYSUID, REGION=0M
/*JOBPARM S=RS27
/*
//STEP01 EXEC PGM=ARYJOGEN
//STEPLIB DD DISP=SHR, DSN=RSQA . ARY320 . IBMTAPE . SARYLOAD
//DB2PARMS DD DISP=SHR, DSN=RSQA . ARY320 . IBMTAPE . CONTROL
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//CEEDUMP DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//ARYOPT DD *
OBJECT-COLLECTION
  MACHINE RS27
  SSID EB1B
  OWNER PDUSER
  NAME BATCH LBDR SPEC
  REPLACE Y
  DEBUG N
/*
//ARYIN DD *
TS DB0.TS0 INC Y WILDCARD N
/*
//ARYRPOPT DD DISP=SHR, DSN=ARY . TS6077 . ARY9061 . JCLLIB(DEFAULT)
/*
//ARYLBDR0 DD *
<lbr>
  <scan-start-timestamp> 2019-08-14-06.32.00.000000 </scan-start-timestamp>
  <scan-end-timestamp> 2019-08-14-06.32.25.000000 </scan-end-timestamp>
  <use-syslglnx> 0 </use-syslglnx>
</lbr>
/*
//ARYJCARD DD *
//LBDRSCAN JOB , 'SAMPLE', CLASS=A, MSGCLASS=X,
//          NOTIFY=&SYSUID, REGION=0M
/*JOBPARM S=RS27
/*
//ARYLOAD DD DISP=SHR, DSN=RSQA . ARY320 . IBMTAPE . SARYLOAD
//ARYSLIB DD DISP=SHR, DSN=RSQA . ARY320 . IBMTAPE . SARYSLIB
```

## Building recovery plan batch jobs by editing JCL samples

You can build a job in batch to generate recovery plans that can be used to recover the objects in an application profile. You must create the application profile with the required objects and recovery options by using the ISPF interface or the batch utility before running this utility. After the utility has finished, the generated jobs are placed in the data set you specified in the option ARYJCLO.

1. Edit the sample JCL job.
2. Add the following keywords to the ARYOPT DD statement to specify location and name of the application profile for which you will build the recovery plan job.

```
MACHINE LPAR-name
SSID Db2-subsystem-ssid
OWNER application-profile-creator
NAME application-profile-name
```

3. Add the keyword TS, LRSN, or PITDSN to the ARYOPT DD statement to specify the recovery point. Specify TS to indicate that the recovery point will be a timestamp. Specify LRSN to indicate that the recovery point will be LRSN. Specify PITDSN to indicate that the recovery point will be the data set name of an image copy. If a valid copy data set name is specified, its timestamp and logpoint will be used for recovery, the same as if the recovery point were specified with TS or LRSN. If none of these three keywords is specified, the recovery point in time (PIT) will be to current.

**Note:** If the data set specified with PITDSN is a SHRLEVEL CHANGE copy, PIT\_RBA is used as the recovery logpoint. Otherwise, START\_RBA is used.

4. Add one or more PLAN keywords to the ARYOPT DD statement to specify a list of recovery plans. This keyword is optional. If PLAN is not specified only the recovery plan RECOVER will be generated. Each PLAN keyword is on a separate line and should be specified in the order of preference for use. The first matched plan encountered will be used. If PIT=CURRENT then the PLAN option is ignored and only the RECOVER plan is generated. If the specified plan does not exist, the appropriate error message with the list of available plans is issued. An example of a PLAN keyword:

```
PLAN PLAN-REDIRECTED-RECOVERY
```

This following table lists the recovery plans that can used in the PLAN keyword.

*Table 27. Recovery plans that can use the PLAN keyword.*

Recovery plan	Description
PLAN-AUTO	Generate any available plans and use the one having the lowest estimated cost.
PLAN-DSN1COPY	Using DSN1COPY
PLAN-DSN1COPY-AND-LOGONLY	Using DSN1COPY and RECOVER LOGONLY
PLAN-DSN1COPY-OF-IC-AND-REDO	Using DSN1COPY of IC and redo SQL
PLAN-DSN1COPY-OF-IC-AND-UNDO	Using DSN1COPY of IC and undo SQL
PLAN-DSN1COPY-OF-FULLIC-AND-UNDO	Using DSN1COPY of full IC and undo SQL
PLAN-RECOVER-TOCOPY	Using RECOVER TOCOPY
PLAN-RECOVER	Using RECOVER
PLAN-RECOVER-TO-IC-AND-UNDO	Using RECOVER to IC and undo SQL
PLAN-RECOVER-TO-FULLIC-AND-UNDO	Using RECOVER to full IC and undo SQL
PLAN-LOAD	Using LOAD
PLAN-LOAD-FULLIC-AND-REDO	Using LOAD from full IC and redo SQL
PLAN-LOAD-FULLIC-AND-UNDO	Using LOAD from full IC and undo SQL
PLAN-UNDO-SQL	Using undo SQL
PLAN-SLB	Using Restore from System Level Backup
PLAN-SLB-AND-LOGONLY	Using Restore from System Level Backup and RECOVER LOGONLY
PLAN-RECOVER-WITH-BACKOUT	Using RECOVER with BACKOUT
PLAN-DDLONLY	Using DDL only
PLAN-REDIRECTED-RECOVERY	Recover to alternate object and Log Apply
PLAN-ADVANCED-RECOVER	Standard recovery or dropped object recovery  <b>Note:</b> This plan has fewer limitations than Undo/Redo SQL plans.

5. Add the JOBPREFIX keyword to the ARYOPT DD statement to specify a prefix that will be added to the job name for generated JCL (up to 4 characters). By default the prefix ARYJ will be used. An example of the JOBPREFIX keyword:

```
JOBPREFIX RCV
```

6. Add the ARYJCLO keyword to the ARYOPT DD statement to specify the partitioned data set where the generated jobs are saved. This partitioned data set file must be created before the job is run. An example of the ARYJCLO keyword:

```
ARYJCLO PD.USER
```

7. Add the DETAILS keyword to the ARYOPT DD statement to specify the objects for which details should be shown. There are three possible values for this option:

- A (details for all objects)
- U (details for unrecoverable objects only)
- R (details for recoverable objects only).

The default value is U.

Details will be generated only for plans selected in ARYOPT DD. In addition, details will be displayed only if ARYEXPLN DD is allocated. Here is an example of the DETAILS keyword:

```
//ARYOPT DD *
...
PLAN PLAN-ADVANCED-RECOVER
DETAILS Y
/*
//ARYEXPLN DD SYSOUT=*
```

Example output:

```
[R] Database DBNAME1
    ARYJ040I - The object is not eligible for data recovery.

[R] Table space DBNAME2.TSNAME1
    Using Advanced Recover
    ARYJ100I - Estimated number of CPU milliseconds: 6

[U] Table space DBNAME2.TSNAME2
    Using Advanced Recover
    ARYJ089I - Advanced Recover of XML objects requires data sets for XML jobs and XML
    template.
```

Either U or R will be displayed before the fully qualified object name. U means that the object is unrecoverable; R means that object is either recoverable or not eligible for recovery. In the above example, the first object is not eligible for recovery, the second is recoverable, and the third is unrecoverable.

8. You must add job card information as a keyword to the ARYJCARD DD statement. An example of the job card keyword is:

```
//ARYJOB JOB , 'Db2 RECOVERY EXPERT',MSGCLASS=H,
// REGION=0M,NOTIFY=&SYSUID
/*JOBPARM SYSAFF=RS27
```

9. Run the job.
10. After the job is run, the generated jobs will be in the partitioned data set that you specified in the ARYJCLO keyword.

## Sample Build Recovery Plan in Batch job

The following is a sample of the Build Application Profile in Batch job.

```
//ARYRPGEN JOB PDUSER,CLASS=A,NOTIFY=&SYSUID,
//          MSGCLASS=X,REGION=0M
/*JOBPARM SYSAFF=RS27
//*****
// SET RGN=0M
// SET TME=1440
// SET PRM='RPTOPTS(OFF),POSIX(ON),ENVAR(_CEE_ENVFILE=DD:ENV) / '
//*****
//STEP01 EXEC PGM=ARYJRGEN,REGION=&RGN,TIME=&TME,PARM='&PRM'
```



```

//ENV DD *
XRPL_USP_PRF_PJOBS=255
/*
//STEPLIB DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.SARYLOAD
//ARYLOAD DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.SARYLOAD
//ARYOPT DD *
MACHINE RS27
SSID EA1A
OWNER PDUSER
NAME BATCH APPLICATION PROFILE
JOBPREFIX RCV
PLAN PLAN-REDIRECTED-RECOVERY
ARYJCLO PDUSER.JCLLIB
/*
//ARYJCARD DD *
//ARYJOB JOB , 'Db2 RECOVERY EXPERT',MSGCLASS=H,
// REGION=0M,NOTIFY=&SYSUID
/*JOBPARM SYSAFF=RS27
/*
//ARYMLIB DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.SARYMENU
//ARYSLIB DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.SARYSLIB
//Db2PARMS DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.CONTROL
//ARYCFG DD *
<agent-config>
<trace-csi>>false</trace-csi>
<trace-xml>>false</trace-xml>
<trace-sql>>false</trace-sql>
<trace-ifi>>false</trace-ifi>
<trace-db2-attachment>>false</trace-db2-attachment>
</agent-config>
//SYSOUT DD SYSOUT=*,LRECL=134
//SYSPRINT DD SYSOUT=*,LRECL=134
//SYSUDUMP DD SYSOUT=*,LRECL=134
//CEEDUMP DD SYSOUT=*,LRECL=134
//XDCCDF DD DUMMY
//ARYSBACK DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.SYSBACK
//ARYSBSSD DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.SYSBACK.SSIDS
//ARYSBVOL DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.SYSBACK.VOLS
//ARYBPROF DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.PROFILES
//ARYBPMAP DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.PROFILE.MAPS
//ARYBPCAT DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.PROFILE.CATS
//ARYBOFFL DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.OFFOPTS
//ARYBREPT DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.BREPORT
//ARYBCPRF DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.CPROFILE
//ARY#RBA DD
DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.RBA

```

## Building recovery plan batch jobs in ISPF

You can build a batch job interactively, using ISPF panels to generate recovery plans that can be used to recover the objects in an application profile. You must create the application profile with the required objects and recovery options by using the ISPF interface or the batch utility before performing the steps below. The generated jobs are placed in the data set you specified in the option ARYJCLO.

1. From the main menu, select **Application Operations**.
2. Select **Application Profiles**.
3. Select an Application Profile by filling in the fields in the **Enter Application Profile Selection Criteria** panel.
4. From the **Application Profile Display** panel, select the profile you want to use as the basis for a recovery plan. Enter **P** next to the profile name, then press ENTER.
5. At the **Generate Recovery Plans** panel, specify **B** for **Generation Method**, to generate the plan via ISPF instead of by editing the sample JCL. This is a useful option if you have application profiles with large numbers of objects and you want to avoid errors caused by timeouts or lack of memory. It also lets you generate recovery plans in parallel. For more information on the **Generate Recovery Plans** panel, see “Generating object recovery plans” on page 334. For information on redirected recovery, see “Performing redirected recovery” on page 342. When you have completed the settings on the **Generate Recovery Plans** panel, press ENTER.
6. If you set the **Redirected Recovery** field to **N**, the **Batch Plans Generation Options** panel lets you specify one or more recovery plans to include in your batch job. Enter **S** next to each plan you want to

include. You can use the **ALL**, **CLEAR**, and **DEFAULT** commands to select all plans, clear all selections, or choose a default group of plans to include in your recovery job.

**Note:** To make it convenient, multiple plans are pre-selected. It is recommended to include these plans as they cover most of the recovery scenarios.

The **Show Object Details** option lets you specify the objects for which details should be shown. There are three possible values for this option:

- A (details for all objects)
- U (details for unrecoverable objects only)
- R (details for recoverable objects only)

The default value is U.

If the **Redirected Recovery** option was set to **Y**, then the only plan generated in the JCL will be **PLAN-REDIRECTED-RECOVERY**, and the **Batch Plans Generation Options** panel is not displayed. There may be more than one plan added to the generated JCL job for each plan you select in the panel. For example, selecting **RECOVER** will generate **PLAN-RECOVER** and **PLAN-RECOVER-TOCOPY** entries. For more information on these options, see “Understanding recovery plans” on page 545. Fill in the **Batch Plans Generation Options** panel and press ENTER.

7. After the job is run, the generated jobs will be in the partitioned data set that you specified in the ARYJCLO keyword.

## Build Jobs Options panel

The **Build Jobs Options** panel lets you specify options for batch jobs.

From this panel, you specify the data set, member, and job cards for a recovery batch job. There are two sections on this panel:

- **Options for the batch utility**
- **Options for the recovery JCL**

```
RCVYXPRT V3R2 ----- Build Jobs Options ----- 2019/09/27 03:50:07
Command ==>
-----
Creator: USERID      Name: TESTPROF                      SSID: EA1A
-----
Options for the batch utility
Build job in Data set  USERID.ARY.CNTL
                    Member  ARYMEM

Job Cards:
==> //ARYJOB  JOB USERID,CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),
==> // USER=&SYSUID,NOTIFY=&SYSUID,REGION=0M
==> /*
==> /*

Options for the recovery JCL
Build job in Data set  USERID.ARY.CNTL
Use job name as member name  Y (Yes/No)
                    Use member prefix
                    Generate SYSAFF  N (Yes/No)

Job Cards:
==> //ARYJOB  JOB USERID,CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),
==> // USER=&SYSUID,NOTIFY=&SYSUID,REGION=0M
==> /*
==> /*
```

### Options for the batch utility

The **Options for the batch utility** section specifies the data set, member and job cards for a batch job. This set of options is used by the ISPF client for a JCL job that runs the batch utility.

### Fields

These fields let you specify the data set, member, and job cards:

- In the **Build job in Data set** field, specify the fully qualified data set name where you want to save the generated job. This data set must exist and can be sequential or a partitioned data set (PDS).
- If the data set is a PDS, enter a member name in the **Member** field. If the member does not exist, Db2 Recovery Expert creates it.
- In the (several) lines of **Job Cards**, specify the job card information.

## Options for the recovery JCL

The **Options for the recovery JCL** section specifies the data set, member name and prefix, and job cards, and lets you generate SYSAFF on the job card. This set of options is used by the batch utility (JOBPREFIX, ARYJCLO and USEMEMBER statements) for generated recovery JCL jobs.

### Fields

- **Build job in Data set:** Specify the name of a PDS data set name in which the job will be built.
- **Use job name as member name:** Specify **Y** to use generated job names as PDS member names. When saving generated jobs as new members in a PDS, member names will be the same as the generated job names. Any existing members with these names will be overwritten. Specify appropriate job names to avoid possible loss of necessary data in existing members. Specify **N** to generate member names using the member prefix in the **Use member prefix** field.
- **Use member prefix:** Specifies the prefix that will be used with a unique, automatically generated 3-digit suffix to create the new member name. The suffix consists of two parts: group number (1 digit, counting from 0); and job number in a group (two digits). For example, generated names may be:
  - PREFX001 - 1st job of group 0
  - PREFX101 - 1st job of group 1
  - PREFX102 - 2nd job of group 1
  - PREFX201 - 1st job of group 2 and so on.

Group number may be used to submit jobs manually in the correct order, because submitting the whole group automatically is not supported in batch. This field is ignored if you specify **Y** in the **Use job name as member name** field.
- **Generate SYSAFF:** Specify **Y** to include SYSAFF on the job card. Including SYSAFF on the job card ensures that the job runs on the same system (LPAR) as the target Db2 system to which the objects will be recovered.
- In the (several) lines of **Job Cards**, specify the job card information.

## Recovering Db2 objects and IMS applications

---

The coordinated application recovery feature of Db2 Recovery Expert and IMS Recovery Expert helps you to recover the Db2 objects and IMS databases that are used in an application to the same consistent point in time.

Consistent in this case means that there are no updates or transactions in-flight to any object or database in the application. Identifying times where all the Db2 objects and IMS databases used by the application are in a consistent state can be a difficult task especially in a high availability environment.

Coordinated application recovery streamlines the process of recovering applications that use both Db2 objects and IMS databases. You can use the coordinated application recovery feature to analyze the logs in both Db2 and IMS to find quiet times for the objects and databases in an application; provide the times when the objects and databases are consistent across both IMS and Db2; and build the job that can be used to recover the application.

Coordinated application recovery involves the following tasks:

- Connect Db2 Recovery Expert and IMS Recovery Expert.

- Use Db2 Recovery Expert to create an application profile that can be used to recover the Db2 objects that are used in the application.
- Use IMS Recovery Expert to create a job profile that can be used to recover the IMS databases that are used in the application.
- Use either Db2 Recovery Expert or IMS Recovery Expert to create a coordinated recovery profile that references the Db2 application profile and the IMS job profile.
- Associate the Db2 application profile with the coordinated recovery profile.
- Associate the IMS job profile with the coordinated recovery profile.
- Run a log analysis job to discover intersecting quiet times for the Db2 objects and the IMS applications.
- Build the coordinated recovery job.

## Connecting Db2 Recovery Expert and IMS Recovery Expert

For each coordinated recovery profile that you build, you can specify that Db2 Recovery Expert connect to a default or a specific instance of IMS Recovery Expert.

Db2 Recovery Expert links to IMS Recovery Expert by using the CLIST information that is specified in the user settings option.

A default value for the CLIST connection information to IMS Recovery Expert is specified during customization. If you want Db2 Recovery Expert to connect to a different instance of IMS Recovery Expert, you must specify overriding CLIST information to use for the current session.

1. Specify 0 on the Db2 Recovery Expert main menu and press Enter. From the **Administration Menu** panel specify 4 in the command line. The **IMS CLIST Information** panel opens.

```
RCVYXPRT V3R2  ----- IMS CLIST Information ----- 2021/01/13 12:56:12
Option  ==>

Enter or update IMS Recovery Expert for z/OS CLIST information:

CLIST library name      ==> XYZ.User.CLIST
CLIST member name      ==> BSYWK22
```

2. In the **CLIST library name** field, specify the name of the library that contains the CLIST member for the specific instance of IMS Recovery Expert.
3. In the **CLIST member name** field, specify the CLIST member name for the instance of IMS Recovery Expert.
4. Press Enter.

For the duration of the current session, Db2 Recovery Expert uses the specified CLIST information to connect to IMS Recovery Expert.

## Setting up and managing the coordinated recovery process

From the **Coordinated Recovery Profile Display** panel you are able to perform all the functions that apply to coordinated application recovery.

Db2 Recovery Expert and IMS Recovery Expert use a coordinated recovery profile to identify the Db2 objects and IMS databases that need to be recovered. You identify the Db2 objects that need to be recovered by associating a Db2 application profile to the coordinated recovery profile and you identify the IMS databases that need to be recovered by associating an IMS job profile to the coordinated recovery profile.

The coordinated recovery profile information is saved into a VSAM repository (CPROFILE) that is shared between both products regardless of whether they share the rest of the repository data sets. Each coordinated recovery profile can access the CPROFILE data set to read and update coordinated recovery profile information. The data set is allocated in both IMS and Db2 CLISTs and in the Db2 agents during customization.

The first step in the coordinated recovery process is to open the Coordinated Recovery Profile Display panel. All the coordinated recovery profiles that have been created are listed. From the Coordinated Recovery Profile Display panel you can perform the following functions:

- Update coordinated recovery profiles
- Create coordinated recovery profiles
- View existing coordinated recovery profiles
- Delete coordinated recovery profiles
- Rename coordinated recovery profiles
- Produce a report of Db2 object and IMS job quiet times
- Build a coordinated recovery job

1. Specify 2 for Application Operations on the Db2 Recovery Expert for z/OS main menu and press Enter.

The **Application Operations Menu** panel opens. Specify 3 for Coordinated Application Profiles and press Enter. The **Enter Coordinated Recovery Profile Selection Criteria** panel opens.

```

Enter Coordinated Recovery Profile Selection Criteria

Profile Like      *
Creator Like     *
```

2. You use the **Enter Coordinated Recovery Profile Selection Criteria** panel to identify the profiles that will be listed on the **Coordinated Recovery Profile Display** panel. You can list all the profiles by using wildcard characters in the **Profile Like** and **Creator Like** fields. The asterisk (\*) wildcard character returns all the profiles for the field where it is specified. You can use an asterisk (\*) for one or all fields. To limit the profiles that are listed, enter a specific profile name or profile creator name in the **Profile Like**, and **Creator Like** fields. Press Enter.

The **Coordinated Recovery Profile Display** panel opens. The following panel shows the Coordinated Recovery Profile Display panel is displayed when you access it for the first time:

```

RCVYXPRT V3R2  ----- Coordinated Recovery Profile Display ----- 2021/01/13 12:56:12
Option  ==>                               Scroll ==>

Line Commands:  U - Update  C - Create  V - View  D - Delete
                R - Rename  B - Build Recov Job  Q - Quiet Time Report

-----
Profile Like   *
Creator Like   *
----- Row 1 of 1  >

Cmd  Name                               Creator  Updt
C    Press Enter to Create Profile

***** Bottom of Data *****

-----
| ARYR031I - No Profiles were found that match your selection criteria. |
| Press enter to create a new profile or change the selection criteria. |
-----
```

3. You can use the **UP** and **DOWN** commands (PF7 and PF8) to scroll through the list when there are more profiles than can be displayed on one panel. The following fields are displayed on the panel:

**Profile Like**

This field displays the coordinated recovery profile name or mask that you entered on the **Enter Coordinated Recovery Profile Selection Criteria** panel. You can change the name or mask, press Enter, and the list of coordinated recovery profiles is updated based on the criteria that you specified.

**Creator Like**

This field displays the coordinated recovery profile creator name or mask that you entered on the **Enter Coordinated Recovery Profile Selection Criteria** panel. You can change the name or mask, press Enter, and the list of coordinated recovery profiles is updated based on the criteria that you specified.

**Row x of y**

Displays the current row and the total number of rows in the profile list. Adjacent to this field is a scroll indicator: > indicates scroll right for more data; < > indicates scroll left or right for data; < indicates scroll left for more data. A plus sign (+) indicates scroll down for more data; a minus sign (-) indicates scroll up for more data.

**Cmd**

The **Cmd** line next to each profile allows you to use the following line commands:

- U to update a coordinated recovery profile
- C to create a coordinated recovery profile
- V to view a coordinated recovery profile
- D to delete a coordinated recovery profile
- R to rename a coordinated recovery profile
- B to build a coordinated recovery job
- Q to run a log analysis job to discover Db2 object and IMS application quiet times

**Name**

The name of the coordinated recovery profile.

**Creator**

The user ID of the person who created the coordinated recovery profile.

**Updt**

This column indicates how users other than the profile creator may use the profile.

**U(pdate)**

Allows other users to update the profile.

**V(iew)**

Allows other users to view but not update the profile.

**N(o access)**

Prevents other users from viewing or updating the profile.

**Description**

An optional description that may have been entered when the coordinated recovery profile was created.

**Last Upd Userid**

The user ID of the person who last updated the coordinated recovery profile.

**Last Updated Timestamp**

The time that the coordinated recovery profile was last updated.

**Created Userid**

The user ID of the person who created the coordinated recovery profile.

**Created Timestamp**

The time that the coordinated recovery profile was created.

4. Enter one of the following commands in the **Cmd** line next to a profile:

- To create a coordinated recovery profile, specify C in any **Cmd** line and press Enter. If no profiles are listed, you can create a profile by pressing Enter. The **Create Coordinated Recovery Profile** panel opens. From this panel you name the coordinated recovery profile, associate a Db2 application profile, and associate an IMS job profile. See [“Creating coordinated recovery profiles” on page 387](#) for more information.
- To update a coordinated recovery profile, specify U in the **Cmd** line next to the profile that you want to update and press Enter. The **Update Application Profile** panel opens. From this panel you can add a Db2 application profile or an IMS job profile if you have not done so, or you can change the Db2 application profile or IMS job profile that have been associated with the coordinated recovery profile. See [“Updating the coordinated recovery profile” on page 389](#) for more information on updating coordinated recovery profiles.
- To view the details of a coordinated recovery profile, specify V in the **Cmd** line next to the profile that you want to view and press Enter. The **View Coordinated Recovery Profile** panel opens. You can use this line command to view one of your own profiles or one created by another user if the profile has a share option of view or update. See [“Viewing a coordinated recovery profile” on page 390](#) for more information on viewing coordinated recovery profiles.
- To delete a coordinated recovery profile, specify D in the **Cmd** line next to the profile that you want to delete and press Enter. You can use this line command to delete one of your own coordinated recovery profiles or one created by another user if the profile has a share option of update. See [“Deleting a coordinated recovery profile” on page 391](#) for more information on deleting coordinated recovery profiles.
- To rename a coordinated recovery profile, specify R in the **Cmd** line next to the profile that you want to rename and press Enter. The **Rename Coordinated Recovery Profile** panel opens. You can use this line command to change the name or the description in one of your own coordinated recovery profiles or one created by another user if the profile has a share option of update. See [“Renaming a coordinated recovery profile” on page 391](#) for more information on renaming coordinated recovery profiles.
- To produce a quiet time analysis for the coordinated recovery profile, specify Q in the **Cmd** line next to the profile and press Enter. The **Log Analysis** panel opens. See [“Performing quiet time analysis for a coordinated recovery” on page 392](#) for more information on log analysis.
- To build the coordinated recovery jobs, specify B in the **Cmd** line next to the profile and press Enter. The **Recovery Point Selection** panel opens. See [“Building the coordinated recovery jobs” on page 394](#) for more information.

## Creating coordinated recovery profiles

You create a coordinated recovery profile from the **Coordinated Recovery Profile Display** panel.

After creating the coordinated recovery profile, you must associate a Db2 application profile and an IMS job profile to provide the information necessary to recover the Db2 objects and IMS databases that are used within the application that you are recovering.

1. From the **Coordinated Recovery Profile Display** panel specify a **C** in any **Cmd** line and press Enter.

The following panel is displayed:

```
Enter New Coordinated Recovery Profile Options
Creator      USERID
Profile Name TestIMSDb2
Description
Share Option U (Update, View only, No access)
```

2. The **Creator** field is automatically filled with your user ID as the profile creator. To create the profile with a different user ID, type the new ID in this field.
3. In the **Profile Name** field, specify a unique name for the coordinated recovery profile.
4. In the **Description** field, specify a description of the coordinated recovery profile
5. In the **Share Option** field, specify what type of access other users will have to this profile. Specify **U** to allow other users to update the profile. Specify **V** to allow other users to view but not update the profile. Specify **N** to deny other users access to the profile.
6. Press Enter.

The **Add Profiles to Coordinated Profile** panel opens. From this panel you associate the Db2 application profile and the IMS job profile with the coordinated recovery profile.

## Associating a Db2 and an IMS profile to the coordinated recovery profile

You must associate one Db2 application profile and one IMS job profile with the coordinated recovery profile.

The Db2 application profile that you associate with the coordinated recovery profile contains the information required to recover the Db2 objects used by the application. The IMS job profile that you associate with the coordinated recovery profile contains the information required to recover the IMS databases used by the application. You can associate only one Db2 application profile and one IMS job profile with a coordinated recovery profile.

**Note:** Once a Db2 application profile or IMS job profile is associated with a coordinated recovery profile, it cannot be associated with another coordinated recovery profile.

1. The **Add Profiles to Coordinated Profile** panel opens automatically as the second step of creating a coordinated recovery profile.

The **Add Profiles to Coordinated Profile** panel also opens when you specify A in the command line next to a coordinated recovery profile from the **Update Coordinated Recovery Profile** panel.

```
----- Add Profiles to Coordinated Profile -----
Add Db2 Profile _ (Yes/No)
Add IMS Profile _ (Yes/No)
Press Enter to process or PF3 to cancel.
```

2. To associate a Db2 application profile with the coordinated recovery profile, specify Y in the **Add Db2 profile** field. If you have already associated a Db2 application profile to this coordinated recovery profile, this field is not available. Press Enter. The **Enter Application Profile Selection Criteria** panel opens.
  - a) Specify the SSID location for the Db2 system where the objects reside.
  - b) Use the **Name Like** and the **Creator Like** fields to filter the objects that are listed on the **Application Selection Profile** panel. Press Enter.
  - c) The Application Profile Selection panel opens. From this panel select the Db2 application profile that you want to associate with the coordinated recovery profile. From this panel you can also create, delete, update, rename and view Db2 application profiles. See [“Displaying profiles and specifications” on page 300](#) for more information on how to perform these functions. Press Enter.
  - d) Because you can add only one type of profile at a time to the coordinated recovery profile, after adding a Db2 application profile control returns to the **Update Coordinated Recovery Profile** panel. If you have not associated the IMS job profile, you start the process from the **Update Coordinated Recovery Profile** panel.



3. To associate an IMS job profile with the coordinated recovery profile, specify Y in the **Add IMS profile** field. If you have already added an IMS object recovery profile to this coordinated recovery profile, this field is not available. Press Enter. The **Enter Applications Profile Like to Display** panel opens.
  - a) Use the **Profile Like**, **Creator Like** and the **SSID Like** fields to filter the objects that are listed on the **Application Profile Selection** panel. Press Enter.
  - b) The **Application Profile Selection** panel opens. From this panel select the IMS job profile that you want to associate with the coordinated recovery profile. From this panel you can also create, delete, update, rename and view IMS application profiles. See the section on working with IMS job profiles in the *IMS Recovery Expert for z/OS User Guide* for more information. Press Enter.
  - c) Because you can only add one type of profile at a time to the coordinated recovery profile, after adding an IMS profile control returns to the **Update Coordinated Recovery Profile** panel. If you have not associated the Db2 application profile, you start the process from the **Update Coordinated Recovery Profile** panel.
4. Press F3 to return to the **Coordinated Recovery Profile Display** panel.

## Updating the coordinated recovery profile

From the **Update Coordinated Recovery Profile** panel you can associate a Db2 application profile or IMS job profile to the coordinated recovery profile if one has not already been assigned. From this panel you can also change the Db2 application profile or IMS job profile that has been selected, or disassociate either of the profiles from the coordinated recovery profile.

1. The **Update Coordinated Recovery Profile** panel opens automatically after you associate either a Db2 application profile or an IMS job profile.

You can also open the **Update Coordinated Recovery Profile** by specifying a U in the **Cmd** line next to a coordinated recovery profile that is listed in the **Coordinated Recovery Profile Display** panel.

```
RCVYXPRT V3R2  ----- Update Coordinated Recovery Profile  ----- 2021/01/13 12:56:12
Command  ===>                                           Scroll  ===>

Line Commands: A - Add  D - Delete
-----
Creator: USERID      NAME: TESTPROF
Share Option N (Upd, View, No)      Description:
-----

```

Cmd	Type	SSID	Profile Name	Profile Creator	LPAR
---	IMS	IBA2	ARYDB024	USERID	
---	Db2	EBA1	ARYDB025	USERID	RS27

2. The fields that are displayed for each profile are:

### Creator

Specifies the user ID of the person who created the coordinated recovery profile.

### Name

Specifies the name of the coordinated recovery profile.

### Type

Identifies whether the profile is an IMS job profile or a Db2 application profile.

### SSID

The Db2 or IMS subsystem ID for which the IMS job or Db2 application profile was created.

### Profile Name

Specifies the name of the IMS job profile or the Db2 application profile.

### Profile Creator

Specifies the user ID of the person who created the IMS job profile or the Db2 application profile.

## LPAR

Identifies the LPAR that is associated with the IMS or Db2 subsystem.

3. You can modify the **Share option** for the coordinated recovery profile. The current value is displayed. Changing the value to **Upd** allows all users to update the profile. Changing the value to **View** allows all users to view but not update the profile. Changing the value to **N** prevents users other than yourself to update or view the profile.
4. Specify A in the **Cmd** line to add either a Db2 application profile or an IMS job profile. Press Enter. The **Add Profiles to Coordinated Profile** panel opens. Follow the process of adding a Db2 application profile or an IMS job profile. When all selections are made, control is returned to the **Update Application Profile** panel.
5. Specify D in the **Cmd** line of the Db2 application profile or an IMS job profile that you want to disassociate from the coordinated recovery profile. Press Enter. The Db2 application profile or an IMS job profile is disassociated from the coordinated recovery profile. The delete command only disassociates the Db2 application profile or an IMS job profile from the coordinated recovery profile, it does not delete the profile from the repository. The disassociated profile will still be available from either the Db2 application profile or IMS job profile display.
6. To change the Db2 application profile or IMS job profile, first delete the profile from the coordinated recovery profile, then add the new profile.
7. Press F3 to return to the Coordinated Recovery Profile Display panel.

## Viewing a coordinated recovery profile

From the **View Coordinated Recovery Profile** panel you can view the IMS job profile and the Db2 application profile that are associated with a coordinated recovery profile. You can view coordinated recovery profiles that you created, regardless of the share option. You can also view a profile created by another user if the profile has a share option of view or update.

1. From the **Coordinated Recovery Profile Display** panel specify a V in the **Cmd** line next to the profile that you want to view and press Enter.

The **View Coordinated Recovery Profile** panel opens.

```
RCVYXPRT V3R2 ----- View Coordinated Recovery Profile ----- 2021/01/13 12:56:12
Command ===> Scroll ===>

-----
Creator: USERID      NAME: TESTPROF      SSID EA1A
Share Option: N    (Upd, View, No)  Description:
-----
  Cmd   Type      SSID      Profile      Profile      LPAR
  -     IMS       IAA       ABCD         USERID
  -     Db2       RS22     ARYD         USERID
```

2. The fields that are displayed for each application profile listed are:

### Creator

Specifies the user ID of the person who created the coordinated recovery profile.

### Name

Specifies the name of the coordinated recovery profile.

### Share Option

The current value of the share option is displayed. The value of **U** specifies that all users can update the profile. A value of **V** specifies that all users can view but not update the profile. A value of **N** specifies that no user other than you as the creator can update or view the profile.

### Description

Displays a description of the profile that was added when the profile was created.

**Type**

Identifies whether the profile is an IMS job profile or a Db2 application profile.

**SSID**

The Db2 or IMS subsystem ID for which the IMS job or Db2 application profile was created.

**Profile Name**

Specifies the name of the IMS job profile or the Db2 application profile.

**Profile Creator**

Specifies the user ID of the person who created the IMS job profile or the Db2 application profile.

**LPAR**

Identifies the LPAR that is associated with the IMS or Db2 subsystem.

3. Press F3 to return to the **Coordinated Recovery Profile Display** panel.

## Renaming a coordinated recovery profile

You can rename coordinated recovery profiles that you created, regardless of the share option. You can also rename a profile that was created by another user if the profile has a share option of update.

1. From the **Coordinated Recovery Profile Display** panel specify R in the **Cmd** line next to the coordinated recovery profile that you want to rename.

The **Rename Coordinated Recovery Profile** opens.

```

                                Rename Coordinated Recovery Profile

Existing Profile:

  Creator      TUSER
  Profile Name TEST2
  Description

New Profile:

  Creator      TUSER
  Profile Name TEST2
  Description
  
```

2. The **New Profile Creator** field is automatically filled with the user ID that created the profile. If you have been granted permission, you can change the user ID in the **New Profile Creator** field. Permission to change the creator user ID is granted using the ADMIN\_USERID parameter in the SYSPARM library.
3. To rename the profile, specify a new name in the **New Profile Name** field.
4. To change the profile description, specify a new description in the **New Profile Description** field.
5. Press Enter.  
The profile is renamed. Control is returned to **Coordinated Recovery Profile Display** panel.
6. To cancel the rename, press PF3 on the **Rename Coordinated Recovery Profile** panel and return to the **Coordinated Recovery Profile Display** panel.

## Deleting a coordinated recovery profile

You can delete coordinated recovery profiles that you created regardless of the share option. You can also delete a coordinated recovery profile that was created by another user if the profile has a share option of update.

1. From the **Coordinated Recovery Profile Display** panel specify D in the **Cmd** line next to the coordinated recovery profile that you want to delete and press Enter.

The following panel is displayed to confirm profile deletion:

```

Confirm Deletion of Profile

Confirm delete of profile TWUSR.TEST2

Delete N (Yes/No)

```

- To delete the profile, specify Y in the **Delete** field and press Enter. A message appears to confirm the deletion. Control returns to the **Coordinated Recovery Profile Display** panel.
- To cancel the deletion, specify N in the **Delete** field and press Enter or press PF3. Control returns to the **Coordinated Recovery Profile Display** panel.

## Performing quiet time analysis for a coordinated recovery

From the **Log Analysis** panel you can build a job that when run searches the Db2 and IMS logs for periods of time when both the Db2 objects and the IMS database have no activity.

The Log Analysis job coordinates and displays the quiet times that you can use to recover the Db2 objects and the IMS database to a consistent point in time. You only need to build and run the Log Analysis job if you are interested in using intersecting quiet times for Db2 objects and IMS databases recovery points.

- From the **Coordinated Recovery Profile Display** panel specify Q in the **Cmd** line next to the coordinated recovery profile for which you want to look for Db2 object and IMS job quiet times. The **Log Analysis** panel opens.

```

RCVYXPRT V3R2 ----- Log Analysis ----- 2021/01/13 12:56:12
Command ==>>
-----
Creator: USERID      NAME: TESTPROF                                     SSID EA1A
-----
Log Range Type              ==> T (Preceding/Timestamp)

Preceding Options:
Preceding Type              ==> H (Hours/Minutes)
Preceding Value             ==> 01 (00-99)
Use database location time  ==> Y (Yes/No)

Timestamp Options
Beginning Timestamp         ==> 2021 - 11 - 23 - 14 : 50 : 56
End Timestamp               ==> 2021 - 11 - 23 - 15 : 50 : 56

Minimum Quiet Time         ==> 00 : 02 : 00 (hh:mm:ss)

```

- In the **Log Range Type** field specify a time range within which Db2 Recovery Expert and IMS Recovery Expert will search the logs for the Db2 objects and IMS database quiet times. Specify P to indicate that a time span preceding the current time identifies the start and stop points in the log. Specify T to indicate that a time value identifies the start and stop points in the log. By default the time range is set to **Preceding** by one hour based on the local client time.
- If you selected a **Log Range Type** of P you specify the time span details in the following **Preceding Options** fields:
  - In the **Preceding Type** field, specify whether the preceding time span is in hours (H) or minutes (M).
  - In the **Preceding Value** field, specify the number of hours or minutes in the time span. You can specify a value from 0 to 99.
  - In the **Use database location time** field, specify whether the time span is based on the time where the database is located or the local client time. Specify Y to use the local time for the database as the base time. Specify N to use the local client time as the base time.
- If you selected a **Log Range Type** of T you specify the time span details in the following **Timestamp Options** fields:

- a) Specify the start time for the range in the **Beginning Timestamp** field in the format of YYYY - MM - DD - HH : MM : SS.
  - b) Specify the end time for the range in the **End Timestamp** field in the format of YYYY - MM - DD - HH : MM : SS.
5. In the **Minimum Quiet Time** field, specify the minimum duration for a quiet time to be included in the output or accept the default value which is 00:02:00 (two minutes).
  6. After specifying the time range for the analysis, press Enter. All the fields are validated and if they validate successfully the **Build Job** panel opens. You can choose to edit or run the log analysis job from the **Build Job** panel.

## Building the quiet time analysis job

Use these steps to build a quiet time analysis job that will find quiet times for the objects in the Db2 application profile as well as for the databases that are in the IMS job profile.

1. From the Coordinated Recovery Profile Display panel, specify Q next to the coordinated recovery profile for which you want to perform a quiet analysis. The Log Analysis panel opens. Specify the options to use for the quiet time analysis. Press Enter.

The **Build Job** panel is displayed.

```

Build Job for TUSER.K82B - TEST

Edit Generated Job      Y          (Yes/No)

Build job in Dataset   TUSER.CRPQT.TEST
Member                 TESTCRP

Job Cards:
==> //OJOB CRD JOB TUSER,CLASS=A,NOTIFY=&SYSUID
==> //*
==> //*
==> //*

Press ENTER to process or PF3 to Cancel

```

2. In the **Edit Generated Job** field specify whether you want to view the generated job JCL in an ISPF editor before saving and running the job. Specify Y to view the job in an ISPF edit session. Specify N to bypass viewing the generated job JCL.
3. In the **Build job in Dataset** specify the fully qualified data set name (without quotation marks) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, enter a member name in the **Member** field. If the member does not exist, Db2 Recovery Expert creates it.
4. In the **Job Cards** field specify a valid job card for your site.
5. Press Enter.

One of the following results occurs:

- If you selected to view the job, an ISPF panel containing the job JCL opens. You can use the ISPF editor to make your required changes. When you have finished editing, press Enter and the job is saved in the data set that you specified. Control returns to the **Coordinated Recovery Profile Display** panel.
- If you selected not to view the job, it is placed directly in the data set that you specified and control returns to the **Coordinated Recovery Profile Display** panel.

Once saved in the specified data set, you can choose to run the job at your convenience by submitting the job from an edit session or inserting the job into your scheduler.

## Building the coordinated recovery jobs

After creating the coordinated recovery profile that includes a Db2 application profile and an IMS job profile and optionally running a log analysis to find quiet times, you must build a Db2 object recovery job and an IMS database recovery job that in conjunction will be used to perform the coordinated recovery.

The following steps outline the process of building the coordinated recovery jobs:

- Select a common recovery point for both the Db2 objects and the IMS databases
- Generate the Db2 recovery plans
- Select the Db2 recovery plan
- Build and run the Db2 recovery job
- Build and run the IMS recovery job

### Selecting the recovery point

The first step in building the coordinated recovery jobs is to select a consistent point in time for both the Db2 objects and the IMS databases that can be used as the recovery point.

1. From the **Coordinated Recovery Profile Display** panel specify **B** in the **Cmd** line next to the coordinated recovery profile for which you want to build the recovery jobs.

The **Recovery Point Selection** panel opens.

```
RCVYXPRT V3R2  ----- Recovery Point Selection  ----- 2021/01/13 12:56:12
Option  ==>

Line Commands:  S - Select Recovery Point

-----
Creator: USERID      NAME: CRPROF
-----
Cmd  Start timestamp                End Timestamp
-   Current
-   User Timestamp
-   2021-09-21-03.12.57.000000      2021-09-21-03.13.37.000000
-   2021-09-21-03.14.03.000000
2021-09-21-03.14.43.000000
```

2. To select a recovery timestamp specify S next to one of the following recovery point types:
  - Select **Current** to specify that recovery will be to the current point, meaning the time when the recovery jobs are run. A confirmation panel opens. When a coordinated recovery to current is performed the Db2 and IMS recovery jobs are generated with the job step to start the databases after performing the recovery commented out. After completion of the Db2 and IMS recoveries, you will edit the JCL to remove the comments from the steps of the job to start the Db2 and IMS databases and resubmit the job to start the databases. Do not start the recovered databases until both recovery jobs complete successfully. Specify **Y** in the **Confirm** field to indicate that you understand the message and you want to proceed with the build process. Specify **N** to return to the **Select Recovery Point** panel to choose another type of recovery point.
  - Select **User Timestamp** to specify a timestamp for the recovery. Press Enter. The **Select Recovery Timestamp** panel opens. Specify the timestamp to which you want to recover. The format of the timestamp that you enter is **YYYY-MM-DD-HH:MM:SS:MMMMMM**.
  - Quiet Time range - If you ran a log analysis for the coordinated recovery profile and any quiet times were identified these ranges are available for selection. Each quiet time range that was discovered is displayed as a start timestamp **YYYY-MM-DD-HH:MM:SS:MMMMMM** and an end timestamp in the same format. If you did not run log analysis no quiet time ranges are displayed.
3. Press Enter.

The **Generate Db2 Recovery Plans** panel opens.

## Generating the Db2 object recovery plans

Db2 Recovery Expert generates one or more recovery plans that you can select from to recover the Db2 objects that have been included in the coordinated recovery profile.

The way that the recovery jobs are generated for Db2 objects differs from how recovery jobs are generated for IMS databases. Db2 Recovery Expert does all the analysis on the different recovery options from the user interface and then generates the JCL for the plan that you select. IMS Recovery Expert determines the way to recover the databases at execution time based on the recovery options defined in the IMS job profile. For a coordinated recovery, you first generate the Db2 object recovery plans and select one to use to build the Db2 object recovery job. You then build the IMS database recovery job.

**Note:** If you are recovering a dropped object that is part of an implicit table space, Db2 Recovery Expert issues a warning during recovery plan generation to let you know the ZPARM parameter IMPDSDEF must be set to YES before running the recovery job. This ZPARM parameter can be dynamically changed with the Db2 SET SYSPARM command.

1. The **Generate Recovery Plans** opens automatically after you select a recovery point from the **Select Recovery Point** panel.

```
RCVYXPRT V3R2 ----- Generate Recovery Plans ----- 2021/01/13 12:56:12
Command ==>
-----
Creator: USERID      NAME: TESTPROF                      SSID EA1A
-----
Update Recovery Options ==> N (Yes/No)

The chosen coordinated recovery point is listed below. You can press
Enter to continue or enter "Y" for 'Update Recovery Options' to display
or change recovery options.

Recovery Point          ==> 1 (1-Current, 2-Timestamp)
Recovery Timestamp      ==> _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
```

2. To update the recovery options for the Db2 application profile, specify Y in the **Update Recovery Options** field. Press Enter.

The **Recovery Options** panel opens. Edit the options that you want to change. Upon completion, press PF3 to return to the **Generate Recovery Plans** panel. See [“Generating object recovery plans”](#) on page 334 for more information.

3. When you are ready to generate the recovery plans, press Enter. All the fields are validated and the recovery plans are generated. The **Recovery Plans** panel opens where you select the recovery plan.

## Selecting the Db2 object recovery plan

The **Recovery Plans** panel displays the recovery plans that can be used to recover the Db2 objects that are included in the coordinated recovery job. You can select the plan that is most advantageous for your recovery environment.

**Note:** If you are recovering a dropped object that is part of an implicit table space, Db2 Recovery Expert for z/OS issues a warning during recovery plan generation to let you know the ZPARM parameter IMPDSDEF must be set to YES before running the recovery job. This ZPARM parameter can be dynamically changed with the Db2 SET SYSPARM command.

1. The **Recovery Plans** panel opens when at least one recovery plan can be generated.

```

RCVYXPRT V3R2 ----- Recovery Plans ----- 2021/01/13 12:56:12
Command ==>

Line Commands: V - Validate P - Properties D - Details B - Build JCL
-----
Creator: USERID      NAME: TESTPROF                               SSID EA1A
-----
Plan Name                                                    Cost
_Using RECOVER                                             52.60
_Recovered objects                                       n/a

```

2. The following fields are displayed in the panel:

**Creator**

Displays the ID of the user who created the Db2 application profile.

**Name**

Displays the name of the Db2 application profile.

**SSID**

Displays the assigned ID for the Db2 subsystem where the objects and the profile reside.

**Plan Name**

Lists the recovery plans that can be used to recover the objects in the Db2 application profile. One of the plans that is listed is called the Recovered Objects plan. This plan lists the objects that can be recovered and each of the plans that can be used successfully to recover the object. Only the D command can be used with this plan.

**Cost**

Displays the recovery plan cost. Each generated recovery plan has an associated cost. The plan with the lowest cost appears first in the list of recovery plan. You can see the detailed information that is used to calculate the cost of the plan by specifying P next to the recovery plan and pressing Enter.

3. Specify P next to a recovery plan to view the properties of the recovery plan. From the Recovery Plan Properties panel you can see the detailed information that is used to calculate the cost of a recovery plan. The **P** command is not a valid command for the Recovered Objects plan.
4. Specify D next to a recovery plan to view the details of the recovery plan. From the Recovery Plan Details panel you can see each of the objects that are included in the application profile. You can also access property information for each of the objects.
5. Specify V next to a recovery plan to validate the recovery plan. You might select the validate option to check that the conditions of the plan still apply. If an error is found, the **Recovery Plan Validation Error** panel opens where you are given more information about the error. When a successful validation completes a message is issued that acknowledges the successful validation but does caution that although no validation errors were discovered, the recovery plan could have unforeseen errors that would impact a successful recovery. Such errors may include missing resources or lack or authorizations to access resources. The V command is not a valid command for the Recovered Objects plan.
6. Enter a **B** next to a recovery plan to build the JCL that can be used to recover the objects in the application profile according to the properties and details of the recovery plan. The **B** command is not a valid command for the plan with the name Recovered Objects.
7. Press Enter. The Build Job Panel opens.

```

Build job in Data set TEST.ARY.CNTL
Use job name as member name N (Yes/No)
  or use member prefix RCVRJ
  Generate SYSAFF N (Yes/No)

Job Cards:

==> //ARYJOB JOB TEST,CLASS=A,NOTIFY=&SYSUID,MSGCLASS=X
==> /**
==> /**

```



8. Specify one or more of the following fields and then press Enter.

**Build job in Data set**

Specify the name of a PDS data set name in which the job will be built.

**Use job name as member name**

Specify Y to use generated job names as PDS member names. When saving generated jobs as new members in a PDS, member names will be the same as the generated job names. Any existing members with these names will be overwritten. Specify appropriate job names to avoid possible loss of necessary data in existing members. Specify N to generate member names using the member prefix in the **Use member prefix** field.

**Use member prefix**

Specifies the prefix which will be used with a unique, automatically generated 3-digit suffix to create a new member name.

The suffix consists of two parts: group number (1 digit, counting from 0), and job number in a group (two digits). For example, if the prefix is PREFX, generated names will be:

- PREFX001 - first job of group 0
- PREFX101 - first job of group 1
- PREFX102 - second job of group 1
- PREFX201 - first job of group 2 and so on.

Group number may be used to submit jobs manually in the correct order. Every job in the same group can be submitted in parallel. This field is ignored if you specify **Y** in the **Use job name as member name** field.

**Generate SYSAFF**

Specify Y to include SYSAFF on the job card. Including SYSAFF on the job card ensures that the job runs on the same system (LPAR) as the target Db2 system to which the objects will be recovered.

9. Enter the data set information. The data set name must be a PDS with a valid member name. Press Enter.

The information entered is verified. When all the data has been verified, the Generate Recovery Plan JCL job is run. The Recovery Plan Jobs panel opens.

## Submitting the recovery plan job

The **Recovery Plan Jobs** panel displays the recovery plan job or jobs that you can use to recover the Db2 objects associated with the coordinated recovery profile.

If the recovery option **Number of parallel jobs** is greater than 1, multiple jobs are returned. A Serial job, followed by a Parallel Job Group, followed by a second Serial job will be returned. You must submit and run the serial and parallel jobs in the order that they are listed.

**Note:** If you are recovering a set of objects to a prior version (existing objects must be dropped and then recreated) and one of the tables has the RESTRICT ON DROP clause active, you will have to alter that table to remove this restriction before running the recovery plan job. Upon completion of the recovery plan job you can reactivate the clause for the table.

1. The Recovery Plans Jobs panel opens after you select a recovery plan from the Recovery Plans panel and select **B** to build the job.

An example of the panel is shown below:

```

RCVYXPRT V3R2 ----- Recovery Plans Jobs ----- 2021/01/13 12:56:12
Command ==>

Line Commands:  B - Browse    E - Edit    V - View    S - Submit

Plan Name: Using Recover
-----
Creator: USERID      NAME: TESTPROF                      SSID EA1A
-----

_Recovery Job Group
- Serial Job 1 - Test.ARY.CNTL (ARYA01)
- Parallel Job Group
-   Parallel Job 1 - Test.ARY.CNTL (ARYB01)
-   Parallel Job 2 - Test.ARY.CNTL (ARYB02)
-   Parallel Job 3 - Test.ARY.CNTL (ARYB03)
-   Parallel Job 4 - Test.ARY.CNTL (ARYB04)
- Serial Job 2 - Test.ARY.CNTL (ARYC01)

```

2. The following fields are displayed:

**Plan Name**

Lists the name of the recovery plan for one or more jobs that have been built.

**Creator**

Displays the ID of the user who created the application profile.

**Name**

Displays the name of the application profile.

**SSID**

Displays the assigned ID for the Db2 subsystem where the objects and the profile reside.

**Recovery Plan jobs**

Lists the jobs that have been built for this plan.

3. To browse the recovery plan job JCL, specify B next to a recovery job. Using browse, you cannot edit or save the JCL. Press Enter. The job JCL is displayed in the ISPF editor. Press PF3 to return to the **Recovery Plan Jobs**.

4. To view and edit the recovery plan job JCL, specify V next to a recovery job. Using view you cannot save the JCL when you exit. Press Enter. The job JCL is displayed in the ISPF editor. Press PF3 to return to the **Recovery Plan Jobs**.

5. To edit the recovery plan job JCL and save your changes upon exit, specify E next to a recovery plan. Press Enter. The job JCL is displayed in the ISPF editor. Press PF3 to return to the **Recovery Plan Jobs**.

6. To run the recovery plan job JCL, specify S next to the recovery job. The job is submitted and run. The results of the job are written to the specified data set. If there are serial and parallel jobs, it is important to submit each of the jobs in the order that they are listed.

7. The next step in coordinated recovery is to generate the IMS database recovery job. Press PF3 on each panel until the Build job for *nameofimsprofile* panel opens.

## Building the coordinated recovery job for IMS objects

Use the Build job for *nameofimsprofile* panel to build the JCL for the recovery of the IMS databases. The **Recovery Point** and **Recovery Timestamp** are the same as was chosen for the recovery of the Db2 objects.

1. From the **Recovery Plans Jobs** panel, after you have built the coordinated recovery job for the Db2 objects, press PF3 to navigate back through several panels to open the **Build job for nameofimsprofile** panel.

```

RCVYXPRT V3R2 ----- Build Job for IMS.PROFILE ----- 2021/01/13 12:56:12

Recovery Point          1 (1 Current, 2 Timestamp, 3 PIT, 4 RPID)
Recovery Timestamp      -----

Edit Generated Job      Y (Yes/No)
Edit Recovery Options   N (Yes/No)

Build Job in Dataset    -----
Member                  -----

Job Cards
==> //OBJREST Job PDSUSC, CLASS=A, NOTIFY=&SYSUID -----
==> // -----
==> // -----
==> // -----

```

- The type of recovery point that you selected is listed in the **Recovery Point** field. If you selected to specify a timestamp, it is listed in the **Recovery Timestamp** field.  
This is the same setting that you selected for the Db2 object recovery job.
- Enter Y in the **Edit Generated Job** to view the job in an ISPF edit session after generation. If you enter N, you cannot edit the jobs JCL before it is stored in the data set.
- To update the recovery options for the IMS job profile, specify Y in the **Update Recovery Options** field. Press Enter.  
The **Recovery Options** panel opens. Edit the options that you want to change. Upon completion, press PF3 to return to the **Build job for nameofimsprofile** panel. See the section on recovering IMS databases in the *IMS Recovery Expert for z/OS* publication for more information on the recovery options.
- In the **Build job in Dataset** field specify a fully qualified data set name (without quotation marks) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, enter a member name in the **Build job in Member** field. If the member does not exist, it is created.
- In the **Job Cards** field specify a valid job card for your site
- When you are ready to generate the IMS recovery job, press Enter. All the fields are validated and the recovery job is built. The job is stored in the data set that you specified.

## Recovering objects using application groups

Using application groups, you can define a prioritized grouping of application profiles that can be utilized in various recovery operations. You can restore applications with other available assets, and additionally, prioritize the recovery of applications according to a user-defined group.

### Displaying application groups

From the **Application Group Display** panel you are able to perform all the application group functions.

The first step in working with application groups is to open the Application Group Display panel for a particular Db2 subsystem. From the Application Group Display panel you can perform the following functions:

- create new profiles
- update profiles
- delete profiles
- rename profiles
- view profiles
- select recovery plans

- Specify 2 on the Db2 Recovery Expert for z/OS main menu and press Enter.

The **Application Operations Menu** panel opens. Specify 2 (Application Groups) on the **Application Operations Menu** panel. The **Enter Application Group Selection Criteria** panel opens.

```

Enter Application Group Selection Criteria

Stored on SSID *      ( ? for subsystem list)
Name like      *
Creator like   *
  
```

2. You use the **Enter Application Group Selection Criteria** panel to filter the application groups that are listed on the **Application Group Display** panel. In the **Stored on SSID** field specify the Db2 subsystem where the application groups reside. You can list all the application groups for the Db2 system using wildcard characters in the **Stored on SSID**, **Name like**, and **Creator like** fields. The asterisk (\*) is a wildcard character that returns all the application groups for the field where it is specified. You can use an asterisk (\*) for one or all fields. To limit the application groups that are listed, enter a specific group name, group creator name, or SSID in one or more of the **Stored on SSID**, **Name like**, and **Creator like** fields. Press Enter.

The **Application Group Display** panel opens. The first time you access this panel, it will appear as follows:

```

RCVYXPRT V3R2  ----- Application Group Display ----- 2021/01/13 12:56:12
Option  ===>                                     Scroll ===> CSR

Line Commands:  U - Update  V - View    C - Create  D - Delete  R - Rename
                P - Recovery Plans

-----
Creator Like *      Name Like *                      SSID Like *
----- Row 1 of 1  >

Name                Creator  SSID  Updt Description
C  Press Enter to Create Profile

***** Bottom of Data *****

-----
| ARYR031I - No Profiles were found that match your selection criteria. |
| Press enter to create a new profile or change the selection criteria. |
-----
  
```

You can use the **RIGHT** and **LEFT** scroll commands (PF10 and PF11) to see all the available columns. You can use the **UP** and **DOWN** commands (PF7 and PF8) to scroll through the list when there are more groups than can be displayed on one panel. The following fields are displayed on the panel:

**Name Like**

The application group name or mask you entered on the **Enter Application Group Selection Criteria** panel appears here. You can change the name or mask to see different groups on this panel.

**Creator Like**

The application group creator name or mask you entered on the **Enter Application Group Selection Criteria** panel appears here. You can change the name or mask to see different groups on this panel.

**SSID Like**

The Db2 subsystem ID or mask you entered on the **Enter Application Group Selection Criteria** panel appears here. You can change the name or mask to see different groups on this panel.

**Row x of y**

Displays the current row and the total number of rows in the group list. Adjacent to this field is a scroll indicator: > indicates scroll right for more data; < > indicates scroll left or right for data; <

indicates scroll left for more data. A plus sign (+) indicates scroll down for more data; a minus sign (-) indicates scroll up for more data.

**Name**

The name of the application group.

**Creator**

The ID of the user who created the application group.

**SSID**

The Db2 subsystem ID where the application group, application profiles and the objects for recovery reside.

**Updt**

Specifies how users other than the creator may use the application group. A value of U allows other users to update the profile. A value of V allows other users to view but not update the profile. A value of N prevents other users from viewing or updating the application group.

**Description**

The application group description, if included.

**Last Updated: Userid**

The ID of the last user to update the application group.

**Last Updated: Timestamp**

The date and time that the application group was last updated.

**Created: Userid**

The user ID of the creator of the application group.

**Created: Timestamp**

The date and time that the application group was created.

3. Enter one of the following commands in the line next to an application group:

- To create a new application group, enter a **C** in any line and press Enter. If no application groups are listed then you can create a new group by just pressing Enter. The **Create Application Group** panel opens. Complete the process of creating the application group by selecting the profiles that will be included in the group. When you have completed the process, the **Update Application Group** panel opens. See [“Creating application groups” on page 402](#) for more information on creating application groups.
- To update an application group, enter a **U** in the line next to the application group that you want to update and press Enter. The **Update Application Group** panel opens. From this panel you can add profiles to the group; remove profiles from the group; change a profile's priority in the group; view the profiles assigned to the group; specify and update the image copy options; specify and update recovery plan options; and update the group's share option. See [“Updating application groups” on page 402](#) for more information on updating application groups.
- To view the details of an application group, enter a **V** in the line next to the application group that you want to view and press Enter. The **View Application Group** panel opens. You can use this line command to view one of your own application group profiles or one created by another user if the profile was created with a share option of view or update. See [“Viewing application groups” on page 404](#) for more information on viewing application groups.
- To delete an application group, enter a **D** in the line next to the application group that you want to delete and press Enter. You can use this line command to delete one of your own application groups or one created by another user if the application group was created with a share option of view or update. See [“Deleting an application group” on page 405](#) for more information on application groups.
- To rename an application profile, enter an **R** in the line next to the application group that you want to rename and press Enter. The **Rename Application Group** panel opens. You can use this line command to change the name or the description in one of your own application groups or one created by another user if the application group was created with a share option of view or update. See [“Renaming application groups” on page 405](#) for more information on renaming application groups.

- To generate a recovery plan for an application group, enter a **P** in the line next to the application group for which you want to generate a recovery plan and press Enter. The **Generate Recovery Plan** panel opens. See “[Generating application group recovery plans](#)” on page 406 for more information on generating application group recovery plans.

## Creating application groups

From the **Create Application Group** panel you can create an application group. The process of creating a new application group includes creating the group; and then associating individual application profiles with the group.

1. From the **Application Group Display** panel specify a **C** in any **Cmd** line and press Enter.

The following panel is displayed:

```

Create Application Group
Creator          USERID
Group Name      APPGRPTW
Description
Db2 SSID       EB1A  (? for system list)
Share Option   U    (Update, View only, No access)

```

2. The **Creator** field is automatically filled with your user ID as the group creator. To create the group with a different user ID, type the new ID in this field.
3. Specify a name for the application group in the **Group Name** field. The name can consist of up to 30 characters.
4. Specify a description for the application group in the **Description** field.
5. Specify the SSID where the application profiles included in the application group currently reside in the **Db2 SSID** field. The application group information is also be stored at that SSID.
6. You control access to the application group using the **Share Option** field. Specify **U** to allow other users to update the group. Specify **V** to allow other users to view but not update the group. Specify **N** to deny other users access to the group.
7. Press Enter.

The group is added. The Update Application Group panel opens. The next step in creating an application group is to add application profiles to the group.

## Updating application groups

From the **Update Application Group** panel you can add profiles to the group; remove profiles from the group; change a profile's priority in the group; view the profiles assigned to the group; specify and update the image copy options; specify and update recovery plan options; and update the group's share option.

1. The **Update Application Group** panel opens automatically after you first create the group. In addition, the **Update Application Profile** panel opens when **Update** is entered for a group listed in the **Application Group Display** panel.

```

RCVYXPRT V3R2 ----- Update Application Group ----- 2021/01/13 12:56:12
Command ===> Scroll ===> CSR

Commands: ADD EXPLODE PRIORITIES
Line Commands: I - Insert R - Remove M - Move U - Update V - View
-----
Creator: USERID NAME: TESTPROF SSID EA1A
Share Option N (Upd, View, No) Description:
Update IC Options N (Yes/No) Update Recovery Options N (Yes/No)
----- Row 1 of 1 +
Name Creator SSID Priority
_APPGRP1 USER1 EB1A 0005
_APPGRP2 USER2 EB1A 0005

```

2. You can modify the **Share option** for the application group. Changing the value to **Upd** will allow all users to update the group. Changing the value to **View** will allow all users to view but not update the group. Changing the value to **N** will not allow any users other than yourself to update or view the group.
3. To specify or update the image copy options, specify a **Y** in the **Update IC Options** field. Press Enter. The **Image Copy Options** panel opens. Update the options and press PF3. Control is returned to the **Update Application Group** panel.
4. To specify or update the recovery options, specify a **Y** in the **Update Recovery Options** field. Press Enter. The **Recovery Options** panel opens. Update the options and press PF3. Control is returned to the **Update Application Group** panel.
5. To add a profile to the group specify an **I** in any command line. You can also add a profile to the group by specifying **ADD** on the Command line. Press Enter. The **Enter Application Profile Selection Criteria** panel opens. From this panel you can filter the profiles that are listed for selection. Press Enter. The Application Profile Selection panel opens. From this panel you select the profiles that will be included in the group. When all selections are made, press Enter and control returns to the **Update Application Group** panel.
6. The fields that are displayed for each application profile that is included in the application group are:
  - Name**  
Specifies the name of the application profile.
  - Creator**  
Specifies the ID of the user who created the profile.
  - SSID**  
Specifies the SSID where the profile resides.
  - Priority**  
Specifies the priority that has been assigned the profile within the application group.
7. Each application profile that is included in a group can be assigned a priority. The priority dictates the order in which the objects in a profile are recovered. Recovery of the objects in the profile with the highest priority is performed first, followed by the profile with the next highest priority. A value of zero assigns the highest priority. You can set the priority in one of the following ways:
  - Tab to the **Priorities** column and type a number.
  - Specify the **PRIORITIES** command in the command line. Priority is assigned to the profiles in increments of 5 starting with the first profile in the list.
8. To reorder the profiles in the list specify an **M** in the command line next to the profile that you want to move and press Enter. You can choose to move the profile one position before or after the current position. Press Enter.
9. Specify an **R** in the command line next to the profile that you want to remove from the group. Press Enter. The profile is removed from the group.

10. Specify a **V** in the command line next to a profile to view the objects that will be recovered by that profile. Press Enter.  
The View Application Profile panel opens. Press PF3 to return to the **Update Application Group** panel.
11. Specify a **U** in the command line next to a profile to update that profile. Press Enter.  
The **Update Application Profile** panel opens. You can make updates to the application profile. Press PF3 to return to the **Update Application Group** panel.
12. Press PF3 to return to the **Application Group Display** panel.

## Viewing application groups

You can view application groups created under your user ID, regardless of the share option. You can also view a group created by another user if the group was created with a share option of view or update.

1. From the **Application Group Display** panel specify a **V** in the **Cmd** line next to the group that you want to view and press Enter.  
The View Application Group panel opens.

```
RCVYXPRT V3R2 ----- View Application Group ----- 2021/01/13 12:56:12
Command ==> Scroll ==> CSR

Commands: EXPLODE
Line Commands: V - View
-----
Creator: USERID      NAME: TESTPROF                      SSID EA1A
Share Option N (Upd, View, No)      Description:
View Image Copy Options N (Yes/No)   View Recovery Options N (Yes/No)
----- Row 1 of 1 +
Name      Creator      SSID      Priority
_APPGRP1  USER1       EB1A      0005
_APPGRP2  USER2       EB1A      0005
```

2. From the **View Application Group** panel you can view a list of all the application profiles that are included in the group. From the **View Application Group** panel you cannot make any changes. The following fields are displayed for each application profile that is included in the group:
  - Name**  
Specifies the name of the profile.
  - Creator**  
Specifies the ID of the user who created the profile.
  - SSID**  
Specifies the SSID of the Db2 subsystem where the group information and the objects in the application profiles reside.
  - Priority**  
Specifies the priority that has been assigned to the profile within the group. The priority indicates the order in which each profile is processed for recovery.
3. You can view the **Share Option** for the application group. The current value is displayed. The value of **U** specifies that all users can update the profile. A value of **V** specifies that all users can view but not update the profile. A value of **N** specifies that no user other than you as the creator can update or view the profile.
4. To view the recovery options, enter Y in the **Update Recovery Options** field and press Enter. The **Recovery Options** panel opens. You can view recovery options, but cannot make any changes. Press PF3 to return to the **View Application Group** panel.
5. To view the image copy options, enter Y in the **Image Copy Options** field and press Enter. The **Image Copy Options** panel opens. You can view all the image copy options. In addition there are several options that you can update from the panel. Press PF3 to return to the **View Application Group** panel.



- To view the objects that are included in each profile, specify **V** in the line next to the profile and press Enter. The **View Application Profile** panel opens. Press PF3 to return to the **View Application Group** panel.
- Press PF3 to return to the **View Application Group** panel.

## Deleting an application group

You can delete application groups created under your user ID, regardless of the share option. You can also delete a group created by another user if the group was created with a share option of update.

- From the **Application Group Display** panel specify a **D** in the **Cmd** line next to the group that you want to delete and press Enter.

The **Confirm Deletion of Group** panel opens:

```

Confirm Deletion of Group

Confirm delete of Group TWUSR.TEST2

Delete  N  (Yes/No)

```

- To delete the group, specify Y in the **Delete** field and press Enter. A message appears to confirm deletion.

## Renaming application groups

You can rename application groups created under your user ID, regardless of the share option. You can also rename a group created by another user if the group was created with a share option of update.

- From the **Application Group Display** panel specify an **R** in the **Cmd** line next to the group that you want to rename and press Enter. The **Rename Application Group** panel opens.

```

Rename Application Group

Existing Application Group:

Creator      TUSER
Name         TEST2
Description  Test Recover App A profiles

New Application Group:

Creator      TUSER
Name         PROD2
Description  Prod Recover App A profiles

```

- The **New Application Group Creator** field is automatically filled with the user ID that created the group. If you have been granted permission, you can change the user ID in the **New Application Group Creator** field. Permission to change the creator user ID is granted using the ADMIN\_USERID parameter in the SYSPARM library.
- To rename the group, specify a new name in the **New Application Group Name** field.
- To change the group description, specify a new description in the **New Application Group Description** field.
- Press Enter. The group is renamed. Control is returned to Application Group Display panel.

## Generating application group recovery plans

Db2 Recovery Expert will generate one or more recovery plans that you can select from to recover the objects that have been included in each application profile of an application group.

Using the **Generate Recovery Plans** panel you will specify recovery options, choose a recovery point, and generate the recovery plans that can be used to recover the objects that are included in the application profiles of the group.

**Note:** If you are recovering a dropped object that is part of an implicit table space, Db2 Recovery Expert issues a warning during recovery plan generation to let you know the ZPARM parameter IMPDSDEF must be set to YES before running the recovery job. This ZPARM parameter can be dynamically changed with the Db2 SET SYSPARM command.

1. From the **Application Group Display** panel specify a **P** in the **Cmd** line next to the group for which you want to generate the recovery plans.

The **Generate Recovery Plans** panel opens.

```
RCVYXPRT V3R2 ----- Generate Recovery Plans ----- 2021/01/13 12:56:12
Command ==>
-----
Creator: USERID      NAME: TESTPROF                      SSID EA1A
-----
Update Recovery Options ==> N (Yes/No)

Choose the desired recovery point. You can enter a timestamp or RBA/LRSN
here or enter "Y" for "Select Recovery point" to display a selection list
of possible recovery points.

Recovery Point          ==> 1 (1-Current, 2-RBA/LRSN, 3-Timestamp)
Recovery RBA/LRSN       ==> -----
Recovery Timestamp      ==> -----
Select Recovery Point   ==> N (Yes/No)
```

2. To update the recovery options for the group, specify **Y** in the **Update Recovery Options** field. Press Enter.

The **Recovery Options** panel opens. Edit the options that you want to change. Upon completion, press PF3 to return to the **Generate Recovery Plans** panel. See [“Specifying recovery options”](#) on page 335 for more information on recovery options.

3. You have three options for specifying a recovery point. Select from one of the following options:
  - **Current:** To select the current recovery point, enter a **1** in the **Recovery Point** field. Any data entered in the **Recovery RBA/LRSN** or **Recovery Timestamp** fields is cleared.
  - **RBA/LRSN:** To select a RBA/LRSN recovery point enter a **2** in the **Recovery Point** field. The value of the current RBA/LRSN is entered in the **Recovery RBA/LRSN** field.
  - **Timestamp:** To select a timestamp recovery point enter a **3** in the **Timestamp** field. The current timestamp is automatically entered in the **Recovery Timestamp** field.
4. Depending on your selection of recovery point options, you must enter values for one or more of the following fields:

### Recovery RBA/LRSN

If you entered a **2** in the **Recovery Point** field, you can either specify a different value in the **Recovery RBA/LRSN** field or enter a **Y** in the **Select Recovery Point** field where you can select the recovery point in the **Recovery Point Selection** panel.

### Recovery Timestamp

If you entered a **3** in the **Recovery Point** field, you can either specify a new timestamp value in the **Recovery Timestamp** field or specify a **Y** in the **Select Recovery Point** field where you can select the recovery point in the **Recovery Point Selection** panel. The timestamp value must be entered as YYYY - MM - DD - HH - MM - SS - MMMMMM.

### Select Recovery Point

If you entered **2** or **3** in the **Recovery Point**, you can change the values in the **Recovery Timestamp** or the **Recovery RBA/LRSN** fields by entering a **Y** in the **Select Recovery Point** field. Press Enter. The **Recovery Point Selection** panel opens where you can select an object definition level, a recovery history event, a quiet time, or an image copy data set as the recovery point.

5. After specifying the recovery point press Enter. All the fields are validated, and the recovery plans are generated. If any valid plans are generated, the **Recovery Plans** panel is displayed. See [Selecting a recovery plan for the application group](#) for details. Otherwise, **Priority Group Selection** panel is displayed. See [No usable recovery plan generated for the application group](#) for details.

## Selecting a recovery plan for the application group

The **Recovery Plans** panel displays the recovery plans for application profiles associated with the application group. Any recovery plan could be used to restore all objects to the selected point in time.

**Note:** If you are recovering a dropped object that is part of an implicit table space, Db2 Recovery Expert issues a warning during recovery plan generation to let you know the ZPARM parameter IMPDSDEF parameter must be set to YES before running the recovery job. This ZPARM parameter can be dynamically changed with the Db2 SET SYSPARM command.

1. The **Recovery Plans** panel opens automatically when you press Enter from the **Generate Recovery Plans** panel and at least one recovery plan can be generated.

```
ARYGRPSL V3R2 ----- Recovery Plans ----- 2021/01/13 12:56:12
Command ==>

Line Commands: P - Properties D - Details B - Build JCL
-----
Creator: USERID      NAME: TESTPROF                      SSID EA1A
-----
Plan Name                                     Cost
_Using RECOVER                                     52.60
_Recovered objects                               n/a
```

2. The following fields are displayed in the panel:

#### Creator

Displays the ID of the user who created the application group.

#### Name

Displays the name of the application group.

#### SSID

Displays the ID for the Db2 subsystem where the objects, profiles and group information resides.

#### Plan Name

Lists the recovery plans that can be used to recover the objects in the profiles of the application group. One of the items is called **Recovered Objects**. Only the **D – Details** line command works on this item. This option lists recovery details for every object in every plan.

#### Cost

Displays the recovery plan cost. Each generated recovery plan has an associated cost. The plan with the lowest cost appears first in the list of recovery plan. You can see the detailed information that is used to calculate the cost of the plan by entering a P next to the recovery plan.

3. Enter a **P** next to a recovery plan to view the properties of the recovery plan. From the **Recovery Plan Properties** panel you can see the detailed information that is used to calculate the cost of a recovery plan.
4. Enter **D** next to a recovery plan to open **Priority Group Selection** panel.

```
ARYGMDT V3R2 ----- Priority Group Selection ----- 2024/04/03 15:52:33
Command ==>                                     Scroll ==> HALF
```

```
Line Commands: S - Select
```

```
Selected Plan Name: Using RECOVER with BACKOUT
```

```
-----  
Creator: TS6077   Name: MAR                               SSID: QC1B  
-----  
Priority Plan name                                     Row 1 of 2  
0001   Using RECOVER with BACKOUT                     Cost  
0003   Using RECOVER with BACKOUT                     1.04  
                                                0.76
```

- **Selected Plan name:** Displays the name of the recovery plan selected on the **Recovery Plans** panel.
- **Creator:** Displays the ID of the user who created the application group.
- **Name:** Displays the name of the application group.
- **SSID:** Displays the ID for the Db2 subsystem where the objects, profiles and group information reside.
- **Priority:** Displays the priority for the priority group. Priority groups are a combination of all application profiles with the same priority value specified on the **Update Application Group** panel.
- **Plan Name:** Displays the plan name for the specific priority group. This name could differ from the **Selected Plan Name** because certain priority groups are not recoverable using the Selected Plan. The product chooses the next best cost-wise plan.
- **Cost:** Displays the cost of recovering the priority group.

Use the line command **S** next to a priority to open **Recovery Plan Details** panel.

5. Enter **B** next to a recovery plan to build the set of JCLs that can be used to recover all objects in the application group.
6. Press Enter. The **Build Job** panel opens.

```
Build job in Data set TEST.ARY.CNTL  
Use job name as member name  N (Yes/No)  
   or use member prefix      RCVRJ  
   Generate SYSAFF           N (Yes/No)  
Job Cards:  
  
==> //ARYJOB JOB TEST,CLASS=A,NOTIFY=&SYSUID,MSGCLASS=X  
==> //*  
==> //
```

7. Specify one or more of the following fields and then press Enter.

#### **Build job in Data set**

Specify the name of a PDS data set name in which the job will be built.

#### **Use job name as member name**

Specify Y to use generated job names as PDS member names. When saving generated jobs as new members in a PDS, member names will be the same as the generated job names. Any existing members with these names will be overwritten. Specify appropriate job names to avoid possible loss of necessary data in existing members. Specify N to generate member names using the member prefix in the **Use member prefix** field.

#### **Use member prefix**

Specifies the prefix which will be used with a unique, automatically generated suffix to create a new member name.

The suffix consists of two parts: group number and job number in a group (two digits). For example, if the prefix is PREFX, generated names will be:

- PREFX101: First job of group 1.
- PREFX201: First job of group 2.
- PREFX202: Second job of group 2.
- PREFX301: First job of group 3 and so on.

Group number may be used to submit jobs manually in the correct order. Every job in the same group can be submitted in parallel. This field is ignored if you specify **Y** in the **Use job name as member name** field.

**Note:** Consider using shorter member prefixes (4 symbols) to avoid invalid member names.

### Generate SYSAFF

Specify **Y** to include SYSAFF on the job card. Including SYSAFF on the job card ensures that the job runs on the same system (LPAR) as the target Db2 system to which the objects will be recovered.

8. Enter the data set information. Edit the job card if necessary. Press Enter.

The information entered is verified. The data set name must be a PDS with a valid member name. When all the data has been verified, the Generate Recovery Plan JCL request is executed. The Recovery Jobs window opens.

## No usable recovery plan generated for the application group

For a detailed explanation on why a recovery plan generation could fail, see [No usable recovery plans generated](#). The **Priority Group Selection** panel is an intermediate panel where the error details could be chosen by priority.

1. The **Priority Group Selection** panel opens automatically when you press. Enter from the **Generate Recovery Plans** panel and there are no valid recovery plans generated.

```
ARYGODET V3R2 ----- Priority Group Selection ----- 2024/04/03 15:37:21
Command ==>                                         Scroll ==> CSR

Line Commands: S - Select
-----
Creator: TS6077   Name: MAR                               SSID: QC1B
-----
Row 1 of 2
-----
Priority   Status      Note
0001     Generated
0003     Failed      Details available.
```

- **Creator:** Displays the ID of the user who created the application group.
- **Name:** Displays the name of the application group.
- **SSID:** Displays the ID for the Db2 subsystem where the objects, profiles and group information reside.
- **Priority:** Displays the priority for the priority group. Priority groups are a combination of all application profiles with the same priority value specified on the **Update Application Group** panel.
- **Status:** Displays the status for the priority group. The **Status** has three values: 'Generated' - the plan was generated successfully, 'Failed' - the plan was not generated and there are details available, 'Error' - the plan was not generated, and details are not available, refer to **Note** field for a reason.
- **Note:** Displays the note for the priority group. For the generated plan, it is empty, for a failed generation it displays 'Details available.', for an error, it displays the reason.

2. Enter **S** next to a priority to open a panel with detailed explanations.

## Submitting the recovery plan jobs for the application group

The **Recovery Plan Jobs** panel displays job or jobs that can be used to recover the objects in the application profiles of the application group.

Multiple job groups could be generated for an application group. For the manual recovery, you must submit jobs going from top to bottom. Jobs named **Parallel Job #** could be submitted simultaneously if they belong to the same **Parallel Job Group**.

**Note:** If you are recovering a set of objects to a prior version (existing objects must be dropped and then recreated) and one of the tables has the RESTRICT ON DROP clause active, you will have to alter that table to remove this restriction before running the recovery plan job. Upon completion of the recovery plan job you can reactivate the clause for the table.

1. The **Recovery Plan Jobs** panel opens after you select a recovery plan from the **Recovery Plans** panel and specify **B** to build the job.

An example of the panel is shown below:

```
ARYGRPJS V3R2 ----- Recovery Plans Jobs ----- 2021/01/13 12:56:12
Command ==>

Line Commands:  B - Browse    E - Edit    V - View    S - Submit

Plan Name: Using Recover
-----
Creator: USERID      NAME: TESTPROF                               SSID EA1A
-----

_Recover Job Group
_Serial Job Group
- Serial Job 1 - TEST.ARY.CNTL (ARYJB101)
- Parallel Job Group
- Parallel Job 2 - TEST.ARY.CNTL (ARYJB201)
- Parallel Job 3 - TEST.ARY.CNTL (ARYJB202)
_Serial Job Group
- Serial Job 4 - TEST.ARY.CNTL (ARYJB301)
```

The following fields are displayed:

**Plan Name**

Lists the name of the recovery plan for one or more jobs that have been built.

**Creator**

Displays the ID of the user who created the application group.

**Name**

Displays the name of the application group.

**SSID**

Displays the assigned ID for the Db2 subsystem where the objects, the application profiles, and the group information reside.

**Recovery Plan jobs**

Lists the jobs that have been built for this plan.

2. To browse the recovery plan job JCL, enter **B** next to a recovery job. Using browse, you cannot edit or save the JCL.
3. To view and edit the recovery plan job JCL, enter **V** next to a recovery job. Using view you cannot save the JCL upon exit.
4. To edit the recovery plan job JCL and save your changes upon exit, enter **E** next to a recovery plan.
5. To run the recovery plan job JCL, enter **S** next to the recovery job. You will not see the JCL before the job is submitted.

**Automatic online recovery**

To run recovery automatically and see real-time progress, press **S** on the first job group. See [“Monitoring recovery jobs and recovered objects” on page 366](#) for more information.

## Performing a Combined System Level Backup

You can use the Combined System Level Backup (Combined SLB) feature to create a system level backup that includes a combination of one or more Db2 and IMS subsystems. The backup is created in a single process with a consistent recovery point for all subsystems in the backup.

Subsystems in the Combined SLB can consist of one or more Db2 subsystem(s), one or more IMS subsystem(s), or a combination of both. Data consistency for all volumes included in the Combined SLB is provided using storage-based consistency.

**Note:** Log suspend is not available for Combined SLB.

You can perform a Combined SLB with the group option. Combined SLB subsystems do not have to be in the same data sharing group. When a Combined SLB Group contains only Db2 subsystems, then only Db2 Recovery Expert programs are run. When the Combined SLB group contains both IMS subsystems and Db2 subsystems, both Db2 Recovery Expert and IMS Recovery Expert programs are run.

## Planning for a Combined SLB

A Combined SLB can contain backup data for multiple IMS subsystems, multiple Db2 subsystems, or a combination of both allowing you to create a single backup that contains multiple, related subsystems. The subsystems included in a Combined SLB do not have to be in the same data sharing group.

Before configuring Db2 Recovery Expert for Combined SLB, you must understand your environment and your intended use for a Combined SLB.

A Combined SLB can be used for the following purposes:

### Disaster Recovery

- A Combined SLB can provide a coordinated and transactionally consistent point of recovery for multiple subsystems at the disaster recovery site without requiring additional recovery assets (such as archive logs).
- Since a Combined SLB can contain both IMS subsystems and Db2 subsystems, you can more quickly recover related IMS and Db2 systems from a single backup without creating multiple backups and performing coordinated recovery between IMS and Db2.
- When a Combined SLB is used for disaster recovery, the recovery is done using the backup only. No forward or log recovery is performed.

### Local Database Recovery

- A Combined SLB can be used with existing application profiles to perform local object recovery.
- By using a Combined SLB as the basis of object recovery, multiple objects across related subsystems (IMS and Db2) can be more quickly recovered to a consistent point in time.
- When an object is recovered, a Combined SLB will be used if it best meets the recovery criteria.

### Local Subsystem Restore

- A Combined SLB can be used to perform a local subsystem restore.
- All subsystems in the Combined SLB are recovered; no individual subsystem recovery is allowed.
- When a Combined SLB is used for local recovery, the recovery is done using the backup only; no forward or log recovery is performed.

Combined SLB can operate within Db2 Recovery Expert or IMS Recovery Expert independently, or across both products. A Combined SLB can contain IMS subsystems, Db2 subsystems, or a combination of both. However, the ability to create a Combined SLB that contains both IMS and Db2 subsystems depends upon the mode of operation for which the feature is installed. Before you configure the Combined SLB option, you must first choose between local or shared mode:

### Local Mode

Combined SLB operates within Db2 Recovery Expert or IMS Recovery Expert independently. You can create a Combined SLB that contains subsystems that are related to the product you are using (IMS or Db2). In this mode, you can use Combined SLB to back up multiple subsystems that are related but not limited to the same data sharing group.

### Shared Mode

Combined SLB operates across Db2 Recovery Expert and IMS Recovery Expert. A Combined SLB can contain a combination of IMS and Db2 subsystems. The profiles and backups that are used for Combined SLB are available from either product regardless of the product that was used to create them. A Combined SLB can contain a combination of IMS and Db2 subsystems, IMS subsystems only, or Db2 subsystems only. In shared mode, the repository data sets used by Db2 Recovery Expert and IMS Recovery Expert must be shared. This allows access to information from both products. If repositories are not shared, then shared mode is not available.

If you use both Db2 Recovery Expert and IMS Recovery Expert, then it is recommended that you configure the Combined SLB option for shared mode, even if you do not currently intend to create Combined SLB groups that contain both IMS and Db2 subsystems. By choosing shared mode, you ensure that your environment is configured appropriately if you choose to create Combined SLB groups that contain both IMS and Db2 subsystems in the future.

## Configuring Combined SLB

After you customize Db2 Recovery Expert, you can activate the Combined SLB option.

1. Update the ARYSYSGR member in the SAMPLIB library, and submit the job. This job creates the VSAM control file used by Db2 Recovery Expert, which contains the Combined SLB group information. You can find instructions in the member.
2. Edit your Db2 Recovery Expert invocation CLIST, member ARYV320 in SAMPLIB, and specify the repository data set name created by ARYSYSGR in the RBRGROUP() variable. This variable identifies (to the ISPF interface) the name of the VSAM data set to use for storing Combined SLB groups, and activates the Combined SLB feature.

After you perform these steps, the Combined SLB feature is active for Db2 Recovery Expert in local mode. To enable Combined SLB in shared mode, perform these additional steps:

1. Edit your IMS invocation CLIST, member BSYV220 in SBSYSAMP, and specify the same data set name in the RBRGROUP() variable as specified in ARYV320 above. The RBRGROUP repository must be shared between Db2 Recovery Expert and IMS Recovery Expert to activate shared mode.
2. The repository data set names used by Db2 Recovery Expert and IMS Recovery Expert must be shared. If you currently use both Db2 Recovery Expert and IMS Recovery Expert, and you are not using shared repositories, see [“Creating shared repositories”](#) on page 413. The following variables in the ARYV320 and BSYV220 CLISTS must specify the same data set names:
  - Db2CNTFL
  - RBRBPROF
  - RBRBPMAP
  - RBRBPCAT
  - RBRBACK
  - RBRBVOL
  - RBRBSSD
  - RBRBREPT
  - RBRBOFFL
  - RBRMOVER
  - RBRGROUP
3. The following variables and the related repositories are not shared:
  - RBRBBOBJ: This repository is used by both Db2 Recovery Expert and IMS Recovery Expert, but the structure of this repository is different; each product specifies its own unique repository data set.
  - RBRARCH: This repository is used by only IMS Recovery Expert.
  - RBRSSRBA: This repository is used by Db2 Recovery Expert only.
  - RBRBCPRF: This repository is used by both Db2 Recovery Expert and IMS Recovery Expert, but it is specified only in the Db2 Recovery Expert ARYV320 CLIST.



## Creating shared repositories

If Db2 Recovery Expert and IMS Recovery Expert are currently installed, and you are not sharing the repository data sets, then you must convert your repositories and share them between the two products to activate the Combined SLB option.

If both products are installed and you are already using shared repositories, or if you are currently only using Db2 Recovery Expert, then you do not need to perform these steps.

1. Edit and submit the ARYCSLBS member in SAMPLIB. Instructions for editing this member are contained in the member. This job first backs up your existing Db2 Recovery Expert and IMS Recovery Expert repositories that must be shared. Then, it allocates a new set of shared repository data sets and populates them with the contents of the individual product repository data sets.
2. Edit your IMS Recovery Expert and Db2 Recovery Expert product invocation CLISTs, and change the variable names listed below to the names of the newly created shared repository data sets created in step 1. The variables that reference the shared repositories are:
  - Db2CNTFL
  - RBRBPROF
  - RBRBPMAP
  - RBRBPCAT
  - RBRBACK
  - RBRBVOL
  - RBRBSSD
  - RBRBREPT
  - RBRBOFFL
  - RBRMOVER I
  - RBRGROUP

## Creating Combined SLB groups

The first step in setting up Combined SLB functions is to create one or more Combined SLB groups. Combined SLB groups define the subsystems that are included in the system level backup.

A Combined SLB group can contain one or more Db2 subsystem(s), one or more IMS subsystem(s), or a combination of both.

### Note:

All IMS subsystems that are included in a Combined SLB group must be defined to the product. For information on how to define an IMS subsystem to the product, see [“Connecting Db2 Recovery Expert and IMS Recovery Expert”](#) on page 384.

When defining Combined SLB groups, you must follow these rules:

- The Combined SLB group name cannot duplicate an existing SSID or data sharing group name.
  - An SSID (individual subsystem or data sharing group) can only be included in one Combined SLB group. When an SSID is included in a Combined SLB group, it is marked as selected and cannot be included in any other Combined SLB group.
  - When the selected SSID is part of a data sharing group, the SSID associated with the data sharing group is used (not the individual SSIDs). However, the individual SSIDs that are part of the data sharing group are marked as a part of the Combined SLB group, and cannot be included in any other Combined SLB group.
1. Specify 0 (Administration) on the **Option** line of the Db2 Recovery Expert main menu panel (ARY\$MAIN) and press Enter.

```

ARY$PNL0 V3R2 ----- Administration Menu ----- 2020/06/30 13:53:39
Option ==>

```

```

2020/06/30 13:53:39
User: PDMONA - ARY

```

- ```

-----
1. Set System Backup Profile Defaults
2. Register DB2 subsystems
3. Specify LPAR recovery execution details
4. Specify server information
5. IMS Recovery Expert for z/OS connection
6. Reset ISPF client passwords
7. Monitoring Cleanup
8. Define Combined SLB Groups
9. SLR Cleanup

```

Figure 17. **Administration Menu** panel (ARY\$PNL0): Combined SLB

- On the **Administration Menu** panel, specify 6 (Define Combined SLB Groups) on the **Option** line and press Enter.

```

ARY$CG00 V3R2 ----- Combined SLB Group Display ----- 2020/06/30 13:58:48
Option ==> Scroll ==> PAGE

```

Line Commands: C - Create D - Delete U - Update V - View

CSLB Mode: Local

Row 1 of 8 >

```

-----
<----- L
Cmd  Group    Members Description          Userid
EMCG 0001     EMC GROUP           TSMGM
GRP1 0001     DATA SHARING SUBSYSTEMS1 TSMGM
GRP2 0002     MULTIPLE SUBSYSTEMS     CSMESH
GRP3 0001     SINGLE SUBSYSTEM        CSMESH
MIKE 0001     DESC                  TSMGM
MXD1 0001           TSMGM
TSLB 0001     TEST CSLB            CSTSUK
123  0001     123                  CSTSUK
***** Bottom of Data *****

```

Figure 18. **Combined SLB Group Display** panel (ARY\$CG00)

- On the **Combined SLB Group Display** panel, specify C in the **Cmd** field to define a new group and press Enter.

```

ARY$CGAD V3R2 ----- Add Combined SLB Group ----- 2020/05/01 10:49:31
Option ==> Scroll ==> PAGE

```

Line Commands: A - Add D - Delete

Group: tslb  
Description: test cslb group

Row 1 of 1

```

-----
Cmd  Member Type
A    Press Enter to Add
***** Bottom of Data *****

```

Figure 19. **Add Combined SLB Group** panel (ARY\$CGAD)

- On the **Add Combined SLB Group** panel, specify the name of the group and a description of the group. Press Enter to add SSIDs to this group.

```

ARY$CGSL V3R2 ----- Subsystem Selection ----- 2020/05/01 10:49:31
Option ==> Scroll ==> PAGE

Line Commands: S - Select Subsystem

----- Row 1 of 25 +

Cmd  SSID      Type      CSLB      DShare
      DBA7      Db2       Group     Group
      DBB7      Db2
X    DDS7      Db2       MXD1
      EA1B      Db2
X    EB1C      Db2       MXD1
      EDS1      Db2
      E9A1      Db2
      IAA3      IMS
      IAA4      IMS
      IAA5      IMS
      IAA6      IMS
      IAA7      IMS
      *CMD
  
```

Figure 20. **Subsystem Selection** panel (ARY\$CGSL)

- On the **Subsystem Selection** panel, all defined subsystems that are available for inclusion in the group are displayed. The following fields are displayed:

**Cmd**

Specify S on the **Cmd** line next to a subsystem to select it for inclusion in the group. Subsystems that are already part of a Combined SLB group are marked with **X** and cannot be selected.

**SSID**

The name of the defined subsystem.

**Type**

The type of subsystem. Values are either IMS or Db2.

**CSLB Group**

If the subsystem is already included in a Combined SLB group, this column indicates the Combined SLB group name.

**DShare Group**

If the subsystem is part of a data sharing group, this column indicates the data sharing group name. If the subsystem is Db2, this column only displays a value when one of the data sharing group members is active on the LPAR to which you are logged in.

- To select subsystems to include in the group, specify S on the **Cmd** line next to the subsystem(s) you want to include. You can page up and down the list to select multiple entries. When you have selected subsystems, press PF3 to process them.

```

ARY$CGAD V3R2 ----- Add Combined SLB Group ----- 2020/05/01 10:49:31
Option ==> Scroll ==> PAGE

Line Commands: A - Add D - Delete

Group:      TSLB
Description: TEST CSLB GROUP

----- Row 1 of 3

Cmd  Member  Type
      EMC    IMSGRP
      IAA    IMSGRP
      IAA3   IMS
***** Bottom of Data *****
  
```

Figure 21. **Add Combined SLB Group** panel (ARY\$CGAD): Subsystems in Group

On the **Add Combined SLB Group** panel, the subsystems that you selected are included in the group. If any of the subsystems were part of a data sharing group, the data sharing group **Member** name is included, and the **Type** is IMSGRP.

You can create as many Combined SLB groups as you need for your environment. When you have one or more Combined SLB groups created, you are ready to use the Combined SLB option.

## Creating system profiles for Combined SLB groups

When you have one or more Combined SLB groups defined, you can create a Combined System Level Backup (SLB) profile for the group.

1. Specify 1 (System Operations) on the **Option** line of the Db2 Recovery Expert main menu panel (ARY\$MAIN) and press Enter.

```

ARY$SYMN V3R2      ----- System Operations Menu -----
Option  ===>

                                     2020/06/30 13:53:57
                                     User: PDMONA - ARY

-----

1. Db2 Subsystem Analysis and Configuration
2. System Backup Profiles
3. System Level Backup Operations
4. Disaster Recovery Profiles
  
```

Figure 22. **System Operations Menu** panel (ARY\$SYMN)

2. On the **System Operations Menu** panel, specify 2 (System Backup Profiles) on the **Option** line and press Enter.

```

Enter Backup Profile Selection Criteria
ARY$BPLK
Profile Like *
Creator Like *
SSID Like *
  
```

3. On the **Enter Backup Profile Selection Criteria** panel, specify selection criteria and press Enter.

```

ARY$BPRD V3R2      ----- Backup Profile Display ----- 2020/06/30 14:05:14
Option  ===>                                           Scroll ===> PAGE

Line Commands: B - Build  U - Update  C - Create  V - View  D - Delete
                R - Rename G - Group

-----
Profile Like *                               SSID Like *
Creator Like *                               Row 1 of 61  +>
-----

Cmd  Name                               Creator  Group  Updt
BAT  BAT                                PDBATA  EMC    U
BAT  BATTERY                             PDBATA  EMC    U
BAT  BAT1234                             PDBATA  EMC    U
CSLB CSLB GRP2                           CSMESH  GRP2   U
CSLB CSLB STOGROUP/TRGPOOL              CSMESH  GRP1   U
EMC  EMC                                PDBISC  EMC    U
EMC  EMC-FC                              CSOSTR  EMC    U
EMC  EMC-L                              CSOSTR  EMC    U
EMC  EMC-S                              CSOSTR  EMC    U
EMC  EMC_TARGET_POOL                    CSOSTR  EMC    U
  
```

Figure 23. **Backup Profile Display** panel (ARY\$BPRD): Combined SLB

- On the **Backup Profile Display** panel, specify C in the **Cmd** field of any row to create a new Combined SLB Backup Profile. Press Enter.

```

Enter Backup Profile Type
ARY$BPTP
Backup Profile Type  C  (S=System, C=Combined SLB)

```

Figure 24. **Enter Backup Profile Type** panel (ARY\$BPTP): Combined SLB

- On the **Enter Backup Profile Type** panel, specify C in the **Backup Profile Type** field. Press Enter.

```

Enter New Backup Profile Options
ARY$CPC1
Creator           TSMXD
Profile Name      Combined SLB Profile
Description       Combined SLB Profile
CSLB Group       ?  (? for group list)
Backup Method    F  (Bcv/Snap/Flash/dfsmsdss(L))
Source/          Source/
Target Mapping   S  (Auto discover/pool mapping,
                   Stogroup discover/pool mapping)
Update Option    U  (Update, View only, No access)

```

Figure 25. **Enter New Backup Profile Options** panel (ARY\$CPC1): Combined SLB

- On the **Enter New Backup Profile Options** panel, specify information in the **Profile Name**, **Description**, **CSLB Group**, **Backup Method**, **Source/Target Mapping**, and **Update Option** fields.

**Note:** Db2 type backups are not available in the **Backup Method** field when creating a Combined SLB Backup Profile. Manual mapping is not available in the **Target Mapping** field when creating a Combined SLB Backup Profile.

- If you do not know the name of the Combined SLB group you want to use, specify a ? in the **CSLB Group** field. Press Enter.

```

ARY$CGGL V3R2 ----- Combined SLB Group Display ----- 2020/05/01 10:49:31
Option ==>                                         Scroll ==> PAGE

Line Commands: S - Select  V - View

----- Row 1 of 2 -----

Cmd  Group  Members  Description
    MXD1   0003   CSLB GROUP
s    TSLB   0003   TEST CSLB GROUP
***** Bottom of Data *****

```

Figure 26. **Combined SLB Group Display** panel (ARY\$CGGL)

- On the **Combined SLB Group Display** panel, specify S on the **Cmd** line next to the Combined SLB group you want. Press Enter.  
The **Enter New Backup Profile Options** panel (ARY\$CPC1) is displayed again.
- When you have specified all options on the **Enter New Backup Profile Options** panel, press Enter.

```

ARY$BPSU V3R2 ----- Update Backup Profile ----- 2020/05/01 12:10:52
Option ==> Scroll ==> PAGE

Commands: ? - Show all commands
Line Commands: I - Insert D - Delete X - Exclude U - Undo from exclude

-----
Creator: TSMXD          Name: COMBINED SLB PROFILE          CSLB Group: IAA
Share Option: U (Upd,View,No) Description: COMBINED SLB PROFILE
----- Backup Options -----
Backup Method ==> F (B/S/F/L)          Current Generation==> 00
Backup Scope ==> F (Full/Data)          Setup Needed ==> Y
Backup Generations==> 03 (01 - 99)      Issue Log Suspend ==> N (Yes/No)
Offload Options ==> N (Yes/No/Update)    Validate IMS Vols ==> Y (Yes/No)
Source Stogroups ==> N (Yes/No/Update)    Enable DB Restore ==> N (Yes/No)
Target Pool ==> N (Yes/No/Update)        Issue NOTIFY.IC ==> N (Yes/No)

----- Volume Inclusions/Exclusions ----- Row 1 of 1
Source Dev Src Target
Cmd Volumes Type Unit Units Message Area
I PRESS ENTER FOR NEW LINE
***** Bottom of Data *****

```

Figure 27. **Update Backup Profile** panel (ARY\$BPSU): Combined SLB

- When you return to the **Update Backup Profile** panel, you can complete defining the Combined SLB profile as you would any other backup profile.

For more information about this process, see [Chapter 8, “Creating system backup profiles and system backups,”](#) on page 213. Note that the **Issue Log Suspend** field is set to N and cannot be changed. The log suspend process is not available for a Combined SLB profile due to the probability of elongated system ENQ times while attempting to quiesce all subsystems to a consistent point in time.

- When viewing backup profiles, if you have a profile associated with a Combined SLB group and want to know what subsystems are in the group, specify G on the **Cmd** line next to the profile, and press Enter.

```

ARY$CGXD V3R2
Option ==> Scroll ==> PAGE

----- Row 1 of 3 -----

SSID      Type
ICA2      IMS
IBA2      IMS
EB1C      Db2
DDS7      Db2GRP
***** Bottom of Data *****

```

Figure 28. **Group subsystems** (ARY\$CGXD)

- On the ARY\$CGXD panel, all subsystems (currently defined to the Combined SLB group) and their types are displayed.

When you have created the Combined SLB backup profile, it can be processed like any other backup profile. For more information about using this profile to create a system level backup (SLB), see [“Creating a system backup”](#) on page 264.

## Using system restore and offload with Combined SLB

When you have created a backup for a Combined SLB group, you can utilize the system restore and offload interface to manage the backup.

- Specify 1 (System Operations) on the **Option** line of the Db2 Recovery Expert main menu panel (ARY\$MAIN) and press Enter.
- On the **System Operations Menu** panel (ARY\$SYMN), specify 3 (System Level Backup Operations) on the **Option** line and press Enter.

```

ARY$REST V3R2  ----- Restore System Display ----- 2021/08/18 15:43:14
Option ==> Scroll ==> PAGE

  Commands: ? - Show all commands
Line Commands: S - Select for Restore D - Delete          V - View Reports  O - Offload
                J - Object Report          H - Health Check I - Image Copies
                G - Group Display
Db2 Subsystem ID *          Datasharing group
*
-----
Select a row from the list of recovery points displayed below. To enter
an RBA/LRSN and have a recovery point automatically selected for you,
enter the RESTORE primary command followed by a Db2 subsystem SSID or a
Group ID.
-----

```

| Cmd | Date                   | Time     | Data Only | Mixed Data | On Disk | On Offload | Obj Rcvr | Partial Backup | Type  |
|-----|------------------------|----------|-----------|------------|---------|------------|----------|----------------|-------|
|     | 07/03/2021             | 05:20:45 | No        | No         | Yes     | No         | Yes      | No             | Flash |
|     | SSID: IAA GROUP: ED53  |          |           |            |         |            |          |                |       |
|     | 08/15/2021             | 11:17:24 | No        | Yes        | Yes     | Yes        | Yes      | No             | Flash |
|     | SSID: IBA2 GROUP: ED52 |          |           |            |         |            |          |                |       |
|     | 08/15/2021             | 04:13:40 | No        | Yes        | Yes     | Yes        | Yes      | No             | Flash |
|     | CSLB: NJG1 GROUP:      |          |           |            |         |            |          |                |       |
|     | 08/08/2021             | 00:25:47 | No        | Yes        | Yes     | Yes        | Yes      | No             | DFdss |

Figure 29. **Restore System Display** panel (ARY\$REST): Combined SLB

On the **Restore System Display** panel, you can perform the same functions that are available for a regular system level backup. For more information about these options, see [“Viewing a list of backups”](#) on page 423.

3. On the **Restore System Display** panel, if you specify J (Object Report) or I (Image Copies) on the **Cmd** line next to a Combined SLB and press Enter, a list of subsystems in the backup is displayed.

```

ARY$CGSS V3R2
Option ==> Scroll ==> PAGE

Line Commands: S - Process SSID
-----
Row 1 of 3

  Cmd  SSID    Type    RBA/LRSN
     DDS7   Db2    00000000000000000000
     EB1C   Db2    000000000000357CCF7D2
     IBA2   IMS
***** Bottom of Data *****

```

Figure 30. **Combined SLB SSID List** panel (ARY\$CGSS)

4. On the **Combined SLB SSID List** panel, you can select one or more subsystems for processing and press Enter. The requested function is performed against those subsystems.

When you specify I (Image Copy), only Db2 subsystems are available for selection. If the Combined SLB contains IMS subsystems and you want to perform image copies for them, you must perform this from the IMS Recovery Expert ISPF interface.

When you select a backup that is associated with a Combined SLB group, the only available option is to recover all subsystems in the backup to the time of the backup.

```

Combined SLB Restore
ARY$RESC

A Combined System Level Backup (CSLB) was selected.
You will not be allowed to select a recovery point.
All subsystems in the backup will be restored.
Press enter to Generate the Restore Job JCL.

```

Figure 31. **Combined SLB Restore** panel (ARY\$RESC)

5. Press Enter. The **Build Restore Job** panel is displayed.

```

Build Restore Job
ARY$BLDR
  Edit Generated Job      Y          (Yes/No)
  Edit Multijob Options  N          (Yes/No)
  Build job in Dataset   ISMXD.ARY.CNTL
  Member                 mxd1rest   Restore System Member

Job Cards:
==> //tsmxdx1 JOB TSMXD,CLASS=A,NOTIFY=&SYSUID
==> //*
==> //*
==> //*

```

Figure 32. **Build Restore Job** panel (ARY\$BLDR): Combined SLB

## Using application profiles with Combined SLB

To use existing or new application profiles with the Combined SLB feature, no changes are necessary.

Actions related to application profiles are performed at the individual subsystem (i.e. SSID). If a recovery is performed and a Combined SLB best meets the recovery criteria, it will be used to recover the database.

## Creating disaster recovery profiles for Combined SLB groups

When you have defined one or more Combined SLB groups, you can create a disaster recovery profile for the group.

1. Specify 1 (System Operations) on the **Option** line of the Db2 Recovery Expert main menu panel (ARY\$MAIN) and press Enter.
2. On the **System Operations Menu** panel (ARY\$SYMN), specify 4 (Disaster Recovery Profiles) on the **Option** line and press Enter.

```

Enter Disaster Recovery Profile Selection Criteria
ARY$XDRK
  Profile Like *
  Creator Like *
  SSID      Like *

```

Figure 33. **Enter Disaster Recovery Profile Selection Criteria** panel (ARY\$XDRK): Combined SLB

3. On the **Enter Disaster Recovery Profile Selection Criteria** panel, specify disaster recovery profile selection criteria and press Enter.



```

ARY$XDRD V3R2 --- Disaster Recovery Profile Display --- 2020/06/30 14:04:43
Option ==>
                                         Scroll ==> PAGE

Line Commands: D - Delete  U - Update  B - Build  P - Report
                C - Create  R - Rename  V - View   G - Group

-----
Profile Like *                               SSID Like *
Creator Like *                               Row 1 of 109  +>
-----

Cmd  Name                Creator  SSID/  Group  Updt
    ABC                  PDBATB  IBA2   U
    ABCDEFG              PDBATA  IAA    U
    BAT                   PDBATA  IAA    U
    BAT - IAA            PDBAT   IAA    U
    BAT TRY               PDBAT   EMC    V
    BATTERY               PDBATA  I9A2   U
    BAT5                  PDBATA  IAA    U
    COORDINATED DR       PDBISC  IBA2   U
    CSLB TEST DR PROFILE CSTSUK  TSLB   U
    EMC DR1/1            CSOSTR  EMC    U

```

Figure 34. **Disaster Recovery Profile Display** panel (ARY\$XDRD): Combined SLB

- On the **Disaster Recovery Profile Display** panel, specify C on the **Cmd** line of any row to create a new Combined SLB disaster recovery profile. Press Enter.

```

Enter DR Profile Type
ARY$DRTP
DR Profile Type c (S=System, C=Combined SLB)

```

Figure 35. **Enter DR Profile Type** panel (ARY\$DRTP): Combined SLB

- On the **Enter DR Profile Type** panel, specify C in the **DR Profile Type** field and press Enter.

```

Enter New Disaster Recovery Profile Data
ARY$CDC1
Creator          TSMXD
Profile Name     CSLB DR Profile
Description      CSLB DR Profile
CSLB Group      mxd1  (? for group list)
Update Option    U    (Update, View only, No access)

```

Figure 36. **Enter New Disaster Recovery Profile Data** panel (ARY\$CDC1): Combined SLB

- On the **Enter New Disaster Recovery Profile Data** panel, specify the information associated with this profile and press Enter.

```

ARY$CDRU V3R2 --- Update Disaster Recovery Profile --- 2020/05/01 11:45:17
Option ==>
-----
Creator: TSMXD      Name: CSLB DR PROFILE      User: TSMXD
Share Option: U    (Upd,View,No)      Description: CSLB DR PROFILE
IMS System/Group: MXD1
-----

DR Profile Options:
DR Site Recovery point ==> B (Backup)
SLB Used for DR        ==> R (Localsite/Recoverysite)

Use Multijob for DR Restore ==> N (Yes/No/Update)

```

Figure 37. **Update Disaster Recovery Profile** panel (ARY\$CDRU): Combined SLB

On the **Update Disaster Recovery Profile** panel, when creating a disaster recovery profile for a Combined SLB group, the only recovery option is to recover all of the subsystems to the point of the backup. As a result, the profile only allows you to select whether you want to use the local or remote site backups for recovery, and whether you want to use the multijob option for performing the restore.

When a build is performed against a disaster recovery profile for a Combined SLB group, the #REPOJOB and xxxx#JC1 jobs are the only jobs created. The #REPOJOB redefines and reloads the repository data sets. The xxxx#JC1 job performs the restore of the Combined SLB. No other recovery processing is performed.

## Performing Db2 system analysis and configuration

The Analysis and Configuration option is not affected by the Combined SLB option.

The Systems Analysis and Configuration option is not affected by the Combined SLB option (i.e. SSID). A Combined SLB group cannot be used as the target for this function.

## Using coordinated application profiles with Combined SLB

To use existing or new coordinated application profiles with the Combined SLB feature, no changes are required.

Actions related to coordinated application profiles are performed at the individual subsystem (i.e. SSID). If a recovery is performed and a Combined SLB best meets the recovery criteria, it will be used to recover the Db2 objects and IMS databases.

## Restoring a subsystem

---

This section explains how to restore a Db2 subsystem that has been backed up by Db2 Recovery Expert.

### Before you restore the subsystem

Db2 Recovery Expert maintains a list of valid system restore points from which you can choose in the event you need to restore a subsystem.

When you restore a subsystem, you will be restoring data and logs, or data only. The type of restore depends on the type of backup specified in the backup profile and whether Db2 Recovery Expert detected mixed data during the backup. Mixed data occurs when Db2 Recovery Expert detected that your Db2 data and the logs are located on the same volumes. If this happens, Db2 Recovery Expert still makes the backup, but if you choose this backup as a recovery point, you must restore both the data and the logs. Note that any logging or transactions that were performed after that recovery point will be lost.

If the backup was a data only backup, you can restore the data only so long as Db2 Recovery Expert did not detect mixed data.

If the backup was a data and log backup, you can restore both data and logs, or you can choose to restore data only as long as Db2 Recovery Expert did not detect mixed data during the backup. If the logs were not mixed in with the data, you can restore the data and the logs to the restore point, and then apply logs to bring it up to current or (another later recovery point). If the subsystem is a member of a data sharing group, and you are restoring data only, you can choose an RBA/LRSN to restore to after the data has been restored.

**Note:** When a backup is on both DASD and tape, Db2 Recovery Expert will use the DASD copy by default for the restore. Add the keyword 'FROM-OFFLOAD' to force Db2 Recovery Expert to perform the restore from the tape copy.

Db2 Recovery Expert can keep track of timestamps and their associated RBAs with the RBA Capture utility. You can use this feature to easily select a recovery point related to a particular time of day. The RBA Capture utility is optionally installed and configured when you customize Db2 Recovery Expert. The utility must run as a started task in each LPAR where you want to capture data.

**Note:** When performing a system restore all MVS user catalogs being used by Db2 must be unallocated. Some monitoring products (such as Query Monitor) are constantly allocating Db2 data sets. This causes the MVS user catalogs to get re-allocated after Db2 Recovery Expert has unallocated them. If the MVS user catalogs are never freed, the system restore will fail. In order to prevent this, you must stop any products that are monitoring or accessing Db2 before running a system restore.

## Viewing a list of backups

Db2 Recovery Expert only lists valid backups; if a backup failed and cannot be used to restore the subsystem, the invalid backup will not appear on the Restore System Display.

1. Specify 1 (System Operations) in the Option line on the Db2 Recovery Expert for z/OS main menu and press Enter.

The System Operations Menu opens. Specify 3 (System Level Operations Menu) and press Enter. The **Restore System Display** panel opens:

```

RCVYXPRT V3R2 ----- Restore System Display ----- YYYY/MM/DD HH:MM:SS
Option  ===>                               Scroll  ===> PAGE

Line Commands: S-Select for Restore   D-Delete           V-View Reports   O-Offload
                J-Object Report       H-Health Check   I-Image Copies
                G-Group Display

Db2 Subsystem ID *          Datasharing group
*
-----
Select a row from the list of recovery points displayed below. To enter
an RBA/LRSN and have a recovery point automatically selected for you,
enter the RESTORE primary command followed by a Db2 subsystem ID.
-----
Row 1 of 20  +>
Cmd Date      Time      Data  Mixed  On   On   Obj  Partial
Only Data  Disk  Offload  Rcvr Backup  Type
09/09/2021  15:54:07 No    No    Yes   No    Yes  No    Snap
SSID: K72A  GROUP: ED53  RBA/LRSN:
000000000000F96B6E00
01/12/2021  16:25:17 No    No    Yes   No    Yes  No    Flash
SSID: B81A  GROUP: ED54  RBA/LRSN:
00000000000018023566C
11/04/2021  09:29:11 No    No    Yes   Yes   No   No    DFdss
SSID: K82C  GROUP: ED55  RBA/LRSN:
00000000000044AF3127C
10/08/2021  00:07:01 No    No    Yes   No    No   No    DFdss
SSID: K82C  GROUP:      RBA/LRSN:
00000000000043DBE5D92
09/03/2021  10:49:59 No    No    Yes   No    No   No    Snap
SSID: K82C  GROUP:      RBA/LRSN:
00000000000041F2668D8
01/13/2021  00:45:13 No    No    Yes   No    Yes  No    Snap
SSID: S89Z  GROUP:      RBA/LRSN:
00000000000031F45118
01/06/2021  09:47:15 No    No    Yes   No    Yes  No    Db2
SSID: E81B  GROUP:      RBA/LRSN:
000000000000BF5FB4D8
12/17/2021  11:21:49 No    No    No    Yes   Yes  No    Db2

```

You can limit the display by entering an SSID name or mask in the Db2 Subsystem ID field, or by entering a group name or mask in the Datasharing Group field.

2. By default, all SSIDs are listed. You can limit the display by entering an SSID name or mask in the Db2 Subsystem ID field.
3. Use the RIGHT and LEFT scroll commands (PF10 and PF11) to see all the available columns. Use the UP and DOWN commands (PF7 and PF8) to scroll through the list when there are more backups than can be displayed on one panel. There is a two-line detail for each backup that contains the following information:

**Date**

The backup date.

**Time**

The time the backup was taken in hh:mm:ss format.

**Data Only**

If the backup profile specified a data only backup, this field contains Yes. If both logs and data were specified, this field contains No.

**Mixed Data**

This field contains Yes if Db2 Recovery Expert detected log data sets on the same volume(s) as the data. If this value is yes, Db2 Recovery Expert must restore both the logs and the data.

**On Disk**

This field contains Yes if this backup has not been offloaded from its original location. If Yes, the restore will be accomplished using the backup on disk.

**On Offload**

This field contains Yes if the backup has been offloaded using the Db2 Recovery Expert offload process (see "Creating backup profiles"). If the On Disk field contains No, the restore will be accomplished using the offloaded backup.

**Obj Rcvr**

This field contains Yes if object restore was enabled for the backup.

**Partial Backup**

This field contains Yes if the backup taken was a partial backup; not all volumes associated with the subsystem were included in the backup. This backup cannot be used for a system restore; however, it can be used for object restoration if the object restore function was enabled for the backup.

**Type**

The type of backup: BCV, SNAP, FlashCopy, DFSMSdss, or Db2.

**Nbr Vols**

The number of volumes that were backed up.

**Run by Userid**

The TSO user ID of the executor of the backup job.

**Profile Name**

The profile name used to create the backup.

**Profile Creator**

The TSO user ID of the profile creator.

**Gen Nbr**

The generation number for this backup.

**Job Name**

The backup job name.

**Job Number**

The backup job number.

**RBA/LRSN**

The RBA or LRSN of the backup. This is the point in time at which the subsystem will be restored.

## Viewing the summary report from the backup

Use the **V** line command next to a restore point to view the summary report produced when the backup was performed.

This is the same report from the ARY#REPT DD described in the topics about reviewing output from the various backup types.

## Offloading a backup

If offload options were set for the backup in the backup profile, you can use the **O** line command to offload a backup listed on the Restore System Display panel.

1. To offload a backup, enter O next to the backup.

The Build Offload job window opens.

```
Build Offload Job
Edit Generated Job      Y          (Yes/No)
Build job in Dataset   TUSER.TEST
Member                 Offload Job Member

Job Cards:
==> //OFFLJOB JOB TUSER,CLASS=A,NOTIFY=&SYSUID
==> //*
==> //*
==> //*
```

2. Specify one or more of the following fields:

### Edit Generated Job

Enter Y to view the job in an ISPF edit session after generation. If you enter N, after the job is generated you will return to the Restore System Display panel.

### Build job in Dataset/Member

Enter the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, enter a member name. If the member does not exist, Db2 Recovery Expert will create it.

### Job Cards

Enter a valid job card for your site.

3. Press Enter to build the offload job.

## Deleting backups

Use the **D** line command next to a backup to delete a backup from the list. A confirmation window appears; you must enter Y in the Delete field and press Enter to delete the backup. This command deletes all backups (both on disk and offloaded to tape).

## Viewing an object list from a backup

Use the **J** line command next to a backup to view a list of objects that were included in the backup. You can use this feature if object restore was enabled when the backup profile was created.

The object report lists all the objects that have their data sets completely contained in the system backup. If the selected backup is a full system backup (no volumes were excluded), then all the table spaces and index spaces in the system will be listed.

**Note:** Db2 Recovery Expert will not restore an object that was in a restricted state at the time of the system backup. If you try to restore an object that was in a restricted state at the time the system backup was performed, an error message will be produced informing you of the restricted status of the object. You can confirm that the object was in a restricted state using the Restricted Objects report that is produced at system backup time.

1. Enter J next to the backup on the Restore System Display.

The Build Object Report Job window is displayed.

```

Build Object Report Job

Edit Generated Job      Y          (Yes/No)

Build job in Dataset   TUSER.DAH.TEST
Member                 OBJREPT   Object Report Job Member

Job Cards:
==> //TUSEROBJ JOB TUSERDH,CLASS=A,NOTIFY=&SYSUID
==> //*
==> //*
==> //*

```

2. Specify the following fields on this window:

**Edit Generated Job**

Enter Y to view the job in an ISPF edit session after generation. If you enter N, after the job is generated you will return to the Restore System Display.

**Build job in Dataset/Member**

Enter the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, enter a member name. If the member does not exist, Db2 Recovery Expert will create it.

**Job Cards**

Enter a valid job card for your site.

3. Press Enter.

If you specified to edit the job, the generated job is displayed in an edit session.

4. Submit the job.

When the job has completed, messages are written to several DDs.

**ARYOUT DD**

This DD contains messages produced during the job execution.

```

ARYS001I -Db2 Recovery Expert.
ARYS003I - Control Cards:
ARYS004I -   OREPORT "PUSER"."TEST S89Z - SNAP"
ARYS004I -   GENERATION 01
ARYS004I -   DATE 10/23/2021
ARYS004I -   TIME 12:48:56
ARYS004I -
ARYS123I - Backup PUSER.TEST S89Z - SNAP generation 001
           was read from the repository.
ARYS004I - Writing report to ARY#REPT DD Name.
ARYS004I - Report writing complete.
ARYS002I - Db2 Recovery Expert complete. RC=000.

```

**Db2 Recovery Expert#REPT DD**

This DD contains the object report.

The following shows a partial object report:

```

Db2 Recovery Expert for z/OS
Object Report
Subsystem S89Z
Backup Date: 10/23/2021
Backup Time: 12:48:56
Backup RBA/LRSN: 00000A698D53

```

| DBNAME | TSNAME   | Dataset                               | Source Volser | Target UCB | Tracks  |
|--------|----------|---------------------------------------|---------------|------------|---------|
| CC390  | UTLEX01  | S89Z.DSNDBC.CC390.UTLEX01.I0001.A001  | ARZ101        | 7519       | 0000001 |
| CC390  | UTLSTX01 | S89Z.DSNDBC.CC390.UTLSTX01.I0001.A001 | ARZ105        | 751D       | 0000001 |
| CC390  | UTPEBX01 | S89Z.DSNDBC.CC390.UTPEBX01.I0001.A001 | ARZ103        | 751B       | 0000001 |
| CC390  | UTPETX01 | S89Z.DSNDBC.CC390.UTPETX01.I0001.A001 | ARZ106        | 751E       | 0000001 |
| CC390  | UTPEX01  | S89Z.DSNDBC.CC390.UTPEX01.I0001.A001  | ARZ105        | 751D       | 0000001 |
| CC390  | UTPRCX01 | S89Z.DSNDBC.CC390.UTPRCX01.I0001.A001 | ARZ105        | 751D       | 0000001 |
| CC390  | UTPROC   | S89Z.DSNDBC.CC390.UTPROC.I0001.A001   | ARZ107        | 751F       | 0000005 |

|          |          |                                          |        |      |         |
|----------|----------|------------------------------------------|--------|------|---------|
| CC390    | UTRESTAR | S89Z.DSNDBC.CC390.UTRESTAR.I0001.A001    | ARZ106 | 751E | 0000001 |
| CC390    | UTRE1WLZ | S89Z.DSNDBC.CC390.UTRE1WLZ.I0001.A001    | ARZ105 | 751D | 0000001 |
| CC390    | UTRSTRT  | S89Z.DSNDBC.CC390.UTRSTRT.I0001.A001     | ARZ105 | 751D | 0000003 |
| CC390    | UTTEMPL  | S89Z.DSNDBC.CC390.UTTEMPL.I0001.A001     | ARZ103 | 751B | 0000003 |
| CC390    | UTTMDX01 | S89Z.DSNDBC.CC390.UTTMDX01.I0001.A001    | ARZ105 | 751D | 0000001 |
| CC390    | UTTMPX01 | S89Z.DSNDBC.CC390.UTTMPX01.I0001.A001    | ARZ101 | 7519 | 0000001 |
| CC390    | UTTREX01 | S89Z.DSNDBC.CC390.UTTREX01.I0001.A001    | ARZ102 | 751A | 0000001 |
| DSNATPDB | DSNASDMA | S89Z.DSNDBC.DSNATPDB.DSNASDMA.I0001.A001 | ARZ103 | 751B | 0000001 |
| DSNATPDB | DSNASDME | S89Z.DSNDBC.DSNATPDB.DSNASDME.I0001.A001 | ARZ107 | 751F | 0000001 |
| DSNATPDB | DSNASDMU | S89Z.DSNDBC.DSNATPDB.DSNASDMU.I0001.A001 | ARZ107 | 751F | 0000001 |
| DSNATPDB | DSNATPTS | S89Z.DSNDBC.DSNATPDB.DSNATPTS.I0001.A001 | ARZ101 | 7519 | 0000004 |
| DSNDB01  | DBD01    | S89Z.DSNDBC.DSNDB01.DBD01.I0001.A001     | ARZ103 | 751B | 0000090 |
| DSNDB01  | DSNLLX01 | S89Z.DSNDBC.DSNDB01.DSNLLX01.I0001.A001  | ARZ101 | 7519 | 0000090 |
| DSNDB01  | DSNLLX02 | S89Z.DSNDBC.DSNDB01.DSNLLX02.I0001.A001  | ARZ103 | 751B | 0000090 |
| DSNDB01  | DSNLUX01 | S89Z.DSNDBC.DSNDB01.DSNLUX01.I0001.A001  | ARZ100 | 7518 | 0000004 |
| DSNDB01  | DSNLUX02 | S89Z.DSNDBC.DSNDB01.DSNLUX02.I0001.A001  | ARZ103 | 751B | 0000004 |
| DSNDB01  | DSNSCT02 | S89Z.DSNDBC.DSNDB01.DSNSCT02.I0001.A001  | ARZ107 | 751F | 0000004 |
| DSNDB01  | DSNSPT01 | S89Z.DSNDBC.DSNDB01.DSNSPT01.I0001.A001  | ARZ103 | 751B | 0000050 |
| DSNDB01  | DSNSPT02 | S89Z.DSNDBC.DSNDB01.DSNSPT02.I0001.A001  | ARZ100 | 7518 | 0000090 |
| DSNDB01  | SCT02    | S89Z.DSNDBC.DSNDB01.SCT02.I0001.A001     | ARZ100 | 7518 | 0000105 |
| DSNDB01  | SPT01    | S89Z.DSNDBC.DSNDB01.SPT01.I0001.A001     | ARZ100 | 7518 | 0001020 |
| DSNDB01  | SYSLGRNX | S89Z.DSNDBC.DSNDB01.SYSLGRNX.I0001.A001  | ARZ102 | 751A | 0000285 |

Db2 Recovery Expert for z/OS  
Object Report  
Subsystem S89Z  
Backup Date: 10/23/2021  
Backup Time: 12:48:56  
Backup RBA/LRSN: 00000A698D53

| DBNAME  | TSNAME    | Dataset                                  | Source |      | Target  |
|---------|-----------|------------------------------------------|--------|------|---------|
|         |           |                                          | Volser | UCB  | Tracks  |
| DSNDB01 | SYSUTILX  | S89Z.DSNDBC.DSNDB01.SYSUTILX.I0001.A001  | ARZ105 | 751D | 0000010 |
| DSNDB06 | DSNACX01  | S89Z.DSNDBC.DSNDB06.DSNACX01.I0001.A001  | ARZ100 | 7518 | 0000012 |
| DSNDB06 | DSNADH01  | S89Z.DSNDBC.DSNDB06.DSNADH01.I0001.A001  | ARZ102 | 751A | 0000009 |
| DSNDB06 | DSNADX01  | S89Z.DSNDBC.DSNDB06.DSNADX01.I0001.A001  | ARZ107 | 751F | 0000009 |
| DSNDB06 | DSNAGH01  | S89Z.DSNDBC.DSNDB06.DSNAGH01.I0001.A001  | ARZ100 | 7518 | 0000030 |
| DSNDB06 | DSNAGX01  | S89Z.DSNDBC.DSNDB06.DSNAGX01.I0001.A001  | ARZ102 | 751A | 0000030 |
| DSNDB06 | DSNAPH01  | S89Z.DSNDBC.DSNDB06.DSNAPH01.I0001.A001  | ARZ101 | 7519 | 0000005 |
| DSNDB06 | DSNAPX01  | S89Z.DSNDBC.DSNDB06.DSNAPX01.I0001.A001  | ARZ100 | 7518 | 0000004 |
| DSNDB06 | DSNATX01  | S89Z.DSNDBC.DSNDB06.DSNATX01.I0001.A001  | ARZ100 | 7518 | 0000030 |
| DSNDB06 | DSNATX02  | S89Z.DSNDBC.DSNDB06.DSNATX02.I0001.A001  | ARZ106 | 751E | 0000060 |
| DSNDB06 | DSNATX03  | S89Z.DSNDBC.DSNDB06.DSNATX03.I0001.A001  | ARZ103 | 751B | 0000045 |
| DSNDB06 | DSNATX04  | S89Z.DSNDBC.DSNDB06.DSNATX04.I0001.A001  | ARZ104 | 751C | 0000030 |
| DSNDB06 | DSNAUH01  | S89Z.DSNDBC.DSNDB06.DSNAUH01.I0001.A001  | ARZ103 | 751B | 0000010 |
| DSNDB06 | DSNAUX02  | S89Z.DSNDBC.DSNDB06.DSNAUX02.I0001.A001  | ARZ107 | 751F | 0000006 |
| DSNDB06 | DSNCCX01  | S89Z.DSNDBC.DSNDB06.DSNCCX01.I0001.A001  | ARZ102 | 751A | 0000009 |
| DSNDB06 | DSNCCX02  | S89Z.DSNDBC.DSNDB06.DSNCCX02.I0001.A001  | ARZ102 | 751A | 0000009 |
| DSNDB06 | DSNCHX01  | S89Z.DSNDBC.DSNDB06.DSNCHX01.I0001.A001  | ARZ103 | 751B | 0000004 |
| DSNDB06 | DSNCNX01  | S89Z.DSNDBC.DSNDB06.DSNCNX01.I0001.A001  | ARZ107 | 751F | 0000004 |
| DSNDB06 | DSNCNX02  | S89Z.DSNDBC.DSNDB06.DSNCNX02.I0001.A001  | ARZ102 | 751A | 0000004 |
| DSNDB06 | DSNCUX01  | S89Z.DSNDBC.DSNDB06.DSNCUX01.I0001.A001  | ARZ107 | 751F | 0000004 |
| DSNDB06 | DSNDCX01  | S89Z.DSNDBC.DSNDB06.DSNDCX01.I0001.A001  | ARZ105 | 751D | 0000045 |
| DSNDB06 | DSNDCX02  | S89Z.DSNDBC.DSNDB06.DSNDCX02.I0001.A001  | ARZ101 | 7519 | 0000030 |
| DSNDB06 | DSNDDH01  | S89Z.DSNDBC.DSNDB06.DSNDDH01.I0001.A001  | ARZ106 | 751E | 0000004 |
| DSNDB06 | DSNDDX02  | S89Z.DSNDBC.DSNDB06.DSNDDX02.I0001.A001  | ARZ100 | 7518 | 0000004 |
| DSNDB06 | DSNDKX01  | S89Z.DSNDBC.DSNDB06.DSNDKX01.I0001.A001  | ARZ100 | 7518 | 0000013 |
| DSNDB06 | DSNDLX01  | S89Z.DSNDBC.DSNDB06.DSNDLX01.I0001.A001  | ARZ102 | 751A | 0000004 |
| DSNDB06 | DSNDLX02  | S89Z.DSNDBC.DSNDB06.DSNDLX02.I0001.A001  | ARZ100 | 7518 | 0000005 |
| DSNDB06 | DSNDPX01  | S89Z.DSNDBC.DSNDB06.DSNDPX01.I0001.A001  | ARZ101 | 7519 | 0000004 |
| DSNDB06 | DSNDPX02  | S89Z.DSNDBC.DSNDB06.DSNDPX02.I0001.A001  | ARZ101 | 7519 | 0000004 |
| .       | .         | .                                        | .      | .    | .       |
| RDBIDB1 | RESOURCE  | S89Z.DSNDBC.RDBIDB1.RESOURCE.I0001.A001  | ARZ105 | 751D | 0000003 |
| RDBIDB1 | RES01\$U# | S89Z.DSNDBC.RDBIDB1.RES01\$U#.I0001.A001 | ARZ104 | 751C | 0000003 |
| RDBIDB1 | SERVERRI  | S89Z.DSNDBC.RDBIDB1.SERVERRI.I0001.A001  | ARZ105 | 751D | 0000003 |
| TEMPDB  | TMPTS16K  | S89Z.DSNDBC.TEMPDB.TMPTS16K.I0001.A001   | ARZ101 | 7519 | 0000002 |
| TEMPDB  | TMPTS32K  | S89Z.DSNDBC.TEMPDB.TMPTS32K.I0001.A001   | ARZ102 | 751A | 0000002 |

Db2 Recovery Expert for z/OS  
Object Report  
Subsystem S89Z  
Backup Date: 10/23/2021  
Backup Time: 12:48:56  
Backup RBA/LRSN: 00000A698D53

| DBNAME | TSNAME | Dataset | Source |     | Target |
|--------|--------|---------|--------|-----|--------|
|        |        |         | Volser | UCB | Tracks |

```

TEMPDB  TMPTS4K  S89Z.DSNDBC.TEMPDB.TMPTS4K.I0001.A001  ARZ100  7518  00000002
TEMPDB  TMPTS8K  S89Z.DSNDBC.TEMPDB.TMPTS8K.I0001.A001  ARZ102  751A  00000002

```

## Using the health check function

Use the **H** line command to run a "health check" on any system backup to check if the objects on the backup can be recovered.

A health check report can be run against any system level backup. You can build the report online or in batch. The health check report determines the objects that may be unrecoverable after a system restore is performed, before you actually run the system restore.

Health check will find objects on which a LOG NO utility was performed after the RBA/LRSN of the system level backup and before the RBA/LRSN you want to restore the system to. Because the log cannot be applied across the LOG NO utility point, an image copy will be necessary to recover those objects.

The specific events that are reported on are the following events in SYSCOPY:

- CHECK LOG NO
- LOAD REPLACE LOG NO
- REORG LOG NO
- LOAD LOG NO
- Modify Recovery

**Restriction:** Starting with Db2 V9, table spaces can be defined as LOG NO. If DML is performed against data in a table defined as LOG NO, and a system restore is performed to a point after the DML was performed, the space will be unrecoverable if a valid image copy does not exist. However, this situation will not appear in the health check report, because it is not possible to determine if and when DML was performed on this space.

**Note:** An index defined as COPY YES will appear in the health check Recoverable Objects report if an image copy of the index is found. If an image copy is not found, or is invalidated by a REBUILD INDEX utility, the index will not appear in the Unrecoverable Objects report because it can be rebuilt.

For health checks generated in batch, the associated image copy data sets can optionally be validated to determine if they still exist and can be opened. For a multi-volume data set on tape, only the first volume is validated.

### Running the health check report online

Follow these steps to run the health check report online.

1. Enter **H** next to the backup on the Restore System Display.

The Health Check Options window is displayed.

Health Check Options

|                          |       |                |
|--------------------------|-------|----------------|
| Build Online or Batch    | 0     | (Online/Batch) |
| Validate IC Datasets     | N     | (Yes/No)       |
| Roll Forward to RBA/LRSN | ----- |                |

Enter an RBA/LRSN that you would like to restore to using the selected System Level Backup. A Health Check report will be generated that will show all objects that will be in Recovery Pending status after the System Restore is performed. If an Image Copy is available to restore an object, the Image Copy dataset will be listed as well.

2. Specify the following fields on this window:

**Build Online or Batch**

Enter 0 for online.



### Validate IC Datasets

Enter Y in this field if you want to check each image copy data set to ensure it still exists. This option is only available when running the job in batch. For image copies on tape, only the first volume serial will be tested for existence.

### Roll Forward to RBA/LRSN

Enter an RBA/LRSN that you would like to restore the system to from the selected system level backup. The health check report generated will show any object that had a LOG NO utility performed between the RBA of the system level backup and the roll forward RBA. If an object can be recovered using an available image copy, that information will be contained in the report.

**Note:** The RBA/LRSN of the system level backup is used as a starting point for the report and the Roll Forward to RBA/LRSN is used as an ending point of the report. The report may include objects that are not contained in the system level backup.

3. Press Enter.

The Health Check Report is displayed as follows:

```
ARY$HCHK V3R2 --- System Backup Health Check Report --- YYYY/MM/DD HH:MM:SS
Option ====> Scroll ====> CSR
```

```
-----
                                                    Row 1 of 108  +>
                Subsystem B81A
                Start RBA/LRSN 0002092A5908
                End RBA/LRSN 0005092A5908
                Objects Recoverable with Image Copy

DBNAME  TSNAME  Part Type Event Type  IC Dataset
DBRE0001 TLRE0001 0000 TS REORG LOG NO DBRE0001.TLRE0001.COPYFLP.D2009099
DBRE0002 TPRE0002 0001 TS REORG LOG NO DBRE0002.TPRE0002.COPYFLP.D2009099
DBRE0002 TPRE0002 0002 TS REORG LOG NO DBRE0002.TPRE0002.COPYFLP.D2009099
DBRE0002 TPRE0002 0003 TS REORG LOG NO DBRE0002.TPRE0002.COPYFLP.D2009099
DBRE0002 TPRE0002 0004 TS REORG LOG NO DBRE0002.TPRE0002.COPYFLP.D2009099
DBRE0002 TPRE0002 0005 TS REORG LOG NO DBRE0002.TPRE0002.COPYFLP.D2009099
DBRE0003 TPRE0003 0001 TS REORG LOG NO DBRE0003.TPRE0003.COPYFLP.D2009099
DBRE0003 TPRE0003 0002 TS REORG LOG NO DBRE0003.TPRE0003.COPYFLP.D2009099
DBRE0003 TPRE0003 0003 TS REORG LOG NO DBRE0003.TPRE0003.COPYFLP.D2009099
DBRE0003 TPRE0003 0004 TS REORG LOG NO DBRE0003.TPRE0003.COPYFLP.D2009099
DBRE0003 TPRE0003 0005 TS REORG LOG NO DBRE0003.TPRE0003.COPYFLP.D2009099
DBRE0004 TPRE0004 0001 TS REORG LOG NO DBRE0004.TPRE0004.COPYFLP.D2009099
DBRE0004 TPRE0004 0002 TS REORG LOG NO DBRE0004.TPRE0004.COPYFLP.D2009099
DBRE0004 TPRE0004 0003 TS REORG LOG NO DBRE0004.TPRE0004.COPYFLP.D2009099
DBRE0004 TPRE0004 0004 TS REORG LOG NO DBRE0004.TPRE0004.COPYFLP.D2009099
DBRE0004 TPRE0004 0005 TS REORG LOG NO DBRE0004.TPRE0004.COPYFLP.D2009099
DBRE0005 TPRE0005 0001 TS REORG LOG NO DBRE0005.TPRE0005.COPYFLP.D2009099
DBRE0005 TPRE0005 0002 TS REORG LOG NO DBRE0005.TPRE0005.COPYFLP.D2009099
DBRE0005 TPRE0005 0003 TS REORG LOG NO DBRE0005.TPRE0005.COPYFLP.D2009099
DBRE0005 TPRE0005 0004 TS REORG LOG NO DBRE0005.TPRE0005.COPYFLP.D2009099
```

The report appears in two sections. The first section shows any table spaces that had a utility with LOG NO performed on them, but that are recoverable to the selected recovery point. The second section lists the table spaces that will be unable to be recovered due to an execution of a LOG NO utility, and lists the event that caused them to be unrecoverable.

### Running the health check report in batch

Follow these steps to run the health check report in batch and optionally specify to validate image copy data sets.

1. Enter H next to the backup on the Restore System Display.

The Health Check Options window is displayed.

### Health Check Options

|                          |       |                |
|--------------------------|-------|----------------|
| Build Online or Batch    | O     | (Online/Batch) |
| Validate IC Datasets     | N     | (Yes/No)       |
| Roll Forward to RBA/LRSN | ----- |                |

Enter an RBA/LRSN that you would like to restore to using the selected System Level Backup. A Health Check report will be generated that will show all objects that will be in Recovery Pending status after the System Restore is performed. If an Image Copy is available to restore an object, the Image Copy dataset will be listed as well.

- Specify the following fields on this window:

#### Build Online or Batch

Enter B for batch.

#### Validate IC Datasets

Enter Y in this field if you want to check each image copy data set to ensure it still exists. This option is only available when running the job in batch. For image copies on tape, only the first volume serial will be tested for existence.

#### Roll Forward to RBA/LRSN

Enter an RBA/LRSN that you would like to restore the system to from the selected system level backup. The health check report generated will show any object that had a LOG NO utility performed between the RBA of the system level backup and the roll forward RBA. If an object can be recovered using an available image copy, that information will be contained in the report.

**Note:** The RBA/LRSN of the system level backup is used as a starting point for the report and the Roll Forward to RBA/LRSN is used as an ending point of the report. The report may include objects that are not contained in the system level backup.

- Press Enter.

The following window is displayed:

```
Build Health Check Report Job
Edit Generated Job      Y          (Yes/No)
Build job in Dataset    TUSER.DAH.TEST
Member                 TSTHLTH    Health Check Report Job Member
Job Cards:
==> //TUSERXX JOB TUSER,CLASS=A,NOTIFY=&SYSUID
==> //*
==> //*
==> //*
```

- Specify the following fields on this window:

#### Edit Generated Job

Enter Y to view the job in an ISPF edit session after generation. If you enter N, after the job is generated you will return to the Restore System Display.

#### Build job in Dataset/Member

Enter the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, enter a member name. If the member does not exist, Db2 Recovery Expert will create it.

#### Job Cards

Enter a valid job card for your site.

- Press Enter to build the job.

If you specified to edit the generated job, an ISPF window containing the job appears. If you did not specify to edit the job, the Restore System Display is displayed.

- Submit the job.

The job output is placed in two DD statements.

**ARYOUT DD**

This DD contains messages produced during the job execution.

```
RBR0001I - Db2 Recovery Expert for z/OS Starting. Version 02.02.001
ARYS003I - Control Cards:
ARYS004I - HEALTH-CHECK
ARYS004I - SSID K82C
ARYS004I - START-RBA 000443D325E4
ARYS004I - END-RBA FFFFFFFFFFFFFF
ARYS004I - IC-CHECK Y
ARYS004I -
ARYS002I - Db2 Recovery Expert for z/OS complete. RC=000.
```

**ARY#REPT DD**

This DD contains the health check report.

The report appears in two sections. The first section lists the objects that are recoverable to the selected recovery point because a valid image copy was found. The second section lists the table spaces that will be unable to be recovered to the selected recovery point, and lists the reasons why the table space cannot be recovered.

```
***** TOP OF DATA *****
                Db2 Recovery Expert
                System Backup Health Check Report
                Subsystem B81A
                Start RBA/LRSN 0002092A5908
                End RBA/LRSN 0005092A5908
                Objects Recoverable with Image Copy
```

| DBNAME   | TSNAME   | Part | Type | Event | Type   | IC Dataset                          |
|----------|----------|------|------|-------|--------|-------------------------------------|
| DBRE0001 | TLRE0001 | 0000 | TS   | REORG | LOG NO | DBRE0001.TLRE0001.COPYFLP.D2009099. |
| DBRE0002 | TPRE0002 | 0001 | TS   | REORG | LOG NO | DBRE0002.TPRE0002.COPYFLP.D2009099. |
| DBRE0002 | TPRE0002 | 0002 | TS   | REORG | LOG NO | DBRE0002.TPRE0002.COPYFLP.D2009099. |
| DBRE0002 | TPRE0002 | 0003 | TS   | REORG | LOG NO | DBRE0002.TPRE0002.COPYFLP.D2009099. |
| DBRE0002 | TPRE0002 | 0004 | TS   | REORG | LOG NO | DBRE0002.TPRE0002.COPYFLP.D2009099. |
| DBRE0002 | TPRE0002 | 0005 | TS   | REORG | LOG NO | DBRE0002.TPRE0002.COPYFLP.D2009099. |
| DBRE0003 | TPRE0003 | 0001 | TS   | REORG | LOG NO | DBRE0003.TPRE0003.COPYFLP.D2009099. |
| DBRE0003 | TPRE0003 | 0002 | TS   | REORG | LOG NO | DBRE0003.TPRE0003.COPYFLP.D2009099. |
| DBRE0003 | TPRE0003 | 0003 | TS   | REORG | LOG NO | DBRE0003.TPRE0003.COPYFLP.D2009099. |
| DBRE0003 | TPRE0003 | 0004 | TS   | REORG | LOG NO | DBRE0003.TPRE0003.COPYFLP.D2009099. |
| DBRE0003 | TPRE0003 | 0005 | TS   | REORG | LOG NO | DBRE0003.TPRE0003.COPYFLP.D2009099. |
| DBRE0004 | TPRE0004 | 0001 | TS   | REORG | LOG NO | DBRE0004.TPRE0004.COPYFLP.D2009099. |
| DBRE0004 | TPRE0004 | 0002 | TS   | REORG | LOG NO | DBRE0004.TPRE0004.COPYFLP.D2009099. |
| DBRE0004 | TPRE0004 | 0003 | TS   | REORG | LOG NO | DBRE0004.TPRE0004.COPYFLP.D2009099. |
| DBRE0004 | TPRE0004 | 0004 | TS   | REORG | LOG NO | DBRE0004.TPRE0004.COPYFLP.D2009099. |
| DBRE0004 | TPRE0004 | 0005 | TS   | REORG | LOG NO | DBRE0004.TPRE0004.COPYFLP.D2009099. |
| DBRE0005 | TPRE0005 | 0001 | TS   | REORG | LOG NO | DBRE0005.TPRE0005.COPYFLP.D2009099. |
| DBRE0005 | TPRE0005 | 0002 | TS   | REORG | LOG NO | DBRE0005.TPRE0005.COPYFLP.D2009099. |
| DBRE0005 | TPRE0005 | 0003 | TS   | REORG | LOG NO | DBRE0005.TPRE0005.COPYFLP.D2009099. |
| DBRE0005 | TPRE0005 | 0004 | TS   | REORG | LOG NO | DBRE0005.TPRE0005.COPYFLP.D2009099. |
| DBRE0005 | TPRE0005 | 0005 | TS   | REORG | LOG NO | DBRE0005.TPRE0005.COPYFLP.D2009099. |
| DBRE0401 | TLRE0401 | 0000 | TS   | REORG | LOG NO | DBRE0401.TLRE0401.COPYFLP.D2009099. |
| DBRE0402 | TLRE0402 | 0000 | TS   | REORG | LOG NO | DBRE0402.TLRE0402.COPYFLP.D2009099. |
| DBRE0403 | TPRE0403 | 0001 | TS   | REORG | LOG NO | DBRE0403.TPRE0403.COPYFLP.D2009099. |
| DBRE0403 | TPRE0403 | 0002 | TS   | REORG | LOG NO | DBRE0403.TPRE0403.COPYFLP.D2009099. |
| DBRE0403 | TPRE0403 | 0003 | TS   | REORG | LOG NO | DBRE0403.TPRE0403.COPYFLP.D2009099. |
| DBRE0403 | TPRE0403 | 0004 | TS   | REORG | LOG NO | DBRE0403.TPRE0403.COPYFLP.D2009099. |
| DBRE0403 | TPRE0403 | 0005 | TS   | REORG | LOG NO | DBRE0403.TPRE0403.COPYFLP.D2009099. |
| DBRE0444 | TPRE0444 | 0001 | TS   | REORG | LOG NO | DBRE0444.TPRE0444.COPYFLP.D2009099. |
| DBRE0444 | TPRE0444 | 0002 | TS   | REORG | LOG NO | DBRE0444.TPRE0444.COPYFLP.D2009099. |

```
                Db2 Recovery Expert
                System Backup Health Check Report
                Subsystem B81A
                Start RBA/LRSN 0002092A5908
                End RBA/LRSN 0005092A5908
                Objects Recoverable with Image Copy
```

| DBNAME   | TSNAME   | Part | Type | Event | Type   | IC Dataset                          |
|----------|----------|------|------|-------|--------|-------------------------------------|
| DBRE0444 | TPRE0444 | 0003 | TS   | REORG | LOG NO | DBRE0444.TPRE0444.COPYFLP.D2009099. |
| DBRE0444 | TPRE0444 | 0004 | TS   | REORG | LOG NO | DBRE0444.TPRE0444.COPYFLP.D2009099. |
| DBRE0444 | TPRE0444 | 0005 | TS   | REORG | LOG NO | DBRE0444.TPRE0444.COPYFLP.D2009099. |
| DBRE1700 | TLRE1700 | 0000 | TS   | REORG | LOG NO | DBRE1700.TLRE1700.COPYFLP.D2009099. |
| DBRE0001 | IRE00011 | 0000 | IX   | REORG | LOG NO | DBRE0001.IRE00011.COPYFLP.D2009099. |

|          |          |      |    |       |     |    |                                     |
|----------|----------|------|----|-------|-----|----|-------------------------------------|
| DBRE0001 | IRE00012 | 0000 | IX | REORG | LOG | NO | DBRE0001.IRE00012.COPYFLP.D2009099. |
| DBRE0001 | IRE00013 | 0000 | IX | REORG | LOG | NO | DBRE0001.IRE00013.COPYFLP.D2009099. |
| DBRE0001 | IRE00014 | 0000 | IX | REORG | LOG | NO | DBRE0001.IRE00014.COPYFLP.D2009099. |
| DBRE0002 | IRE00021 | 0001 | IX | REORG | LOG | NO | DBRE0002.IRE00021.COPYFLP.D2009099. |
| DBRE0002 | IRE00021 | 0002 | IX | REORG | LOG | NO | DBRE0002.IRE00021.COPYFLP.D2009099. |
| DBRE0002 | IRE00021 | 0003 | IX | REORG | LOG | NO | DBRE0002.IRE00021.COPYFLP.D2009099. |
| DBRE0002 | IRE00021 | 0004 | IX | REORG | LOG | NO | DBRE0002.IRE00021.COPYFLP.D2009099. |
| DBRE0002 | IRE00021 | 0005 | IX | REORG | LOG | NO | DBRE0002.IRE00021.COPYFLP.D2009099. |
| DBRE0002 | IRE00022 | 0000 | IX | REORG | LOG | NO | DBRE0002.IRE00022.COPYFLP.D2009099. |
| DBRE0002 | IRE00023 | 0000 | IX | REORG | LOG | NO | DBRE0002.IRE00023.COPYFLP.D2009099. |
| DBRE0002 | IRE00024 | 0000 | IX | REORG | LOG | NO | DBRE0002.IRE00024.COPYFLP.D2009099. |
| DBRE0003 | IRE00031 | 0001 | IX | REORG | LOG | NO | DBRE0003.IRE00031.COPYFLP.D2009099. |
| DBRE0003 | IRE00031 | 0002 | IX | REORG | LOG | NO | DBRE0003.IRE00031.COPYFLP.D2009099. |
| DBRE0003 | IRE00031 | 0003 | IX | REORG | LOG | NO | DBRE0003.IRE00031.COPYFLP.D2009099. |
| DBRE0003 | IRE00031 | 0004 | IX | REORG | LOG | NO | DBRE0003.IRE00031.COPYFLP.D2009099. |
| DBRE0003 | IRE00031 | 0005 | IX | REORG | LOG | NO | DBRE0003.IRE00031.COPYFLP.D2009099. |
| DBRE0003 | IRE00032 | 0000 | IX | REORG | LOG | NO | DBRE0003.IRE00032.COPYFLP.D2009099. |
| DBRE0003 | IRE00033 | 0000 | IX | REORG | LOG | NO | DBRE0003.IRE00033.COPYFLP.D2009099. |
| DBRE0003 | IRE00034 | 0000 | IX | REORG | LOG | NO | DBRE0003.IRE00034.COPYFLP.D2009099. |
| DBRE0004 | IRE00041 | 0001 | IX | REORG | LOG | NO | DBRE0004.IRE00041.COPYFLP.D2009099. |
| DBRE0004 | IRE00041 | 0002 | IX | REORG | LOG | NO | DBRE0004.IRE00041.COPYFLP.D2009099. |
| DBRE0004 | IRE00041 | 0003 | IX | REORG | LOG | NO | DBRE0004.IRE00041.COPYFLP.D2009099. |
| DBRE0004 | IRE00041 | 0004 | IX | REORG | LOG | NO | DBRE0004.IRE00041.COPYFLP.D2009099. |
| DBRE0004 | IRE00041 | 0005 | IX | REORG | LOG | NO | DBRE0004.IRE00041.COPYFLP.D2009099. |

If you specified to validate the image copies, the far right column of the report shows the status of the image copy data sets.

## Restoring a subsystem: Data only

If both data and logs were backed up, you can choose to restore only the data if desired. In addition, if the backup was configured for data only, you can only restore the data.

When restoring data only, Db2 Recovery Expert generates three separate JCL members that must be executed in order. Follow these general steps to restore the subsystem:

**Note:** You must have installation SYSADM authority to perform these steps, because Db2 restarts in ACCESS (MAINT) mode during this procedure.

1. Build the restore job from the desired backup. Refer to "How to build the restore jobs - data only" for details.
2. If not already stopped, stop Db2. If the subsystem is a non-data sharing subsystem, a step was included in the restore job to stop the subsystem. If the subsystem is a data sharing group, all members of the data sharing group must be manually stopped before continuing.
3. If the restored system is non-data sharing subsystem, the user must validate that the generated RBA represents the beginning of a log record before proceeding with the restore. To do this follow this procedure:
  - a) Use the RBA from the job and subtract x'8000' from this value.
  - b) Submit a DSN1LOGP utility with RBASTART(RBA from previous step) RBAEND(RBA from job) SUMMARY(YES).
  - c) In the SYSSUMRY output, look for message DSN1213I, and use the RBA from this message as the SYSPITR for the conditional restart job.
4. Submit the conditional restart job.
5. Submit the restore system job.
6. Restart Db2.

Upon restart, you will receive a WTOR as follows:

```
XXXX CONDITIONAL RESTART RECORD INDICATES
      TRUNCATION AT RBA XXXXXXXX. REPLY Y OR N
```

You must reply to the WTOR with Y. Db2 will restart in ACCESS(MAINT) mode.

7. Submit the log restore job.

The Db2 subsystem is now restored to the selected point in time (PIT).

8. Stop Db2 and restart it normally to remove ACCESS(MAINT) mode.

## Building the restore jobs - data only

Use these steps to build a data only restore job.

1. Select a recovery point to which to restore.

The Restore Options window is displayed.

```
Restore Options

Restore Only Data                Y      (Yes/No)
Resolve Recover/Rebuild Pending Objects  N      (Yes/No)
Select a Recovery Point          N      (Yes/No)
Recover to RBA/LRSN             00000000000000B21C000

Select whether to Restore Data and Logs or Data only.  If
restoring Data and Logs you will not be able to select a
Timestamp Recovery Point or change the Recover to RBA/LRSN.
If doing a Data only restore you will have the option of
building a job that will resolve all the objects in either
Recover pending or Rebuild pending status.
```

### Restore Only Data

To restore only the data from the backup, enter Y here.

### Resolve Recover/Rebuild Pending Objects

Enter Y in this field if you would like an additional step generated after the Log Apply step that will generate a separate job to resolve RECOVER-pending or REBUILD-pending objects. This job can be executed after the restore job to identify all objects in RECOVER-pending or REBUILD-pending status and create JCL to execute a RECOVER or REBUILD utility for those objects.

### Select a Recovery Point

Enter Y in this field if you want to select a recovery point based on a timestamp.

### Recover to RBA/LRSN

This field defaults to the recovery RBA/ LRSN associated with the backup. If you are restoring data only, you can leave this field as is and the subsystem will recover to that point in time. You can also enter an RBA/LRSN greater than that of the backup; in that case, Db2 Recovery Expert will apply logs to bring the subsystem up to that point in time.

**Note:** When an RBA is entered for a non-data sharing subsystem, Db2 Recovery Expert rounds the RBA to the nearest 4K multiple. The checkpoint restart requires the RBA to be a multiple of 4K.

2. Once your recovery point has been established, press Enter on the Restore Option window.

The Build Restore Job window opens:

```
Build Restore Job

Edit Generated Job      Y      (Yes/No)
Edit Recovery Options   N      (Yes/No)
Edit Multijob Options   Y      (Yes/No)

Build job in Dataset    TUSER.AR.Y.TEST
Member                 -----
Member                 ----- Conditional Restart Member
Member                 ----- Restore System Member
Member                 ----- Log Restore Member
Member                 ----- Recover/Rebuild Pending Member

Job Cards:
==> //RJOBGRD JOB TUSERDH,CLASS=A,NOTIFY=&SYSUID
==> //*
==> //*
==> //*
```

Db2 Recovery Expert builds the following JCL members:

### Conditional restart

This job contains the SYSPITR keyword to specify the restoration point.

### Restore system

This job invokes the System Backup and Restore Services utilities to restore all of the data volumes to the recovery point.

### Log Restore

This job restores the logs to the specified RBA/LRSN using the RESTORE SYSTEM LOGONLY utility.

### Recover/Rebuild Pending Member

If the Resolve Recover/Rebuild Pending Objects option was selected, this member name will be used to build the recover and/or rebuild pending job. This job is generated in batch as the last step of the log restore job; the member name entered in this field will be used to hold the job after the log restore job is submitted.

3. Optionally, you can edit the JCL that is generated by specifying Y in the **Edit Generated Job** field. The generated JCL will open in a text editor ISPF panel where you can make changes before the job is submitted.
4. Optionally, you can edit the recovery options by specifying Y in the **Edit Recovery Options** field. Press Enter. The Recovery Options panel is displayed.

```
RCVYXPRT V3R2 ----- Recovery Options ----- YYYY/MM/DD HH:MM:SS
Option   ==>>
-----
Enter the Recovery options for the Recover/Rebuild pending job.

Objects Per Step      ==> 10 (00 - 99)
Validate IC Datasets ==> N (Yes/No)
Reuse (IBM recover)   ==> Y (Yes/No)
Utility ID            ==>
Parallel Tasks        ==> 04 (01 - 99)
Number of Tape Units ==> 02 (01 - 99)
Edit Rebuild IX Options ==> N (Yes/No)
Online Rebuild Index ==> N (Yes/No)
Edit Online Rbld opts ==> N (Yes/No)
```

The following describes the fields on this panel:

#### Objects Per Step

Enter the number of objects that you want to be placed in each recovery step. You may enter a number between zero (0) and ninety nine (99). A value of zero indicates that all objects will be placed in one step.

#### Validate IC Options

Enter a Y in this field if you want to check each image copy data set to see if it still exists. For image copies on tape, only the first volume serial will be tested for existence. Specify an N if you do not want to check the image copy data sets.

#### Reuse (IBM recover)

Enter Y to specify that the RECOVER utility is to logically reset and reuse Db2-managed data sets without deleting and redefining them. If you enter N, Db2-managed data sets are deleted and redefined.

#### Utility ID

Enter a 1 to 16 character utility ID to be used to uniquely identify the utility to Db2.

#### Parallel Tasks

If you want the utility to process objects in parallel from backups on tape, enter the maximum number of objects to be processed in parallel.

### Number of Tape Units

If specifying processing in parallel, indicate the maximum number of tape drives to be dynamically allocated.

### Edit Rebuild IX Options

When indexes are included in the objects to be recovered, Db2 Recovery Expert chooses to either recover or rebuild the index, depending on the index and the type of recovery. Enter Y in this field to set options for REBUILD INDEX.

### Online Rebuild Index

(Db2 V9 and higher) Type Y in this field to specify that the REBUILD INDEX should be performed online. You can specify the options for the online rebuild by entering Y in the Edit Online Rbld opts field.

### Edit Online Rbld opts

(Db2 V9 and higher) To set options for an online REBUILD INDEX, type Y in this field and press Enter.

- Optionally, set options for an online REBUILD INDEX by entering Y in the Edit Online Rbld opts field. When you press Enter, the following panel is displayed:

```
RCVYXPRT V3R2 --- Online Rebuild Index Options ---- YYYY/MM/DD HH:MM:SS
Option  ==>
-----
Creator:          Name:          SSID: T9A1
Share Option:    (Upd,View,No)  Description:
-----
Enter the options for Online Rebuild Index Utility

Sharelevel      ==> C          (Reference/Change)
Drain Wait      ==> 0          (blank, 0-1800 seconds)
Retry           ==>          (blank, 0-255)
Retry Delay     ==>          (blank, 1-1800 seconds)
Maxro           ==>          (blank, Number/DEFER)
Longlog         ==> C          (blank, Continue/Term/Drain)
Delay           ==> 1200      (blank, Number)
```

The following describes the fields on this panel:

### Sharelevel

Indicate the level of access applications will have during the RELOAD phase of the online index rebuild. Type R for reference (applications can read but not write data). Type C for change (applications can read and write data).

### Drain Wait

Specify the number of seconds that the utility waits when draining the space. The time specified is the aggregate time for objects to be checked during the REBUILD INDEX. This overrides the values specified by IRLMRWT and UTIMOUT. If the keyword is not specified or 0 is specified, then regular draining using the IRLMRWT value will be used. Acceptable values can be from 0 to 1800 seconds.

### Retry

Specify the maximum number of retries that can be attempted. Values can be from 0 to 255. If this field is left blank, the utility will use the value of the utility multiplier system parameter UTIMOUT.

### Retry Delay

Specify the minimum duration in seconds between retries. Values can be from 1 to 1800. The value must be an integer. If you do not specify a value, REBUILD INDEX uses the Drain Wait value x Retry value.

### Maxro

If Sharelevel is set to Change, set the maximum amount of time for the last iteration of log processing. During that iteration, applications have read-only access. Valid values are blank, an integer to specify the number of seconds, or DEFER to specify that iterations of log processing

can continue indefinitely. The default is the value of the lock timeout system parameter IRLMKWT. If you type DEFER, you should also enter C in the Longlog field.

### Longlog

If Sharelevel is set to Change, specify what action to take if log reading is not catching up quickly enough to the applications' writing of the log. Db2 sends a message to the console, then takes the action you specify. Type C to continue the online REBUILD INDEX until the time on the JOB statement expires. Type T to terminate the online REBUILD INDEX after the delay specified by the Delay parameter. Type D to drain the write claims after the delay specified by the Delay parameter, forcing the final iteration of log processing.

### Delay

If Sharelevel is set to Change, specify the minimum interval between the time that the online REBUILD INDEX sends the LONGLOG message to the console and the time that the online REBUILD INDEX performs the action specified by the LONGLOG parameter. Enter an integer value.

6. Optionally, you can select to use multiple jobs for the restore process. In the **Edit Multijob Options** you can:

- Specify N to bypass updating the options that are used to control a multiple job restore process. If you selected to perform the offload of the system level backup using multiple jobs, then the restore process has already been set up to use multiple jobs. Specifying N in this case merely bypasses changing those options, it does not change the fact that multiple jobs will be used. After pressing Enter you will continue generating the build job.
- Specify Y to update or change the options that are used to control a multiple job restore process. If you selected to perform the offload of the system level backup using multiple jobs, and you do not want to perform the restore using multiple jobs then you can specify Y in this field and turn off the multiple jobs option in the **Restore Multijob Options** panel. If you did not select to use multiple jobs for the offload and you would like to use multiple jobs for the restore, you can specify Y and turn on the multiple jobs option in the **Build Restore Multijob Options** panel. After pressing Enter the Build Restore Multijob Options panel opens. The following is an example of the **Build Restore Multijob Options** panel.

**Note:** The JCL JOB statement TIME and NOTIFY parameters are passed from the main job to spawned jobs. If either parameter is not present in the main job, it will not be in the spawned jobs, either.

```
RCVYXPRT V3R2 ----- Build Restore Job ----- YYYY/MM/DD  HH:MM:SS
                   ----- Multijob Options -----

Option   ==>
-----
Creator: TUSER      Name: T9B1 - DFSMSDSS          SSID: T9B1
Share Option: U    (Upd,View,No)  Description:
-----
Enter the options for performing offload and restore processing:

Use Multijobs   ==> Y      (Y/N)
Multijob Prefix ==> TSMXDX (1-6 character job prefix)

Multijob LPAR list:
LPAR Name      Max Jobs (1-99)      Max Tasks (1-8)
RS22           02                02
RS23           02                02
```

7. You can update one or more of the following Multijob options:

- a) In the **Multijob Prefix** field specify a 1 to 6 character prefix that will be used to generate a job name for each of the multiple jobs. Each job name will begin with this prefix followed by a number from 01-99. If this value is not specified, then the prefix is taken from the first 6 characters of the main job's name. The first character specified for the Multijob Prefix option must begin with either an alphabetic character or a national symbol (#, @, or \$) so that when the job name is generated it will be a valid z/OS job name.



- b) You specify the LPARS where you want the multiple jobs to run in the **Multijob LPAR list** fields. When specifying the LPARS for the multiple job restore:
- To allow for workload balancing you can specify the same LPAR more than once in the LPAR list. For example, you might specify in the LPAR list:
    - LPAR1
    - LPAR2
    - LPAR3
    - LPAR1
  - When defining the LPAR list, you will need to consider the total number of tape drives that are available to each LPAR and the total number of tape drives that are required for processing if the maximum number of jobs are submitted to complete the offload. To calculate the maximum number of tape drives you multiple the maximum number of jobs by the maximum number of tasks for each LPAR, and then add all the values. In the Multijob Options panel example, the maximum number of jobs is 8 (2x2+2x2).
  - The main job that controls the distribution of the multijobs to the specified LPARs will also control the distribution of the volumes required for the recovery.
- c) Specify the LPAR name in the **LPAR Name** field. The LPAR name can be from 1 to 8 characters. You can specify a single asterisk (\*) to indicate that all the jobs are to be run on the same LPAR as the main job.
- d) Specify a 2 digit number from 01-99 in the **Max Jobs** field. This number indicates the maximum number of jobs that can be submitted to run on the LPAR. The main job will submit multiple jobs to the specified LPAR until this limit is reached. When this limit is reached, if more jobs are needed, the main job will move to the next LPAR list entry. The default value is 4.
- e) Specify a 2 digit number from 01-8 in the **Max Tasks** field. This number specifies the maximum number of tasks that are to be created in each multijob. When the multijob is submitted, it will create as many tasks as are needed, up to this limit, to perform offload or restore processing. The default value is 4.

8. Press Enter.

9. Submit the jobs.

10. Optionally, if you specified to recover or rebuild objects in pending status, submit the job contained in the member that you specified on the Build Restore Job window.

When you submit this job, the RECOVER or REBUILD build jobs are executed.

## Sample restore jobs

Sample restore jobs are shown in this topic.

## Conditional restart job for non-data sharing environment

The following shows a sample conditional restart job for a non-data sharing environment:

```
//TUSERRS JOB TUSERDH,CLASS=A,NOTIFY=&SYSUID
//*
//*
//*
//*
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//* Profile:  PUSER2.TEST S89Z - SNAP TO STOGROUPS *
//* Job:      01 of 03 *
//* Desc: *
//* User:     TUSER *
//* Date:     Tuesday October 28, 2021 *
//* Time:     21:10:06.79 *
//* *
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
```

```

//* Step:      Db2STOP                                *
//* Desc:      This step will STOP Db2 subsystem S89Z  *
//*                                                    *
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//Db2STOP EXEC PGM=ARY#SDb2,COND=(4,LT),PARAM=(S89Z,STOP)
//STEPLIB DD DISP=SHR,DSN=ARYRTE.WRK0320.LOADLIB
//         DD DISP=SHR,DSN=DSN.S89Z.SDSNEXIT
//         DD DISP=SHR,DSN=DSN.V810.SDSNLOAD
//Db2PARMS DD DISP=SHR,DSN=ARY.WRK0320.Db2.CONTROL
//SYSPRINT DD SYSOUT=*
//*
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//* Step:      ARYCRCR                                *
//* Desc:      This step will invoke the IBM DSNJU003 stand alone *
//*            utility to create a Conditional Restart Control *
//*            Record for a Restore System Utility.          *
//*            Db2 must be down before submitting this job.  *
//*            *
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//ARYCRCR EXEC PGM=DSNJU003,REGION=006M,COND=(4,LT)
//*
//STEPLIB DD DISP=SHR,DSN=DSN.S89Z.SDSNEXIT
//         DD DISP=SHR,DSN=DSN.V810.SDSNLOAD
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD DISP=SHR,DSN=S89ZLOG.BSDS01
//SYSUT2 DD DISP=SHR,DSN=S89ZLOG.BSDS02
//SYSIN DD *
        CRESTART CREATE,SYSPITR=00000B21C000,FORWARD=YES,BACKOUT=YES
/*

```

## Conditional restart job for data-sharing environment

The following shows a sample conditional restart job for a data-sharing environment:

```

//TUSERRS JOB TUSERDH,CLASS=A,NOTIFY=&SYSUID
//*
//*
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//* Profile:   PUSER2.TEST S89Z -                *
//* Job:      01 of 03                           *
//* Desc:     TUSER                               *
//* User:     Tuesday October 28, 2021          *
//* Date:     21:10:06.79                       *
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//* Note: All members of the data-sharing group must be stopped *
//* before submitting this job.                            *
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//* Step: ARYCRCR
//* Desc: This step will determine which data-sharing systems need
//*       conditional restart and invoke DSNJU003.
//*
//*       When this job is complete, Db2 can be restarted. If you
//*       did not restore the Db2 logs, you will need to respond
//*       Yes to the WTOR: XXXX CONDITIONAL RESTART RECORD INDICATES
//*       TRUNCATION AT RBA XXXXXXXXXXXXX. REPLY Y OR N
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//ARYREST EXEC PGM=ARY@MAIN,REGION=006M,COND=(4,LT)
//*
//STEPLIB DD DISP=SHR,DSN=ARY.WRK0320.LOADLIB
//         DD DISP=SHR,DSN=RSRTE.EMC.LINKLIB
//Db2PARMS DD DISP=SHR,DSN=ARY.WRK0320.CONTROL

```

```
//ARYBPROF DD DISP=SHR,DSN=ARY.WRK0320.PROFILES
//ARYBCPRF DD DISP=SHR,DSN=ARY.WRK0320.CPROFILE
//ARYBOFFL DD DISP=SHR,DSN=ARY.WRK0320.OFFOPTS
//ARYBPMAP DD DISP=SHR,DSN=ARY.WRK0320.PROFILE.MAPS
//ARYBPCAT DD DISP=SHR,DSN=ARY.WRK0320.PROFILE.CATS
//ARYSBACK DD DISP=SHR,DSN=ARY.WRK0320.SYSBACK
//ARYSBOBJ DD DISP=SHR,DSN=ARY.WRK0320.SYSBACK.OBJS
//ARYSBVOL DD DISP=SHR,DSN=ARY.WRK0320.SYSBACK.VOLS
//ARYSBSSD DD DISP=SHR,DSN=ARY.WRK0320.SYSBACK.SSIDS
//ARYBREPT DD DISP=SHR,DSN=ARY.WRK0320.RBR.BREPORT
//ARY#REPT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//ARYOUT DD SYSOUT=*
//ARYSNAPO DD SYSOUT=*
//ARY#PARM DD DISP=SHR,DSN=BRSRTE.WRK0320.SAMPLIB(ARY#PARM)
//ARYIN DD *
          CRCR "PUSER2"."TEST"
          GENERATION 01
          DATE 08/09/2021
          TIME 09:27:11
          CRCR-LRSN 00CBC940367ECF000000
/*
/*
```

## Restore job

The following is a sample restore job:

```
//TUSERRS JOB TUSERDH,CLASS=A,NOTIFY=&SYSUID
/*
/*
/*
/*
/*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/* * Profile:  PUSER2.TEST S89Z - SNAP TO STOGROUPS *
/* * Job:      02 of 03 *
/* * Desc:     *
/* * User:     TUSER *
/* * Date:     Tuesday October 28, 2021 *
/* * Time:     21:10:07.05 *
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/* * Step:     ARYREST *
/* * Desc:     This step will invoke the System Restore job. *
/* *           When this job is complete. Db2 can be restarted. If *
/* *           you did not restore the Db2 logs, you will need to *
/* *           respond Yes to the WTOR: *
/* *           XXXX CONDITIONAL RESTART RECORD INDICATES TRUNCATION *
/* *           AT RBA XXXXXXXXXXXX. REPLY Y OR N *
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/* * ARYREST EXEC PGM=ARY@MAIN,REGION=006M,COND=(4,LT) *
/* * *
/* * STEPLIB DD DISP=SHR,DSN=ARYRTE.WRK0320.LOADLIB *
/* *        DD DISP=SHR,DSN=DEV RTE.EMC.SSCF580.LINKLIB *
/* *        DD DISP=SHR,DSN=RSRTE.VENDOR.FDR5467.LOAD *
/* * Db2PARMS DD DISP=SHR,DSN=ARY.WRK0320.Db2.CONTROL *
/* * ARYBPROF DD DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILES *
/* * ARYBOFFL DD DISP=SHR,DSN=ARY.WRK0320.ARY.OFFOPTS *
/* * ARYBPMAP DD DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILE.MAPS *
/* * ARYBPCAT DD DISP=SHR,DSN=ARY.WRK0320.ARY.PROFILE.CATS *
/* * ARYSBACK DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK *
/* * ARYSBOBJ DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.OBJS *
/* * ARYSBVOL DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.VOLS *
/* * ARYSBSSD DD DISP=SHR,DSN=ARY.WRK0320.ARY.SYSBACK.SSIDS *
/* * ARYBREPT DD DISP=SHR,DSN=ARY.WRK0320.ARY.BREPORT *
/* * ARY#REPT DD SYSOUT=* *
/* * SYSOUT DD SYSOUT=* *
/* * ARYOUT DD SYSOUT=* *
/* * ARYSNAPO DD SYSOUT=* *
/* * ARY#PARM DD DSN=ARYRTE.WRK0320.SAMPLIB(ARY#PARM),DISP=SHR *
/* * ARYIN DD * *
RESTORE "PUSER2"."TEST S89Z - SNAP TO STOGROUPS"
      GENERATION 01
```

```

                DATE 10/28/2021
                TIME 10:15:08

/*
//*
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//* Step:      Db2START *
//* *
//* Desc:      This step will START Db2 subsystem S89Z *
//* *
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//Db2START EXEC PGM=ARY#SDB2,COND=(4,LT),PARM=(S89Z,START)
//STEPLIB DD DISP=SHR,DSN=ARYRTE.WRK0320.LOADLIB
// DD DISP=SHR,DSN=DSN.S89Z.SDSNEXIT
// DD DISP=SHR,DSN=DSN.V810.SDSNLOAD
//Db2PARMS DD DISP=SHR,DSN=ARY.WRK0320.Db2.CONTROL
//SYSPRINT DD SYSOUT=*
//*

```

## Log restore job

The following is a sample log restore job:

```

//TUSERRS JOB TUSERDH,CLASS=A,NOTIFY=&SYSUID
//*
//*
//*
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//* Profile:   PUSER2.TEST S89Z - SNAP TO STOGROUPS *
//* Job:      03 of 03 *
//* Desc: *
//* User:     TUSER *
//* Date:     Tuesday October 28, 2021 *
//* Time:     21:10:07.15 *
//* *
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//* Step:     ARYLOG *
//* *
//* Desc:     This step will invoke the IBM DSNUTILB stand alone *
//* utility to Restore the System Logs. *
//* *
//* Db2 must be up and you must have responded Yes to *
//* the WTOR: *
//* XXXX CONDITIONAL RESTART RECORD INDICATES TRUNCATION *
//* AT RBA XXXXXXXXXXXXX. REPLY Y OR N *
//* *
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//ARYLOG EXEC PGM=DSNUTILB,REGION=006M,PARM=(S89Z)
//*
//STEPLIB DD DISP=SHR,DSN=DSN.S89Z.SDSNEXIT
// DD DISP=SHR,DSN=DSN.V810.SDSNLOAD
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//UTPRINT DD SYSOUT=*
//SYSIN DD *
        RESTORE SYSTEM LOGONLY
/*
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//* Step:     RECPEND *
//* *
//* Desc:     This step will do the following: *
//* *
//* 1)Produce a report listing all the objects that are *
//* currently in Recover Pending or Rebuild Pending *
//* status. The report will be written to the *
//* ARY#REPT DD. *
//* *
//* 2)Generate recovery JCL that when executed will *
//* resolve any Recover Pending or Rebuild Pending *
//* objects that are recoverable. The generated JCL *
//* will be placed in the following dataset: *
//*

```

```

/**          TUSER.ARY.TEST(RECRBLB) .                                *
/**          *
/** Return Codes:                                                    *
/**          *
/** (00) - Recovery Job was built successfully.                       *
/** (12) - Problem occurred during the build process                  *
/**          *
/** ** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/** Create temp dataset to bypass enqueue failure in ISPF
/** ** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/** PROFILE EXEC PGM=IEFBR14
/** TEMP DD DSN=&&TEMP, DISP=(NEW,PASS,DELETE),
/**        UNIT=SYSALLDA, SPACE=(TRK,(1,1,5)),
/**        DCB=ISP.SISPTENU
/**          *
/** ** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/** Run Batch Build
/** ** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/** RECPEND EXEC PGM=IKJEFT1A, REGION=006M
/**          *
/** STEPLIB DD DISP=SHR, DSN=ARYRTE.WRK0320.LOADLIB
/** DD DISP=SHR, DSN=DEV RTE. EMC. SSCF580.LINKLIB
/** DD DISP=SHR, DSN=RSRTE.VENDOR.FDR5467.LOAD
/** DD DISP=SHR, DSN=DSN.S89Z.SDSNEXIT
/** DD DISP=SHR, DSN=DSN.V810.SDSNLOAD
/** Db2PARMS DD DISP=SHR, DSN=ARY.WRK0220.Db2.CONTROL
/** ARYBPROF DD DISP=SHR, DSN=ARY.WRK0320.ARY.PROFILES
/** ARYBOFFL DD DISP=SHR, DSN=ARY.WRK0320.ARY.OFFOPTS
/** ARYBPMAP DD DISP=SHR, DSN=ARY.WRK0320.ARY.PROFILE.MAPS
/** ARYBPCAT DD DISP=SHR, DSN=ARY.WRK0320.ARY.PROFILE.CATS
/** ARYSBACK DD DISP=SHR, DSN=ARY.WRK0320.ARY.SYSBACK
/** ARYSBOBJ DD DISP=SHR, DSN=ARY.WRK0320.ARY.SYSBACK.OBJS
/** ARYSBVOL DD DISP=SHR, DSN=ARY.WRK0320.ARY.SYSBACK.VOLS
/** ARYSBSSD DD DISP=SHR, DSN=ARY.WRK0320.ARY.SYSBACK.SSID5
/** ARYBREPT DD DISP=SHR, DSN=ARY.WRK0320.ARY.BREPORT
/** ARY#PARM DD DSN=ARYRTE.WRK0320.SAMPLIB(ARY#PARM), DISP=SHR
/** ISPLLIB DD DISP=SHR, DSN=ARYRTE.WRK0320.LOADLIB
/** ISPPLIB DD DISP=SHR, DSN=ARYRTE.WRK0320.ISPPLIB
/** ISPTLIB DD DSN=&&TEMP, DISP=(OLD,DELETE,DELETE)
/** DD DISP=SHR, DSN=ISP.SISPTENU
/** ISPMLIB DD DISP=SHR, DSN=ARYRTE.WRK0320.ISPMLIB
/** DD DISP=SHR, DSN=ISP.SISPMENU
/** ISPSLIB DD DISP=SHR, DSN=ARYRTE.WRK0320.ISPSLIB
/** DD DISP=SHR, DSN=TUSER.ARY.TEST
/** ISPPROF DD DSN=&&PROF, DISP=(NEW,DELETE),
/**        UNIT=SYSALLDA, SPACE=(TRK,(2,1,2)),
/**        DCB=(RECFM=FB, LRECL=80, BLKSIZE=800)
/** ISPLOG DD SYSOUT=*, DCB=(RECFM=VA, LRECL=125, BLKSIZE=129)
/** ISPWRK1 DD UNIT=SYSALLDA, SPACE=(CYL,(30,30)),
/**        DCB=(RECFM=FB, LRECL=133, BLKSIZE=1330)
/** ARYOUT DD SYSOUT=*
/** ARY#REPT DD SYSOUT=*
/** ARYERROR DD SYSOUT=*
/** SYSTSPRT DD SYSOUT=*
/** SYSOUT DD SYSOUT=*
/** SYSTEMSIN DD *
        PROFILE NOPREFIX
        ISPSTART PGM(ARY@PEND)
/**          *
/** ARY#DATA DD *
RESOLVE_PENDING (
OBJECTS_PER_STEP 10
Db2_SUBSYSTEM S89Z
START_RBA 00000B21B47F
END_RBA 00000B21C000
GEN_TO_DATASET TUSER.ARY.TEST
GEN_TO_MEMBER RECRBLB
JOB_CARD_1_1 '//TUSER JOB TUSERDH,CLASS=A,NOTIFY=&SY'
JOB_CARD_1_2 'SUID'
JOB_CARD_2_1 '/*'
JOB_CARD_3_1 '/*'
JOB_CARD_4_1 '/*'
PARML_DSN ARYRTE.WRK0320.SAMPLIB
PARML_MEMBER ARY#PARM
Db2CNTL_DSN ARY.WRK0320.Db2.CONTROL
REUSE Y
PARALLEL 04
TAPEUNITS 02
IXREUSE Y
STATS Y
UPDATE_CAT S
UPDATE_HIST S

```

```

COLUMN_VALUES      Y      -
REPORT             Y      -
)
//*
```

## Restoring a subsystem: Data and logs

You can restore data and logs if both data and logs were successfully backed up. Also, if the backup specified data only, but Db2 Recovery Expert detected mixed data when the backup job was run, you must restore both data and logs.

These are the general steps to restore both data and logs. For restoring data and logs, Db2 Recovery Expert generates only one JCL member. Follow these general steps to restore the subsystem:

1. Build the restore job from the desired backup. Refer to [“Building the restore job - data and logs” on page 442](#) for details.
2. If not already stopped, stop Db2.
3. Submit the restore system JCL.
4. Restart Db2.

## Building the restore job - data and logs

Use these steps to build a restore job for data and logs.

1. Select a recovery point to which to restore.  
The Restore Options window is displayed.

Restore Options

|                                         |                      |          |
|-----------------------------------------|----------------------|----------|
| Restore Only Data                       | N                    | (Yes/No) |
| Resolve Recover/Rebuild Pending Objects | N                    | (Yes/No) |
| Select a Recovery Point                 | N                    | (Yes/No) |
| Recover to RBA/LRSN                     | 00000000000443D33000 |          |

Select whether to Restore Data and Logs or Data only. If restoring Data and Logs you will not be able to select a Timestamp Recovery Point or change the Recover to RBA/LRSN. If doing a Data only restore you will have the option of building a job that will resolve all the objects in either Recover pending or Rebuild pending status.

### Restore Only Data

To restore data and logs, enter N.

### Resolve Recover/Rebuild Pending Objects

Leave this field set to N; you cannot resolve recover or rebuild pending objects when restoring data and logs.

### Select a Recovery Point

Leave this field set to N; you cannot select a recovery point when restoring data and logs.

### Recover to RBA/LRSN

This field defaults to the recovery RBA/ LRSN associated with the backup. You cannot change this field.

2. Press Enter.

The Build Restore Job window appears:



```

000061 //ARY#REPT DD SYSOUT=*
000062 //SYSOUT DD SYSOUT=*
000063 //ARYOUT DD SYSOUT=*
000064 //ARYSNAP DD SYSOUT=*
000065 //ARY#PARM DD DSN=ARYRTE.WRK0220.SAMPLIB(ARY#PARM),DISP=SHR
000066 //ARYIN DD *
000067 RESTORE "PUSER"."TEST K82C - SNAP AUTO"
000068 GENERATION 01
000069 DATE 10/23/2021
000070 TIME 12:05:11
000071 RESTORE-LOGS
000072 /*
000073 /**
000074 /*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
000075 /***
000076 /*** Step: Db2START
000077 /***
000078 /*** Desc: This step will START Db2 subsystem K82C
000079 /***
000080 /*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
000081 /***
000082 //Db2START EXEC PGM=ARY#Sdb2,COND=(4,LT),PARM=(K82C,START)
000083 //STEPLIB DD DISP=SHR,DSN=ARYRTE.WRK0220.LOADLIB
000084 // DD DISP=SHR,DSN=DSN.K82C.SDSNEXIT
000085 // DD DISP=SHR,DSN=DSN.V810.SDSNLOAD
000086 //Db2PARMS DD DISP=SHR,DSN=ARY.WRK0220.Db2.CONTROL
000087 //SYSPRINT DD SYSOUT=*
000088 /***

```

## Adding keywords to a system restore job

Db2 Recovery Expert allows you to edit a system restore job and add one or more keywords. Each keyword that you specify adds functionality that otherwise would not be present in the generated JCL.

1. Access the **Build Restore Job** panel as follows:
  - a) Specify 1 (System Operations) in the **Option** line of the Db2 Recovery Expert main menu. From the System Operations Menu specify 3 (System Level Backup Operations) and press Enter. The **Restore System Display** panel opens.
  - b) Specify S in the **Cmd** line next to the system backup job to which you want to add keywords. The Restore Options panel opens. Specify or change options. Press Enter. The **Build Restore Job panel** opens.
  - c) Specify Y in the **Edit Generated Job** field. Specify any other fields that are applicable.
  - d) Press Enter. The JCL for the system backup job displays in an ISPF edit session.
2. Add one or more keywords to the JCL. You add keywords to the ARYIN DD \* statement following the keywords that are generated by Db2 Recovery Expert. You can add one or more of the following keywords:

### CLEAN-SNAP

Clean the snapper. May need in case the PRESNAP phase failed on the previous run.

### CLEAN-VVR

Clean volumes before the object restore.

### DEBUG

This keyword produces extra debugging information. You should only add this keyword when directed to by technical support.

### FCFRR

This keyword can be used when performing a system restore using space efficient flash devices. FCFRR must be specified for fast replication to be used during the flash copy restore. This parameter is honored only for restores using DFSMSdss as the copy method on space efficient devices. For all other copy methods the presence of this keyword is ignored.

### FROM-OFFLOAD

If the system backup that is used for the restore is on disk and tape, the restore is performed from the TAPE (or OFFLOAD) copy.



**LOCALSITE**

The restore job detects if it is running at the LOCAL or REMOTE site by looking at DSNZPARMs. This keyword overrides that detection and directs Db2 Recovery Expert to use LOCAL SITE resources for the recovery.

**MAX-TASKS**

This will control how many tasks are started to complete the restore processing for operations that can be multi-tasked. You can specify a number from 1 to 8. The default is 4.

**NOSTACK**

Free backup data sets after the object restore.

**NOTIFYONLY**

Do not execute object restore.

**RECOVERYSITE**

The restore job detects if its running at the LOCAL or REMOTE site by looking at DSNZPARMs. This keyword overrides that detection and directs Db2 Recovery Expert to use REMOTE SITE resources for the recovery.

**RESTART**

This keyword is used when a system restore from tape fails after some volumes have been restored. Db2 Recovery Expert restarts where it left off and continues the restore.

**RESTORE-LOGS**

If the system backup that is used for the restore contains the LOGS (either archive or active), this keyword causes the volumes containing the log data to be restored. This keyword is included automatically based on the options chosen when building the system restore JCL.

**RESTORE-TO-VOLSERS**

This keyword can be added to the system restore job at the disaster recovery site. It is required if your UCBs at the disaster recovery site do not match the UCBs at your local site. More specifically, if the UCBs at the disaster recovery site are not formatted with the same VOLSERS as were used at your local site (the case for most customers) this keyword is needed. It is also required for restoring from an offload which was run with the OFFLOAD-TO-VOLSERS control card.

**REMOTE-RESTORE**

This keyword is added to the disaster recovery system restore job. It specifies that the system restore job that Db2 Recovery Expert is running is a disaster recovery system restore job.

**RENAME-ALL *NewHLQ***

Rename objects using HLQ *NewHLQ*

**REUSE**

Do not delete data sets after object restore.

**USE-DSS**

DFSMSdss restore

**USE-FDR**

FDR Restore

**USE-FDR-INSTT**

Fdrinstant restore

**USE-SNAP**

SNAP DATASET copy

3. Either run the job or press PF3 to return to the Application Profiles Display panel.

## Selecting a recovery RBA based on a timestamp

You may be able to choose your recovery point from a list of timestamps and their associated RBAs.

For non-data sharing subsystem, your site must be running Db2 Recovery Expert's RBA Capture utility in order to use this feature. However, if your site was not running the utility but the subsystem you wish to restore is a data sharing subsystem, Db2 Recovery Expert can calculate a recovery LRSN based on a given timestamp without requiring the RBA Capture utility.

1. After you choose a backup to restore, the Restore Options window appears.
2. On the Restore Options window, enter Y in the Select a Recovery Point field and press Enter.

The following window appears:

```
Select Time / RBA information to display
Display Timestamp / RBA Captured Data:  Y  (Yes/No)
Display Archive Logs times / RBAs:      Y  (Yes/No)
Display Checkpoint times / RBAs:       Y  (Yes/No)
Timestamp to Db2 LRSN Utility:          N  (Yes/No)
```

On this window, you can choose either to display information from the RBA Capture utility or use the timestamp to LRSN conversion feature.

## Selecting a recovery RBA using the RBA Capture utility

If you are using Db2 Recovery Expert's RBA Capture utility, timestamps and their associated RBAs are tracked and stored in a VSAM repository.

If you select a backup to restore and then choose to select a recovery point, Db2 Recovery Expert displays all the RBAs captured from the date and time of the backup to either the current point in time OR to the date and time of the next backup that was taken.

1. To view the RBA Capture utility data, type Y in one or more of these fields:

### **Display Timestamp / RBA Captured Data**

Y in this field displays the timestamps and associated RBAs captured at the specified intervals while the Db2 subsystem was active.

### **Display Archive Logs times / RBAs**

Y in this field displays the timestamps and the RBAs and/or LRSNs at the start and end of the archive logs.

### **Display Checkpoint times / RBAs**

Y in this field displays the timestamps and associated log RBAs and/or LRSNs recorded at start and end checkpoints.

2. Type N in the Timestamp to Db2 LRSN utility field. Press Enter.

The Subsystem Time/RBA Display appears:

```
RCVYXPRT V3R2 ---- Subsystem Time/RBA Display --- YYYY/MM/DD HH:MM:SS
Option ==> Scroll ==> CSR
```

Line Commands: S - Select RBA

```
-----
RBA Backup Range Displayed from: 01/05/2021-16:46:49 To Current/End
-----
Subsystem: S89X          Datasharing: No          Row 1 of 111  +
-----
Archive Log Records
Strt/End <-- Log Timestamp --> <----- Log RBA -----> <---- Log LRSN ---->
Sta 01/06/2021-12:07:37.70 000000000000C179D000 00000000C38E3BA78E9B
End 01/07/2021-10:04:21.70 000000000000C395CFFF 00000000C38F61F7AD8D
Sta 01/07/2021-10:04:21.70 000000000000C395D000 00000000C38F61F7AD8E
End 01/12/2021-15:11:38.70 000000000000C5B1CFFF 00000000C395EFF9E01C
Sta 01/12/2021-15:11:38.70 000000000000C5B1D000 00000000C395EFF9E01D
End 01/12/2021-16:57:52.90 000000000000C7CDCFFF 00000000C39607B8CC27
Sta 01/12/2021-16:57:52.90 000000000000C7CDD000 00000000C39607B8CC28
End 01/13/2021-21:03:04.70 000000000000C9E9CFFF 00000000C39780647A69
-----
                                End of Data -----

Check Point Records
Strt/End <-- Log Timestamp --> <----- Log RBA -----> <---- Log LRSN ---->
Sta 01/13/2021-21:03:14.01 000000000000CA5B350C 00000000806D52126246
End 09/17/2021-18:53:47.37 000000000000CA5B6E62 00000000000000000000
Chkp Type: Checkpoint
Sta 01/13/2021-21:03:04.98 000000000000C9EAE637 000000008064B4D90886
End 09/17/2021-18:53:47.37 000000000000C9EB1BCE 00000000000000000000
Chkp Type: Shutdown
Sta 01/13/2021-21:03:02.91 000000000000C9CDE508 000000008062BC67B844
End 09/17/2021-18:53:47.37 000000000000C9CE1C5E 00000000000000000000
Chkp Type: Checkpoint
```

### Captured Timestamp/RBA section:

This section contains information about the RBA at the specified timestamp.

#### Active

Yes indicates the subsystem was active at that timestamp.

#### Log Timestamp

This is the store clock time at which Db2 Recovery Expert captured the RBA. The first timestamp captured probably will not be at an exact minute boundary, because the first RBA is captured at the time the task is started. However, successive timestamps should be on minute boundaries (such as 22:24:00.00).

#### Log RBA/Log LRSN

The log RBA and/or LRSN captured at the store clock time.

#### Log Bytes

The number of bytes that have been added to the log since the previous interval; blank if no changes have been made to the log.

**Tip:** If Log Bytes is blank, this represents a quiet time for the subsystem and therefore might be a good recovery point for that subsystem.

### Archive Log Records

#### Strt/End

The start and end timestamps for the RBAs at the start and end of the archive logs.

#### Log Timestamp

This is the store clock time at which the log records at the start and end of the archive log were created.

#### Log RBA/Log LRSN

The start or end log RBA and/or LRSN when the log records were created at the start and end of the archive log.

### Check Point Records

This section displays the timestamps and associated log RBAs and/or LRSNs recorded at start and end checkpoints.

#### Strt/End

The start and end timestamps for the beginning of the checkpoint record and the ending of the checkpoint record.

#### Log Timestamp

This is the store clock time associated with the RBA at the start or end of the checkpoint record.

#### Log RBA/Log LRSN

The start or end log RBA and/or LRSN captured at the store clock time.

#### Chkp Type

The type of checkpoint.

3. To select a recovery point, specify S next to the record and press Enter.
4. When you have selected an RBA, press PF3 to return to the Restore Options window.  
The selected RBA is inserted into the Recover to RBA/LRSN field.

## Using the timestamp to LRSN conversion window

This feature can be used for data sharing subsystems when you are restoring data only. You can enter a timestamp in either GMT or local time; Db2 Recovery Expert then determines the appropriate restore LRSN based on the timestamp.

1. Type Y in the **Timestamp to Db2 LRSN Utility** field and press Enter.  
The Timestamp to LRSN Conversion Utility window opens. Each of the fields default to the current date and time in local time, and the LRSN of the selected backup.

```
Timestamp to LRSN Conversion Utility
Timestamp is in GMT or Local Time      L (Gmt/Local)
Date to Recover      2021 - 01 - 13  (CCYY - MM - DD)
Time to Recover      22 : 17 : 16   (HH : MM : SS)
Generated LRSN      C39790F98670
```

2. Enter the desired time format in the **Timestamp is in GMT or Local Time** field.
3. Enter the desired date and time in the **Date to Recover** and the **Time to Recover** fields. You must enter values in all fields of the date and time before pressing Enter. Db2 Recovery Expert validates the date; if it is invalid, an error message is issued.
4. Press Enter. The appropriate LRSN based on the timestamp appears in the **Generated LRSN** field. The Date and Time to Recover fields become read only, and the Timestamp is in GMT or Local Time field changes to the Recover System to Generated LRSN field. This field defaults to Y. If you change it to N and press Enter, the field changes back to the Timestamp is in GMT or Local Time field, allowing you to modify the timestamp.
5. To accept the LRSN, enter Y in the Recover System to Generated LRSN field and press Enter. The Restore Options window reappears. The Recover RBA/LRSN field is populated with the LRSN retrieved via the conversion utility.

## Restarting a failed restore job

If a job fails while restoring a Db2 subsystem from tape, you may be able to restart the restore job using a **RESTART** parameter. This parameter allows Db2 Recovery Expert to bypass restoring volumes from tape that were successfully restored in the previous job.

The **RESTART** parameter can only be used for jobs that are restoring Db2 subsystems from tape. This parameter is not required; if you resubmit the restore job without adding **RESTART**, the restore job will start from the beginning and all volumes will be restored.

1. Open the restore job that failed in an edit session.
2. In the **ARYREST** step, find the **ARYIN DD**. Add the **RESTART** parameter anywhere after the **RESTORE** command, as shown in the following example:

```
//ARYIN DD *
  RESTORE PUSER."K82C - SNAP BACKUP"
          GENERATION 01
          DATE 10/31/2021
          TIME 15:13:14
          RESTART
/*
//*
```

3. Save the job and resubmit it.

Db2 Recovery Expert restore skips the tape restore for volumes that were previously successfully restored. Messages will appear in the restore report listing the volumes that were bypassed.

## Reviewing restore reports

Db2 Recovery Expert produces several different reports when a subsystem is restored. This section describes the reports; they are output to the **DDs** of each job. Except where indicated, the **DDs** are the same whether the restore is a data only restore or a full restore.

### Conditional restart job report (data only restores)

The Conditional restart job report appears in the **SYSPRINT DD** of the conditional restart job for a data only restore. This report mostly contains messages from the **DSNJU003** change log inventory utility.

The following is an example of the report:

```
RELEASE LEVEL OF BSDS - ACTIVE=2.3 AND ABOVE ARCHIVE=2.3 AND ABOVE DDNAME=SYS
RELEASE LEVEL OF BSDS - ACTIVE=2.3 AND ABOVE ARCHIVE=2.3 AND ABOVE DDNAME=SYS
CRESTART CREATE, ENDRBA=0000FE910000, FORWARD=YES, BACKOUT=YES
DSNJ408I DSNRJFKC CHECKPOINT RBA FOUND, RBA = 0000FE909C8E, TIME = 23:00:26 OCT08
DSNJ411I DSNRJRCR CRESTART CREATE FOR CRCRID = 0018, DDNAME = SYSUT1
DSNJ408I DSNRJFKC CHECKPOINT RBA FOUND, RBA = 0000FE909C8E, TIME = 23:00:26 OCT08
DSNJ411I DSNRJRCR CRESTART CREATE FOR CRCRID = 0018, DDNAME = SYSUT2
DSNJ225I CRESTART OPERATION COMPLETED SUCCESSFULLY
DSNJ200I DSNJU003 CHANGE LOG INVENTORY UTILITY PROCESSING COMPLETED SUCCESSFULLY
```

## Restore job report

This topic provides sample restore job reports.

### ARY#REPT DD

The following summary report appears in the **ARY#REPT DD** of the restore job. This **DD** lists the volume details of the restore. The following is a sample of the **ARY#REPT DD** for a restore using **BCV** backups:

```
Db2 Recovery Expert
Restore Summary Report

Utility Executed:..... Restore
Profile Name:..... PUSER.TEST K72A - BCV
Db2 Subsystem:..... K72A
Db2 Version:..... Vvvv
Restore Type:..... BCV
```

```

Restored:..... Object Data Only
Nbr of Controllers:..... 01
Lowest Microcode Level:... 5x73
Nbr of Volumes:..... 0001
Backup RBA:..... 0000FE909C28

```

Db2 Recovery Expert  
Restore Volume Detail Report

```

<--Db2 Source Volume--> <-Split-> <-Restore->
Volser Ucb# Sym# Devtyp Ucb# Sym# Ucb# Sym#
-----
ARY090 9090 0190 3390-3 90B3 0000 90B3 01B3

```

## ARYOUT DD

The following report appears in the ARYOUT DD of the restore job. This DD contains information about the backup profile used to make the backup, control cards, and ARY messages. The following is a sample of the ARYOUT DD for a restore using BCV backups:

```

ARYS001I - Db2 Recovery Expert Starting. Version 02.02.001
ARYS003I - Control Cards:
ARYS004I - RESTORE "PUSER"."TEST K72A - BCV"
ARYS004I - GENERATION 01
ARYS004I - DATE 10/30/2021
ARYS004I - TIME 17:44:32
ARYS004I -
ARYS123I - Backup PUSER.TEST K72A - BCV generation 01 was read from the repository.
ARYS013I - Backup profile PUSER.TEST K72A - BCV was read from the repository.
ARYS150I - EMC API version 05.08.00. API patch level 0001. SCF patch level 0001.
ARYS038I - Performing profile volume map validation.
ARYS146I - Removing volser ARY092 from this restore. It contains only log data.
ARYS039I - Volume map validation complete.
ARYS135I - Profile PUSER.TEST K72A - BCV has been marked as "Setup Needed".
ARYS137I - Varying volumes offline.
ARYS136I - Disconnecting user catalogs.
ARYS217I - User catalog CATALOG.RSPLEX01.K72A.CAT1 disconnected.
ARYS217I - User catalog CATALOG.RSPLEX01.K72A.CAT2 disconnected.
ARYS138I - Restoring volumes.
ARYS115I - Standard unit 9090 (volser ARY090) was restored from BCV unit 90B3.
ARYS137I - Varying volumes online.
ARYS002I - Db2 Recovery Expert complete. RC=000.

```

## ARYSNAPO

The following report appears in the ARYSNAPO DD of the restore job. This DD contains messages generated by the EMC SNAP VOLUME and Timefinder utilities. For information on these messages, see the EMC documentation.

ARY@SNPC - EMC Snap Cleanup Messages:

```

*** TIMEFINDER MF SNAP V5.8.0 (001) ***
ESNP010I BEGINNING COMMAND PARSE
ESNP011I PARSING STATEMENT #1
ESNPD00I API GLOBAL REQUEST PROCESSED
ESNP011I PARSING STATEMENT #2
ESNPC80I API CLEANUP REQUEST PROCESSED
ESNP500I UNIT 9090 WAS REQUESTED,
FOUND WITH VOLUME ARY090 MOUNTED
ESNP011I PARSING STATEMENT #3
ESNPC80I API CLEANUP REQUEST PROCESSED
ESNP504I UNIT 90B3 WAS REQUESTED, FOUND OFFLINE
ESNP011I PARSING STATEMENT #4
ESNPK31I A MAXIMUM OF 88 SUBTASKS WILL BE SCHEDULED
ESNP040I PROCESSING REQUESTS
ESNP044I PROCESSING FOR STATEMENT #2 BEGINNING,
CLEANUP EXTENT TRACK ON VOLUME ARY090
ESNP600I CLEANUP EXTENT TRACK COMPLETED
ESNP610I NO EXTENTS REMAINING IN EXTENT TRACK
ESNP621I - SOURCE - ACTIVE
ESNP622I SYM DEV# - SESSION LIST
ESNP623I *0100(9000) - 25EF 04FF 04FE 25ED 04FD 25EC
ESNP623I *0104(9004) - 04FF 12EE
ESNP623I *010C(900C) - 04FF 12EE
ESNP623I *010D(900D) - 04FF 12EE
ESNP623I *0110(9010) - 25EF 04FF 04FE 25ED 04FD 25EC

```

```

ESNP623I *0120(9020) - 04FF 12EE
ESNP623I *0140(9040) - 04FF 12EE
ESNP623I *0141(9041) - 04FF 12EE
ESNP623I *0150(9050) - 25EF 04FF 04FE 25ED 04FD 25EC
ESNP623I *0160(9060) - 04FF 12EE
ESNP623I *0180(9080) - 04FF 12EE
ESNP623I *0181(9081) - 04FF 12EE
ESNP623I *0190(9090) - 04FF
ESNP623I *0192(9092) - 25EF 04FF 04FE 25ED 04FD
ESNP623I *01D1(90D1) - 04FF 12EE
ESNP623I *01D3(90D3) - 04FF 12EE
ESNP624I -SESSION - REMAINING
ESNP625I ID - TRACKS TO COPY
ESNP626I 04FD - 0
ESNP626I 04FE - 0
ESNP626I 04FF - 0
ESNP626I 12EE - 0
ESNP626I 25EC - 0
ESNP626I 25ED - 0
ESNP626I 25EF - 0
ESNP045I PROCESSING FOR STATEMENT #2 COMPLETED,
HIGHEST RETURN CODE ENCOUNTERED IS 0
ESNP044I PROCESSING FOR STATEMENT #3 BEGINNING,
CLEANUP EXTENT TRACK ON VOLUME *90B3*
ESNP600I CLEANUP EXTENT TRACK COMPLETED
ESNP610I NO EXTENTS REMAINING IN EXTENT TRACK
ESNP621I - SOURCE - ACTIVE
ESNP622I SYM DEV# - SESSION LIST
ESNP623I *0100(9000) - 25EF 04FF 04FE 25ED 04FD 25EC
ESNP623I *0104(9004) - 04FF 12EE
ESNP623I *010C(900C) - 04FF 12EE
ESNP623I *010D(900D) - 04FF 12EE
ESNP623I *0110(9010) - 25EF 04FF 04FE 25ED 04FD 25EC
ESNP623I *0120(9020) - 04FF 12EE
ESNP623I *0140(9040) - 04FF 12EE
ESNP623I *0141(9041) - 04FF 12EE

*** TIMEFINDER MF SNAP V5.8.0 (001) ***
ESNP623I *0150(9050) - 25EF 04FF 04FE 25ED 04FD 25EC
ESNP623I *0160(9060) - 04FF 12EE
ESNP623I *0180(9080) - 04FF 12EE
ESNP623I *0181(9081) - 04FF 12EE
ESNP623I *0190(9090) - 04FF 25ED 04FD
ESNP623I *0192(9092) - 25EF 04FF 04FE 25ED 04FD
ESNP623I *01D1(90D1) - 04FF 12EE
ESNP623I *01D2(90D2) - 04FF 12EE
ESNP623I *01D3(90D3) - 04FF 12EE
ESNP624I -SESSION - REMAINING
ESNP625I ID - TRACKS TO COPY
ESNP626I 04FD - 0
ESNP626I 04FE - 0
ESNP626I 04FF - 0
ESNP626I 12EE - 0
ESNP626I 25EC - 0
ESNP626I 25ED - 0
ESNP626I 25EF - 0
ESNP044I PROCESSING FOR STATEMENT #3 BEGINNING,
CLEANUP EXTENT TRACK ON ATTACHED R2 VOLUME *70B3*
ESNP600I CLEANUP EXTENT TRACK COMPLETED
ESNP610I NO EXTENTS REMAINING IN EXTENT TRACK
ESNP045I PROCESSING FOR STATEMENT #3 COMPLETED,
HIGHEST RETURN CODE ENCOUNTERED IS 0
ESNP440I PROCESSING COMPLETED, HIGHEST RETURN CODE ENCOUNTERED IS 0

*** TIMEFINDER MF SNAP V5.8.0 (001) ***
RQST RC SOURCE TARGET
2 00 CLEANUP EXTENT TRACK ON VOLUME ARY090
3 00 CLEANUP EXTENT TRACK ON VOLUME *90B3*
ESNPL80I 2 INTRA-REQUEST LEVEL SUBTASKS WERE ATTACHED
ESNPL81I 2 INTER-REQUEST LEVEL SUBTASKS WERE ATTACHED

```

## Log restore report (data only restores)

This topic provides sample reports from the log restore job.

The log restore job uses RESTORE SYSTEM LOGONLY syntax to apply the logs. The output is placed in a SYSPRINT DD. The following is a sample of the output:

```

***** TOP OF DATA *****
DSNU000I DSNUGUTC - OUTPUT START FOR UTILITY, UTILID = TWUSR.TWUSRBD
DSNU1044I DSNUGTIS - PROCESSING SYSIN AS EBCDIC
DSNU050I DSNUGUTC - RESTORE SYSTEM LOGONLY
DSNU1604I !B81D DSNUVARL - RESTORE SYSTEM PHASE
                LOG APPLY STARTED AT LOG POINT = X'0000076AA090'.
DSNU1628I DSNUVBRD - RESTORE SYSTEM PHASE
                LOG APPLY COMPLETED, ELAPSED TIME = 00:00:00.
DSNU010I DSNUGBAC - UTILITY EXECUTION COMPLETE, HIGHEST RETURN CODE=0
***** BOTTOM OF DATA *****

```

## RECOVER and REBUILD job output

Output generated from the RECOVER and REBUILD jobs is shown in this topic.

### SYSPRINT DD (RCVRFRC step)

The following is an example of the output from the SYSPRINT DD in the RCVRFRC step of the RECOVER and REBUILD job.

```

DSNU000I DSNUGUTC - OUTPUT START FOR UTILITY, UTILID = PDBOB.RJOBGRD
DSNU1044I DSNUGTIS - PROCESSING SYSIN AS EBCDIC
DSNU050I DSNUGUTC - RECOVER TABLESPACE RIDB.RITS1 PARALLEL(4)
                TAPEUNITS(2) REUSE LOCALSITE
DSNU427I DSNUCBMT - OBJECTS WILL BE PROCESSED IN PARALLEL,
                NUMBER OF OBJECTS = 1

DSNU515I DSNUCBAL - THE IMAGE COPY DATA SET PDBOB.RIDB.RITS1.D081031.T101721.LP
                WITH DATE=20081031 A IS PARTICIPATING IN RECOVERY OF
                TABLESPACE RIDB.RITS1
DSNU504I DSNUCBRT - MERGE STATISTICS FOR TABLESPACE RIDB.RITS1 -
                NUMBER OF COPIES=1
                NUMBER OF PAGES MERGED=3
                ELAPSED TIME=00:00:00
DSNU1511I !B81D DSNUCALA - FAST LOG APPLY WAS NOT USED FOR RECOVERY
DSNU1510I DSNUCBDR - LOG APPLY PHASE COMPLETE, ELAPSED TIME = 00:00:00
DSNU500I DSNUCBDR - RECOVERY COMPLETE, ELAPSED TIME=00:00:01
DSNU010I DSNUGBAC - UTILITY EXECUTION COMPLETE, HIGHEST RETURN CODE=0

```

### SYSPRINT DD (REBUILD step)

The following is an example of the output from the SYSPRINT DD in the REBUILD step of the RECOVER and REBUILD job.

```

DSNU000I DSNUGUTC - OUTPUT START FOR UTILITY, UTILID = PDBOB.RJOBGRD
DSNU1044I DSNUGTIS - PROCESSING SYSIN AS EBCDIC
DSNU050I DSNUGUTC - REBUILD INDEX("PDBOB"."RIIX1") REUSE SORTDEVT SYSDA SORTNUM
                6 SORTKEYS STATISTI YES KEYCARD UPDATE SPACE HISTORY
SPACE
DSNU555I !B81D DSNUCRUL - UNLOAD PHASE STATISTICS
                - NUMBER OF RECORDS PROCESSED=32
DSNU705I DSNUCRIB - UNLOAD PHASE COMPLETE - ELAPSED TIME=00:00:00
DSNU394I !B81D DSNURBXC - SORTBLD PHASE STATISTICS -
                NUMBER OF KEYS=32 FOR INDEX PDBOB.RIIX1
DSNU391I DSNUCRIB - SORTBLD PHASE STATISTICS. NUMBER OF INDEXES = 1
DSNU392I DSNUCRIB - SORTBLD PHASE COMPLETE, ELAPSED TIME = 00:00:04
DSNU618I !B81D DSNUSUIP - SYSINDEXPART CATALOG STATISTICS
                FOR PDBOB.RIIX1 PARTITION 0
                CARD = 32
                CARDF = 3.2E+01
                NEAROFFPOS = 0
                NEAROFFPOSF = 0.0E0
                FAROFFPOS = 0
                FAROFFPOSF = 0.0E0
                LEAFDIST = 0
                LEAFNEAR = 0
                LEAFFAR = 0
                SPACE = 96
                SPACEF = 9.6E+01
                DSNUM = 1
                EXTENTS = 1
                P_DEL_ENT = 0
                P_QTY = 16
                S_QTY = 16
DSNU610I !B81D DSNUSUIP - SYSINDEXPART CATALOG UPDATE FOR PDBOB.RIIX1 SUCCESSFUL
DSNU615I !B81D DSNUSUCO - SYSCOLUMNS CATALOG STATISTICS
                FOR COL01
                COLCARD = 32

```



```

COLCARDF      = 3.2E+01
HIGH2KEY      = X'D7404040'
LOW2KEY       = X'C1C1C1C1'
DSNU617I  !B81D DSNUSUIX - SYSINDEXES CATALOG STATISTICS
FOR PDBOB.RIIX1
CLUSTERED     = Y
CLUSTERRATIO  = 100
CLUSTERRATIOF= 1.0E+00
FIRSTKEYCARD  = 32
FIRSTKEYCARDF= 3.2E+01
FULLKEYCARD   = 32
FULLKEYCARDF  = 3.2E+01
NLEAF         = 1
NLEVELS       = 2
SPACEF        = 9.6E+01
DSNU610I  !B81D DSNUSUIX - SYSINDEXES CATALOG UPDATE FOR PDBOB.RIIX1 SUCCESSFUL
DSNU620I  !B81D DSNUSEOF - RUNSTATS CATALOG
TIMESTAMP = 2021-11-01-07.31.17.680374
DSNU568I  !B81D DSNUGSRX - INDEX PDBOB.RIIX1 IS IN INFORMATIONAL COPY PENDING
DSNU010I  DSNUGBAC - UTILITY EXECUTION COMPLETE, HIGHEST RETURN CODE=0

```

## UTPRINT DD (REBUILD step)

The following is an example of the output from the UTPRINT DD in the REBUILD step of the RECOVER and REBUILD job.

```

ICE143I 0 BLOCKSET      SORT TECHNIQUE SELECTED
ICE250I 0 VISIT http://www.ibm.com/storage/dfsor
FOR DFSORT PAPERS, EXAMPLES AND MORE
ICE000I 0 CONTROL STATEMENTS FOR 5694-A01, Z/OS DFSORT V1R5
- 07:31 ON SAT NOV 01, 2021
- SORT FIELDS=(00007.0,00006.0,A,00001.0,00005.0,A),
FORMAT=BI,FILSZ=E0000*000000006120,DYNALLOC=(SYSDA,06)
RECORD TYPE=F,LENGTH=(0012,0012,0012)
OPTION MSGPRT=ALL,SORTDD=SW01,MSGDDN=UTPRINT,MAINSIZE=027638K
ICE201I F RECORD TYPE IS F - DATA STARTS IN POSITION 1
ICE751I 0 C5-K90013 C6-K90013 C7-K90000 C8-K90013 E4-K90007 C9-BASE
E5-K35433 E6-K34782 E7-K24705
ICE193I 0 ICEAM2 ENVIRONMENT IN EFFECT - ICEAM2 INSTALLATION MODULE SELECTED
ICE089I 1 RJOBICRD .REBUILD . , INPUT LRECL = 12, TYPE = F
ICE092I 0 MAIN STORAGE = (28301312,28301312,28301312)
ICE156I 0 MAIN STORAGE ABOVE 16MB = (28170420,28170420)
ICE127I 0 OPTIONS: OVFL0=RC0,PAD=RC0,TRUNC=RC0,
SPANINC=RC16,VLSCMP=N,SZERO=Y,RESET=Y,VSAMEMT=Y,DY
ICE128I 0 OPTIONS: SIZE=28301312,MAXLIM=1048576,MINLIM=450560,
EQUALS=N,LIST=Y,ERET=RC16 ,MSGDDN=UTPR
ICE129I 0 OPTIONS: VIO=N,RESDNT=ALL,SMF=NO,
WRKSEC=Y,OUTSEC=Y,VERIFY=N,CHALT=N,DYNALOC=(SYSDA ,
ICE130I 0 OPTIONS: RESALL=0,RESINV=0,SVC=109,CHECK=Y,
WRKREL=Y,OUTREL=Y,CKPT=N,STIMER=Y,COBEXIT=COB2
ICE131I 0 OPTIONS: TMAXLIM=6291456,ARESALL=0,ARESINV=0,OVERRGN=16384,
CINV=Y,CFW=Y,DSA=0
ICE132I 0 OPTIONS: VLSHRT=N,ZDPRINT=Y,IEXIT=N,TEXIT=N,LISTX=N,EFS=NONE,
EXITCK=S,PARMDDN=DFSPARM
ICE133I 0 OPTIONS: HIPRMAX=OPTIMAL,DSPSIZE=MAX ,ODMAXBF=0,SOLRF=Y,
VLLONG=N,VSAMIO=N,MOSIZE=MAX
ICE235I 0 OPTIONS: NULLOUT=RC0
ICE750I 0 DC 0 TC 0 CS DSVVV KSZ 11 VSZ 11
ICE752I 0 FSZ=6120 RE IGN=0 C AVG=12 0 WSP=95 E DYN=0 0
ICE751I 1 DE-K24705 D5-K24705 D9-K24705 E8-K90013
ICE091I 0 OUTPUT LRECL = 12, TYPE = F
ICE080I 0 IN MAIN STORAGE SORT
ICE055I 0 INSERT 32, DELETE 32
ICE054I 0 RECORDS - IN: 0, OUT: 0
ICE134I 0 NUMBER OF BYTES SORTED: 384
ICE165I 0 TOTAL WORK DATA SET TRACKS ALLOCATED: 0 , TRACKS USED: 0
ICE199I 0 MEMORY OBJECT STORAGE USED = 0M BYTES
ICE180I 0 HIPERSPACE STORAGE USED = 0K BYTES
ICE188I 0 DATA SPACE STORAGE USED = 0K BYTES
ICE052I 0 END OF DFSORT

```

## Creating image copies from system level backups

You can use Db2 Recovery Expert to make Db2 image copies from system level backups if object restore is enabled when the backup job was built.

After the backup is complete, you can select an existing application profile, or create a new application profile, to specify which objects to copy. You can have the image copies registered in the Db2 system catalog table SYSIBM.SYSCOPY, therefore allowing the image copies to be used by several Db2 utilities that can process Db2 image copies.

### Note:

- DFSMSdss version 1.8 or higher is required to create an image copy from a system level backup.
- In some cases image copies created from a system level backup are not in page order. If the image copy is not in page order it may not work with the IBM UNLOAD utility.

You can make image copies of table spaces and indexes defined with COPY YES that were included in the backup.

A backup taken using any method can be used to create the image copies. In most cases, a backup offloaded to tape can also be used; however, if the profile used FDR to offload the backup, that offloaded backup cannot be used to make image copies.

All image copies will be for a single partition. If a non-partitioned object has grown to multiple data sets, all data sets will be included in the image copy.

The image copies are registered as SHRLEVEL CHANGE copies. The start RBA will be recorded as the HPGRBLP RBA value associated with a system backup. Db2 maintains this RBA in the header page of DSNDB01; every log record lower than this RBA or LRSN has been applied and externalized to disk. The PIT\_RBA will be set to the backup RBA associated with the system backup. No log records past this value are applied to the table spaces and indexes in the system backup.

Db2 Recovery Expert will not create an image copy for objects that were in a restricted state at the time of the system backup. If you try to create an image copy for an object that was in a restricted state at the time the system backup was performed, an error message will be produced informing you of the restricted status of the object. You can confirm that the object was in a restricted state using the Restricted Objects report that is produced at system backup time.

**Note:** Db2 Recovery Expert does not create image copies of encrypted objects (created with nonempty KEY LABEL).

## Selecting or creating the application profile

This topic describes how to specify or create an application profile when creating Db2 image copies from a system level backup.

1. On the Restore System Display panel, enter the I line command next to the backup and press Enter. The Enter Application Profile Selection panel is displayed:

```
Enter Application Profile Selection Criteria
Stored on SSID T9A1 (? for subsystem list)
Name Like      *
Creator Like    TUSER*
```

You can limit the profiles that are listed on the next panel by entering a profile name, profile creator name, or SSID in this window. You can use wildcards for one or all fields; an asterisk (\*) is the only supported wildcard character.

**Note:** You can change the SSID on this window to see profiles on different subsystems, but you can only use a profile that was created for the subsystem on which the backup was taken.

2. Press Enter.

The Application Profile Selection panel is displayed.

```
RCVYXPRT V3R2 ---- Application Profile Selection ---- 2021/01/13 22:27:04
Option ==> Scroll ==> CSR

Line Commands: S - Select D - Delete U - Update
                C - Create R - Rename V - View

-----
Profile Like *          SSID Like T9A1
Creator Like TUSER*    Row 1 of 1  >
-----

Cmd  Name          Creator  SSID  Updt
   T9A1          TUSER   T9A1   U
***** Bottom of Data *****
```

The fields on this panel are described in [“Creating application profiles”](#) on page 304. Use the RIGHT and LEFT scroll commands (PF10 and PF11) to see all the available columns. Use the UP and DOWN commands (PF7 and PF8) to scroll through the list when there are more profiles than can be displayed on one panel. On this panel, you can select an existing profile, or create one as described in [“Creating application profiles”](#) on page 304.

3. On the Application Profile Selection panel, select the profile using the S line command. When you press Enter, the Build Image Copy Job window is displayed:

```
Build Image Copy Job for TUSER

Edit Generated Job      Y          (Yes/No)
Edit Image Copy Options N          (Yes/No)

Build job in Dataset    TUSER.DAH.TEST
Member                  COPY10BJ

Job Cards:
==> //TUSERIC JOB TUSERDH,CLASS=A,NOTIFY=&SYSUID
==> //*
==> //*
==> //*
```

### Edit Generated Job

Enter Y to view the job in an ISPF edit session after generation. If you enter N, after the job is generated you will return to the Restore System Display.

### Edit Image Copy Options

Enter Y if you want to edit options for the image copy, including the data set name specifications, work volumes, and whether you want the copy registered in SYSCOPY. Options must be set the first time you create a job for an image copy from a system level backup. Subsequent jobs use the previous settings if you do not specify to edit the options.

### Build job in Dataset/Member

Enter the fully qualified data set name (without quotes) where you want to save the generated job. This data set must exist and can be sequential or a PDS. If the data set is a PDS, enter a member name. If the member does not exist, Db2 Recovery Expert will create it.

### Job Cards

Enter a valid job card for your site.

## Setting image copy options

This topic describes how to set image copy options such as backup type, data set naming specifications, and whether the copy is to be recorded in SYSCOPY.

1. On the **Build Image Copy Job** window, enter Y in the **Edit Image Copy Options** field and press Enter. The Image Copy Option panel opens. The following is an example of the panel:

```
RCVYXPRT V3R2 ----- Image Copy Options ----- 2021/01/14 15:06:42
Option  ==>
-----
Update DSN Specification => Y          (Yes/No)
Backup Type              => LP          (LP/LB/RP/RB)
Unit Type               => SYSALLDA    (CART/SYSALLDA/etc..)
Catalog                 => Y          (Yes/No)
Register in SYSCOPY     => Y          (Yes/No)
All Parts in one Copy   => Y          (Yes/No)
Data Class              =>            (8 character class)
Storage Class           =>            (8 character class)
Management Class       =>            (8 character class)
Volume Count           => 005         (1-256)
Number of Tasks        => 02         (1 - 8)
Work Volumes           => R1P126 R1P127
Work Storage Class     => SG3
Work Storage group     =>
Work Qualifier         =>
Maximum Work Volumes   => 005         (1-256)
Process Indexes        => N          (Yes/No)
Process RI             => N          (Yes/No)

Tape specific parameters (only needed if Unit Type is a Tape device):
Stack Copies on Tape   => Y          (Yes/No)
Tape Stack Limit       => 005         (1 - 999)
Expiration date *or*   =>            (YYYYDDDD/YYDDDD)
Retention period       =>            (4 digit number)
```

2. Enter the fields as follows:

### Update DSN Specification

Specify Y in this field to specify or update the copy data set name template.

### Backup Type

Specify the type of image copy to create. Valid values are LP (local primary), LB (local backup), RP (remote primary), or RB (remote backup). If the backup offloaded to tape is used to create an image copy, make sure the system level backup was performed for the corresponding backup copy type, by verifying that the appropriate field is set on the Offload Options panel for Backup Profile.

### Unit Type

Type in a valid unit where the data set will be written.

### Catalog

Type Y to catalog the data set. Type N to not catalog the data set.

### Register in SYSCOPY

Type Y to have the image copy registered in SYSIBM.SYSCOPY.

### All Parts in one Copy

Type Y to specify that when creating an image copy from a system level backup, all partitions of a partitioned object (table or index space) will be placed in the same image copy data set. The image copy row that is logged will indicate that all partitions are in the same copy as well. Type N to specify that each partition of a partitioned object (table or index space) will be placed in its own image copy. Specifying Y in this field will reduce the number of image copy data sets that are created.

**Data Class**

If your site uses SMS to manage data sets, type in the SMS Data Class.

**Storage Class**

If your site uses SMS to manage data sets, type in the SMS Storage Class.

**Management Class**

If your site uses SMS to manage data sets, type in the SMS Management Class.

**Number of tasks**

Specify the number of subtasks that Db2 Recovery Expert is to use when creating the image copies.

**Work Volumes**

Specify the work volumes used during the creation of the image copies. This field can be left blank, or up to six volumes can be specified.

**Note:** If Db2 has striping on, you must use SMS managed work volumes.

**Work Storage Class (optional)**

If the work volume(s) specified are SMS-managed, you can specify an SMS storage class. This field can be left blank; if blank, the value will not be passed to DFSMSdss.

**Work Storage Group**

All volumes that belong to the storage group you specify are validated; if they are valid, they are included in the work volumes list.

**Work Qualifier**

Specify an HLQ, data set name, or dataset mask to obtain volumes from its associated storage group. All volumes that belong to the storage group associated with the qualifier are validated; if they are valid, they are included in the work volumes list. The Work Qualifier field is validated as a dataset mask. The qualifier value is used only for obtaining a list of work volumes. It does not mean that the image copy will be created with this qualifier. To specify the IC data set, use the Image Copy DSN Specification options.

**Note:** At least one of the following three parameters must be specified: Work Volumes, Work Qualifier, or Work Storage Class. These are the three ways of specifying the work volumes you want to use. If none of these is specified, message ARYR543E will be generated.

**Maximum Work Volumes**

You can specify a maximum number of work volumes, which can be anywhere from 1 to 256. This field can be left blank; the default value is 5.

**Process Dependent Indexes**

Specify whether the indexes on selected objects are copied. Specify Y to include all indexes on selected objects in the image copy if they are defined as COPY YES. Specify N to exclude the indexes from the image copy.

**Process RI**

Specify whether related objects are included in the image copy. Specify Y to include all related table spaces including RI table spaces, LOB table spaces and XML table spaces. Specify N to exclude the related objects from the image copy.

Enter the following fields if the unit type is a tape device:

**Stack Copies on Tape**

Indicate whether you want to stack image copies on a single tape when possible.

**Tape Stack Limit**

If stacking image copies, enter the number of image copies that you want Db2 Recovery Expert to stack on one tape before dismounting the tape.

**Expiration date \*or\* Retention period**

Enter either the tape expiration date in YYYYDDD format, or the tape retention period in number of days.

**Volume Count**

Enter the maximum number of volumes for each image copy.

3. When you have finished entering image copy options, press PF3 (END).

The Build Image Copy Job window is displayed.

## Image copy options in JCL

New input cards will be added to generated IMAGE-COPY step according to the fields filled on the **Image Copy Options** (ARY\$IMGO) panel.

The following inputs cards will be generated:

- COPY-WORK-HLQ WRKHLQ: Up to 44 characters Work Qualifier enclosed in double quotes
- COPY-WORK-STORGROUP WRKSTGR: 8-character Work Storage Group
- COPY-MAX-WORK-VOLUMES MAXVOLUMES: 3-digit maximum work volumes value (leading zero is required)

Db2 Recovery Expert V3.2 obtains the Storage Group associated with Work Qualifier, then obtains volumes belong to this storage group (highlighted in yellow and purple):

Image Copy options

```
ARYS001I - IBM DB2 Recovery Expert for z/OS Starting. Version 03.02.001
ARYS003I - Control Cards:
ARYS004I - IMAGE-COPY "ARYTST1"."EBIA_DB2"
ARYS004I - GENERATION 01
ARYS004I - DATE 07/14/2021
ARYS004I - TIME 10:36:18
ARYS004I - MAX-TASKS 02
ARYS004I - COPY-TYPE LP
ARYS004I - COPY-UNIT SYSALLDA
ARYS004I - COPY-MASK "&UID..&VOLSER..&VCATNAME..&RANDOM#.."
ARYS004I - COPY-CATALOG
ARYS004I - COPY-REGISTER
ARYS004I - COPY-STACK 005
ARYS004I - COPY-MAX-TAPES 005
ARYS004I - COPY-MAX-WORK-VOLUMES 008
ARYS004I - COPY-WORK-HLQ "QB1X.IMAGCOPY.*)"
ARYS004I - COPY-WORK-STORGROUP RCKG1
ARYS004I - TABLESPACE S0760D00.S0760S00
ARYS004I - DEBUG
ARYS905I - Storage group BPKG3 obtained for qualifier QB1X.IMAGCOPY.**
ARYS275I - Fetching volumes in source storage group: BPKG3
ARYS906W - Skipping invalid or not online work volume DIP10A.
ARYS906W - Skipping invalid or not online work volume DIP10B.
ARYS906W - Skipping invalid or not online work volume DIP10C.
ARYS906W - Skipping invalid or not online work volume DIP10D.
ARYS906W - Skipping invalid or not online work volume DIP10E.
ARYS906W - Skipping invalid or not online work volume DIP10F.
ARYS906W - Skipping invalid or not online work volume DIP102.
ARYS906W - Skipping invalid or not online work volume DIP103.
ARYS906W - Skipping invalid or not online work volume DIP104.
ARYS906W - Skipping invalid or not online work volume DIP105.
ARYS275I - Fetching volumes in source storage group: RCKG1
ARYS907I - The final list of work volumes:
ARYS908I - Volume R1P144, free tracks 0004D0BF
ARYS908I - Volume R1P142, free tracks 0004A5A8
ARYS908I - Volume R1P13F, free tracks 0004A08B
ARYS908I - Volume R1P143, free tracks 000498E8
ARYS908I - Volume DIP123, free tracks 0003A803
ARYS908I - Volume DIP126, free tracks 000393A6
ARYS908I - Volume R1P145, free tracks 000360D1
ARYS908I - Volume DIP124, free tracks 00033C5C
ARYS162I - Parmlib used for this execution
ARYS004I - 0001 BACKUP AND RECOVERY
```

Work Volumes from Storage Group specified with COPY-WORK-STORGROUP input card and Work Volumes specified explicitly with COPY-WORK-VOLSER input card are also added to the Work Volumes list.

The Work Volumes list is sorted in volume free tracks descending order (blue).

The number of volumes in the list is limited to the value specified with COPY-MAX-WORK-VOLUMES input card (highlighted in green).

Work Volumes from the resulted Work Volumes list are passed to DFSMSdss sequentially starting from the first in the list (highlighted in red). When the list ends, the first volume is used again. If the process runs with two or more tasks, every task starts with the beginning of the list; this will be reflected in the job log.

## Specifying data set naming conventions

You can use Db2 Recovery Expert Image Copy DSN Specification panel to construct data set names for the image copies.

The Image Copy DSN Specification screen allows you to build data set names using variables that are resolved at run time.

If you do not specify a data set mask using this screen, the DSN defaults to the following mask:

```
&UID..&SSID..&DB..&SN..ICOPY
```

- When you type Y in an Update DSN Specification field, the screen appears.

```
RCVYXPRT V3R2 ---- LP Image Copy DSN Specification --- 2021/01/14 15:26:21
Option ==>
-----
Enter codes to create a dataset name specification:
Qualifier code ==> Free form literal ==> Show DSN ==> N
Current dataset name qualifier string:

Valid dataset name specification codes are:
1. Database          10. Year (YYYY)      19. GDG (+1)..(+n)
2. Space Name       11. Month (MM)      20. Backup Type (#18.#19)
3. Partition        12. Day (DD)        21. Local/Recovery (L/R)
4. Volser           13. Julian Day (DDD) 22. Primary/Backup (P/B)
5. Vcatname         14. Hours (HH)      23. Job Name
6. Subsystem ID     15. Minutes (MM)    24. Step Name
7. User ID          16. Seconds (SS)    25. Profile Creator
8. Time (HHMMSS)    17. Timestamp       26. Profile Name
9. Date (YYYYDDD)   18. Random Number   27. Substring Qualifier
                   28. Use freeform literal
```

### Qualifier code

To include a qualifier, type its number in the **Qualifier code** field and press Enter. The qualifier string appears in the Current® dataset name generation qualifier string field. You can also type the data set name or string directly in the string field.

### Free form literal

After selecting the Use Freeform literal qualifier, you can enter an eight-character literal in this field. If you want the literal to be in its own substring, make sure to begin the literal with a period.

### Show DSN

To view the string as it would be completed, enter Y in this field and press Enter.

### Current dataset name generation qualifier string

This field displays the qualifier string as it was input.

Valid qualifiers for the data set names that you can use on the Offload DSN Specification screen are listed on the bottom half of the screen and are:

### Database

The database name of the object being copied.

### Space Name

The table space or index space name being copied.

### Partition

The partition number of the object being copied.

### Volser

The volume serial of the data set.

**Vcatname**

The volume catalog name.

**Subsystem ID**

The Db2 subsystem ID.

**User ID**

The TSO user ID of the job builder.

**Time (HHMMSS)**

The current time in the format shown.

**Date (YYYYDDD)**

The current date in the format shown.

**Year (YYYY)**

The year in the format shown.

**Month (MM)**

The month in the format shown.

**Day (DD)**

The day of the month in the format shown.

**Julian Day (DDD)**

The Julian day.

**Hours (HH)**

The current time in hours.

**Minutes (MM)**

The current time in minutes.

**Seconds (SS)**

The current time in seconds.

**Timestamp**

The current timestamp, in format yymmdd.hhmmss.

**Random Number**

A random number in format Rnnnnnn.

**GDG (+1)..(+n)**

If you are using GDG data sets, this variable appends (+n) to the GDG base. This must be the last qualifier code you specify for the data set name.

**Backup Type (#18.#19)**

The backup type. The format is x.y, where x is L for local or R for recovery and y is P for primary or B for backup.

**Local/Recovery (L/R)**

The backup type; L is used for local and R for recovery.

**Primary/Backup (P/B)**

The image copy backup type; P is used for primary and B for backup.

**Job Name**

The job name.

**Step Name**

The job step name.

**Profile Creator**

The profile creator ID.

**Profile Name**

The profile name.

**Substring Qualifier**

Select this option to specify one of the qualifiers and customize the substring. When you press Enter, the substring parameters window appears.



### Use freeform literal

After selecting this qualifier, you can enter an eight-character literal in the Free Form literal field. If you want the literal to be in its own substring, make sure to begin the literal with a period. For example, if you enter 1 (Volser), 3 (Subsystem ID), then 14 (Timestamp), the data set name appears as:

```
volser.ssid.D070104.T151509
```

where *volser* and *ssid* resolve to values appropriate to your site.

## Using the substring function

Use the Substring Qualifier function to customize substring parameters.

When you choose the **Substring Qualifier** data set name specification code, the Substring Parameters window is displayed.

```
Substring Parameters
Enter the Qualifier Code ==>
Enter Starting Position ==>
Enter Substring Length ==>

Press ENTER or PF3 to continue
```

You can choose to enter almost any of the qualifier codes and specify the string's starting position and length. For example, qualifier code 3 generates a string of "&SSID", a four-character subsystem name. However, if your site uses three-character SSIDs, option 24 can be used to specify the SSID and customize the string length, as follows:

```
Substring Parameters
Enter the Qualifier Code ==> 3
Enter Starting Position ==> 1
Enter Substring Length ==> 3

Press ENTER or PF3 to continue
```

An example of the result is shown in the following screen:

```
RCVYXPRT V3R2 ---- LP Offload DSN Specification --- 2021/01/13 01:23:28
Option ==>
-----
Creator: TUSER          Name: FLASH BACKUP          SSID: K82B
Share Option: U (Upd,View,No)  Description:
-----
Enter codes to create a dataset name specification:
Qualifier code ==>      Free form literal ==>      Show DSN ==> N

Current dataset name qualifier string:
&SSID(1,3).

Valid dataset name specification codes are:
1. Volser                9. Day (DD)                17. Backup Type (#18.#19)
2. Vcatname              10. Julian Day (DDD)       18. Local/Recovery (L/R)
3. Subsystem ID         11. Hours (HH)            19. Primary/Backup (P/B)
4. User ID               12. Minutes (MM)          20. Job Name
5. Time (HHMMSS)        13. Seconds (SS)          21. Step Name
6. Date (YYYYDDD)       14. Timestamp              22. Profile Creator
7. Year (YYYY)          15. Random Number         23. Profile Name
8. Month (MM)           16. GDG (+1)..(+n)        24. Substring Qualifier
                        25. Use freeform literal
```

## Resulting DSN using current symbolic string

Some substrings (such as time and date) require the addition of an alphanumeric or symbol in the beginning of the string.

When you select these substrings, the following window is displayed.

```
Resulting DSN using current symbolic string

Enter a Literal or Symbolic to Prefix the Invalid Dataset Node

==>

Invalid Dataset Name:
* VOLSER.DATABASE.SPACENAM.2009014          *
```

-----  
| ARYR284E - Invalid ending period detected. |  
-----

This screen allows you to insert an alphanumeric or symbol to make the data set node name valid. When finished, press Enter. The Offload DSN Specification screen reappears with the corrected substring.

## Viewing a sample string

To view the string as it will be completed, type **Y** in the **Show DSN** field.

When you press Enter, the sample string appears. The following is an example of the sample string as it may appear in the panel:

```
Resulting DSN using current symbolic string

Using the following sample data as input:

&JOBNAME   = 'JOBNAME '  &STEPNAME   = 'STEPNAME'  &UID       = 'PDUSER2'
&SSID      = 'SSID'     &VOLSER    = 'VOLSER'   &VCATNAME  = 'VCATNAME'
&LOCREM    = 'L'        &PRIBAC    = 'P'        &DB        = 'DATABASE'
&PROFCRTR  = 'PDUSER2'  &PROFNAME  = 'S89Z OBJE &SN       = 'SPACENAM'
&PART      = 'PART'

The date/time fields are set to the current time.

The generated dataset would be:

* DATABASE.SPACENAM.T210215          *
```

## Creating an image copy from the last created system-level backup

Db2 Recovery Expert can create image copies from the last created system-level backup (SLB) for a Db2 subsystem. After generating the JCL to create image copies for a selected system-level backup, you can edit the generated JCL directing Db2 Recovery Expert to use the last backup.

1. Use the Db2 Recovery Expert ISPF interface to generate the JCL that will create image copies for a selected system-level backup.
2. Edit the control cards in the JCL. In the ARYIN DD add the LAST-BACKUP control cards. There are two options for the LAST-BACKUP control card:
  - To use the last backup of a particular backup profile, specify GENERATION LAST-BACKUP.
  - To use the last backup for a particular Db2 SSID (regardless of profile name), specify LAST-BACKUP SSID directly following the IMAGE-COPY card.

The LAST-BACKUP card must follow either the IMAGE-COPY card or the GENERATION card.

#### Example #1

Generated JCL control cards that do not use the LAST-BACKUP card:

```
//ARYIN DD *
IMAGE-COPY "PDUSER"."TEST EA1A FLASH BACKUP"
           GENERATION 01
           DATE          02/28/2021
           TIME          17:41:17
           MAX-TASKS    02
```

#### Example #2

Edited JCL control cards that use the last backup for a Db2 SSID (any profile name):

```
//ARYIN DD *
IMAGE-COPY LAST-BACKUP ssid
           MAX-TASKS    02
           etc.
```

#### Example #3

Edited JCL control cards that use the last backup for a specified profile:

```
//ARYIN DD *
IMAGE-COPY "PDUSER"."TEST EA1A FLASH BACKUP"
           GENERATION LAST-BACKUP
           MAX-TASKS    02
           etc.
```

## Restarting an image copy from a system level backup job

You can use the RESTART keyword to restart a job that failed during the creation of an image copy from a system level backup. The RESTART keyword enables you to restart the job where it ended without having to rerun the entire job or analyze the output to see what has been run and successfully copied.

To drive the restart processing you will add the RESTART keyword to the end of the control card statements that are generated by Db2 Recovery Expert in the ARYIN DD statement. When this keyword is present, Db2 Recovery Expert will search SYSIBM.SYSCOPY to see if any image copies of the selected type (LP, LB, RP, RB) were created from the selected system backup in a previous run. If so, a message will be produced saying it was image copied in a previous run and the current copy will be skipped. The RESTART keyword will only work if the image copies are being registered in SYSIBM.SYSCOPY. If the RESTART keyword is not added, the processing will remain unchanged. A new image copy will be created for each table or index space specified regardless of whether one had been created in a previous run or not.

### Example

The following is an example of the RESTART control card:

```
//ARY#PARM DD DISP=SHR,
//          DSN=ARY.TST0310.SAMPLIB.EDITED(ARY#PARM)
//ARYIN    DD *
IMAGE-COPY "CSKATE"."IPZ Db2"
           GENERATION 01
           DATE          02/28/2021
           TIME          18:54:22
           MAX-TASKS    01
           COPY-TYPE    LP
           COPY-UNIT    SYSDA
           COPY-MASK    "CSKATE.&DB..&SN..P&PART..T&TIME."
           COPY-CATALOG
           COPY-REGISTER
           COPY-STOR-CLASS B0ZOCLAS
           COPY-STACK 999
```

```
COPY-MAX-TAPES 100
COPY-WORK-VOLSER WRKV01
COPY-WORK-STORCLAS WRKCLASS
TABLESPACE ICTEST.SEG16K
INDEXSPACE ICTEST.IX16KS
RESTART
```

/\*

## Adding keywords to the image copy job

Db2 Recovery Expert allows you to edit the job that creates an image copy from a system level backup and add one or more keywords. Each keyword that you specify adds functionality that otherwise would not be present in the generated JCL.

1. Access the **Build Restore Job** panel as follows:
  - a) Specify 1 in the **Option** line of the Db2 Recovery Expert main menu and press Enter. From the System Operations Menu, specify 3 (System Level Backup Operations) and press Enter. The **Restore System Display** panel opens.
  - b) Specify I in the **Cmd** line next to the system backup job that you want to image copy. The **Enter Application Profile Selection Criteria** panel opens.
  - c) Specify the profile selection criteria and press Enter. The **Application Profile Display** panel opens.
  - d) Specify S in the **Cmd** line next to the profile that you want to use to build the image copy job. The **Build Image Copy Job** panel opens.
  - e) Specify Y in the **Edit Generated Job** field. Specify any other fields that are applicable.
  - f) Press Enter. The JCL for the system backup job displays in an ISPF edit session.
2. Add one or more keywords to the JCL. You add keywords to the ARYIN DD \* statement following the keywords generated by Db2 Recovery Expert. You can add one or more of the following keywords:

### **DEBUG**

This keyword produces extra debugging information. You should only add this keyword when directed to by technical support.

### **MAX-TASKS**

This keyword controls how many tasks are started to complete the image copy processing for operations that can be multi-tasked. You can specify a number from 1 to 8. The default is 4.

### **FROM-OFFLOAD**

If the system backup that is used to create the image copy is on disk and tape, the restore is performed from the tape (or OFFLOAD) copy. If the system backup is only on disk, this keyword is ignored and the objects are restored from disk.

### **RESTART**

This keyword is added if a previous run of the job abends. When included Db2 Recovery Expert restarts, creating image copies for only those objects that were not successfully created in the previous run.

3. Either run the job or press PF3 to return to the **Restore System Display** panel.

## Creating image copies using Change Accumulation

Change Accumulation creates image copies offline with features previously available in Db2 Change Accumulation Tool, now incorporated into Db2 Recovery Expert.

As a DBA, you may want to use offline resources to create image copies, so that the actual database objects are unaffected and can be used online or in batch jobs at the time of the image copy. You can use the Change Accumulation features in Db2 Recovery Expert to create image copies of a given database, table space, index space or set of table spaces and/or index spaces. Db2 Recovery Expert reads the most recent image copy and adds any incremental image copies and Db2 log data.

Db2 Change Accumulation Tool Mini Log Control Table is not supported by Db2 Recovery Expert.

## Prerequisites for using Change Accumulation

Change Accumulation needs a full image copy as a starting point. Otherwise, it cannot create the accumulated full image copy.

If the last registered copy (full or incremental) for a table space or index space in the catalog has SHRLEVEL REFERENCE, the image copy created by Change Accumulation inherits that SHRLEVEL REFERENCE from the last space image copy.

If the last registered copy (full or incremental) for a table space or index space in the catalog has no previous SHRLEVEL REFERENCE image copy, Change Accumulation generates a SHRLEVEL REFERENCE image copy when possible. To do so, Change Accumulation reads the BSDS, retrieves the log record ranges for the checkpoint records, and adds them to the read ranges derived from SYSLOGRANGE. This ensures that checkpoint records come into the log reader engine and, when found, are used to 'upgrade' SHRLEVEL CHANGE image copies if the checkpoint record shows that either:

- No units of work exist; or
- The units of work that exist have been successfully committed.

The usual implementation is to have the COPY utility take an initial full SHRLEVEL REFERENCE image copy of the table spaces or index spaces. From then on, always use Change Accumulation to take accumulated full SHRLEVEL REFERENCE image copies without locking or blocking the data.

Change Accumulation applies to databases, table spaces, index spaces, partitions of a table space, and partitions of an index space.

## Sample JCL for Change Accumulation

The following is a sample of the JCL code that can be used to run Change Accumulation.

For more information on customizing the JCL code, see:

- [Customizing the sample JCL for your site](#)
- [Change Accumulation syntax definitions](#)

```
//JOB STATEMENT
//*
//*
//*****
//* This member provides sample JCL for running the Copy Accumulation.
//* It may be used as a replacement for the Change Accumulation Tool.
//*
//* CAUTION: THIS IS NEITHER A JCL PROCEDURE NOR A COMPLETE JOB.
//*
//* Before running this job, you will have to make the following
//* modifications:
//*
//* 1. Change the job statement to meet your system requirements
//*
//* 2. Change #SSID to the target Db2 subsystem Id.
//*
//* 3. Change the #SARYLOAD to the Recover Expert load library.
//*
//* 4. Change #SDSNEXIT to the Db2 load exit library.
//*
//* 5. Change #SDSNLOAD to the Db2 load library.
//*
//* 6. Change #DB2PARMS to the product VSAM control file.
//*
//* 7. Specify appropriate control statements in DD:SYSINAR
//*   for each copied space and all required options.
//*   Most options of the Change Accumulation Tool may be specified
//*   in DD:SYSINAR without any changes.
//*
//* 8. Code DD:CAxxxxxx statements for all resulting copies.
//*
//*****
//ARYACCUM EXEC PGM=ARY#MAIN,REGION=0M,PARAM='#SSID'
//STEPLIB DD DISP=SHR,DSN=#SARYLOAD
// DD DISP=SHR,DSN=#SDSNEXIT
// DD DISP=SHR,DSN=#SDSNLOAD
//SYSUDUMP DD SYSOUT=*
```

```

//SYSDUMP DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//INFOM DD SYSOUT=*
//SR0AMSGS DD SYSOUT=*
//SORAMSGS DD SYSOUT=*
//DB2PARMS DD DISP=SHR,DSN=#DB2PARMS
//*****
//* DD name format of output copies is CAxxxxnn:
//* nnnn is a space number in DD:SYSINAR
//* xx is
//* LP for Local Primary
//* LB for Local Backup
//* RP for Remote Primary
//* RB for Remote Backup
//*****
//CALP0001 DD DSN=FULL.IMAGE.COPY.FOR.SPACE.1.LP, SPACE #1 LP COPY
//          SPACE=(CYL,(10,10),RLSE),UNIT=DISK,
//          DISP=(NEW,CATLG,DELETE)
//CALB0001 DD DSN=FULL.IMAGE.COPY.FOR.SPACE.1.LB, SPACE #1 LB COPY
//          SPACE=(CYL,(10,10),RLSE),UNIT=DISK,
//          DISP=(NEW,CATLG,DELETE)
//CARP0001 DD DSN=FULL.IMAGE.COPY.FOR.SPACE.1.RP, SPACE #1 RP COPY
//          SPACE=(CYL,(10,10),RLSE),UNIT=OFFSITE,
//          DISP=(NEW,CATLG,DELETE)
//CARB0001 DD DSN=FULL.IMAGE.COPY.FOR.SPACE.1.RB, SPACE #1 RB COPY
//          SPACE=(CYL,(10,10),RLSE),UNIT=OFFSITE,
//          DISP=(NEW,CATLG,DELETE)
//CALP0002 DD DSN=FULL.IMAGE.COPY.FOR.SPACE.2.LP, SPACE #2 LP COPY
//          SPACE=(CYL,(10,10),RLSE),UNIT=DISK,
//          DISP=(NEW,CATLG,DELETE)
//*****
//* Control statements
//*****
//SYSINAR DD *
CHANGE_ACCUM(
GROUP (
SPACE (
DATA_BASE XXXXXX1 - SPACE #1:
SPACE_NAME YYYYYY1 - "XXXXXXX1" = 8 CHAR DATA BASE NAME
PARTITION 0 - "YYYYYYY1" = 8 CHAR TABLE SPACE NAME
) - USE ONLY FOR PARTITIONED SPACES
)
SPACE (
DATA_BASE XXXXXX2 - SPACE #2:
SPACE_NAME YYYYYY2 - "XXXXXXX2" = 8 CHAR DATA BASE NAME
PARTITION 0 - "YYYYYYY2" = 8 CHAR TABLE SPACE NAME
) - USE ONLY FOR PARTITIONED SPACES
)
TO_CURRENT - END POINT
)
LOCAL_SITE -
FORCE_COPIES -
BUFFERS_IN_31_BIT -
USE_ABOVE_THE_BAR '0010,0025,0020' -
)
//*

```

## Customizing the sample JCL for your site

Follow these steps to customize the sample JCL for your site.

1. (Required) Enter a valid job card for your site. If you anticipate a large number of log records to be processed, allocate a generous REGION size to avoid out-of-memory errors.
2. (Required) In the EXEC statement, enter the subsystem ID (*ssid*) for the subsystem on which you will be running the Change Accumulation job. For example,

```
//ARYACCUM EXEC PGM=ARY#MAIN,PARM='A50B'
```

3. (Required) Change the STEPLIB DD data set filenames to point to the Db2 Recovery Expert program library.
4. (Required) Specify the appropriate INFOM DD. The sample JCL includes the following:

```
//INFOM DD SYSOUT=*
```

**Note:** The following INFOM DD definitions are both valid:

```
//INFOM DD SYSOUT=*
```

```
//INFOM DD DUMMY
```

5. (Optional) Include the SYSUDUMP DD statement to facilitate finding and correcting problems encountered when running the job.
6. (Required) Specify a data set or \* for the job output.
7. (Required) Specify a data set or \* for messages for the SORTMSG utility.
8. (Required) Specify the VSAM control file for Db2® parameters.
9. (Required) Specify the output data sets that will hold the new full image copies either using the CAxxxxDD statements (which supports <5000 objects) or the IC\_xx control cards (which support >5000 objects). When using the CAxxxxDD statements, specify at least one CAxxxxDD statement is needed for each SPACE card in your job where xx is LP, LB, RP or RB and xxxx is a four-digit integer.

**Note:** In certain error conditions, Db2 Recovery Expert forces an abnormal termination with user abend code U0012. This condition forces the deletion of the Change Accumulation image copy data set when the disposition of the output data set holding the new full image copy is defined as:

```
DISP=(NEW,CATLG,DELETE)
```

10. (Required) The SYSINRY data set holds the parameters that define the Change Accumulation job options.
11. (Required) Modify the Change Accumulation syntax as needed for your site.

## Change Accumulation syntax definitions

Change Accumulation keywords are not positional. For readability, include each keyword on a single line. To insert comments, include a hyphen on the line after the keyword. Characters that appear after the hyphen are treated as comments until the end of the line. To comment out a keyword, place a hyphen in column 3.

The following details the syntax elements supported by Change Accumulation.

### **BUFFERS\_IN\_31\_BIT**

Include this optional item to use 31 bit storage for buffers. If BUFFERS\_IN\_31\_BIT is not specified, 24 bit storage for buffers will be used.

### **CHANGE\_ACCUM**

The main control card. An open parenthesis must follow this keyword. The remainder of the keywords must be contained within the delimiters.

### **CHECK\_AFTER QUIESCE**

When present, this control card causes GGC to check space activity after the specified end point and if some activity is found the end point is set to TO\_CURRENT.

#### **Note:**

- The CHECK\_AFTER QUIESCE control card is valid for any job type when the space end point TO QUIESCE is specified.
- NO\_SYSLGRNX cannot be specified with CHECK\_AFTER QUIESCE (the reading of SYSLGRNX must be allowed).
- CHECK\_AFTER QUIESCE can be specified at the SPACE, GROUP, or job level.
- When specified at the SPACE level, GGC checks activity for the space after the designated QUIESCE point and if activity is found, the end point for the space will be set to TO\_CURRENT to include the activity.
- When CHECK\_AFTER QUIESCE is not applied at the SPACE, GROUP or JOB level, TO QUIESCE will be performed.
- UNIFIED or UNIFIED\_WARNING cannot be specified with CHECK\_AFTER QUIESCE.

**CHECK\_DATA NO|WRITE|OPERATION**

Include this optional keyword to specify if and when you want Change Accumulation to check data page integrity. Specify this keyword outside the delimiters of the GROUP keyword. This keyword accepts the following values:

**NO**

Do not check data page integrity.

**WRITE**

(DEFAULT) Check data page integrity before writing out a data page.

**OPERATION**

Check data page integrity both before and after each log apply operation and before writing out a data page.

**CONTINUE\_ON\_ERROR**

Causes most errors to be ignored and the processing to continue.

**Note:** If this control card is specified and errors higher than RC=4 are encountered, they will be overridden and a RC=4 will be reported and the job will not fail. I/O errors and other serious issues (out-of-memory, for instance) will not be ignored and will still cause aborts.

**CREATOR *creator* INDEX *index* PARTITION *number***

Where:

**CREATOR *creator***

The index creator name. Valid values for *creator* can be up to 128 characters in length.

**INDEX *index***

The index name. Valid values for *index* can be up to 128 characters in length.

**PARTITION *number***

(Optional) This optional item indicates the partition number, if the index space is partitioned. Replace *number* with the appropriate partition number for your site. To include all partitions, specify 0. If the index space is not partitioned, do not include this control card (or comment it out). The PARTITION item is optional for each SPACE keyword specified in your job.

**DATA\_BASE *database* SPACE\_NAME *tablespace* PARTITION *number***

Where:

**DATA\_BASE *database***

(Required) This keyword indicates the database name. Replace *database* with the appropriate database name for your site, up to 8 characters. The DATA\_BASE keyword is required for each SPACE keyword specified in your job.

**SPACE\_NAME *tablespace***

(Required) This keyword indicates the table space name. Replace *tablespace* with the appropriate table space name for your site, up to 8 characters. The SPACE\_NAME keyword is required for each SPACE keyword specified in your job.

**PARTITION *number***

(Optional) This optional item indicates the partition number, if the table space is partitioned. Replace *number* with the appropriate partition number for your site. To include all partitions, specify 0. If the table space is not partitioned, do not include this control card (or comment it out). The PARTITION item is optional for each SPACE keyword specified in your job.

**DATA\_BASE *database* SPACE\_NAME *indexspace* PARTITION *number***

Where:

**DATA\_BASE *database***

(Required) This keyword indicates the database name. Replace *database* with the appropriate database name for your site, up to 8 characters. The DATA\_BASE keyword is required for each SPACE keyword specified in your job.



**SPACE\_NAME *indexspace***

(Required) This keyword indicates the index space name. Replace *indexspace* with the appropriate index space name for your site, up to 8 characters. The SPACE\_NAME keyword is required for each SPACE keyword specified in your job.

**PARTITION *number***

(Optional) This optional item indicates the partition number, if the index space is partitioned. Replace *number* with the appropriate partition number for your site. To include all partitions, type 0. If the index space is not partitioned, do not include this control card (or comment it out). The PARTITION item is optional for each SPACE keyword specified in your job.

**Db2\_SORT YES / NO**

Indicates whether to use the Db2 Sort product.

- **YES** - The run will use Db2 Sort for sort operations if Db2 Sort is available. If Db2 Sort is not found, the run will use the system sort program that is installed on the LPAR (DFSORT or Syncsort).
- **NO** - The run will use the system sort program that is installed on the LPAR (DFSORT or Syncsort).

**END\_LRSN**

END\_LRSN *byte string* directs Change Accumulation to read the log and to incorporate data into the image copy up to the specified LRSN. Replace *byte string* with the desired value.

**END\_RBA**

END\_RBA *byte string* directs Change Accumulation to read the log and to incorporate data into the image copy up to the specified RBA. Replace *byte string* with the desired value.

**Note:**

- END\_RBA is not valid in a data sharing environment.
- If the RBA value specified on END\_RBA is a valid RBA then Change Accumulation will use this RBA as an end point for the Image Copy. If the RBA value specified is not a valid RBA then Change Accumulation will use the next higher valid RBA as an end point for the Change Accumulation Image Copy.

**FORCE\_COPIES**

Duplicates the old image copy into a new image copy, even if no log records are found following the last image copy.

**GROUP**

Use the GROUP keyword to enclose one or more SPACE keywords. You can specify multiple GROUP keywords in a single job, each holding one or more SPACE keywords. An open parenthesis must follow the GROUP keyword. Each GROUP keyword must contain one or more SPACE keywords.

**IC\_CATALOG**

This optional keyword is set within the context of the IC\_\*\* sets (IC\_LP, IC\_LB, IC\_RP, IC\_RB) and if present in the Change Accumulation syntax, sets DISP=CATLG. If the IC\_CATALOG keyword is not present, then DISP=KEEP.

**IC\_DATA\_CLASS**

This optional keyword is set within the context of the IC\_\*\* sets (IC\_LP, IC\_LB, IC\_RP, IC\_RB) and specifies the SMS data class to be used.

**IC\_DEVICE *devicename***

This optional keyword is set within the context of the IC\_\*\* sets (IC\_LP, IC\_LB, IC\_RP, IC\_RB) and specifies an 8-character device name.

**IC\_DSN '*dsn*'**

This keyword is set within the context of the IC\_\*\* sets (IC\_LP, IC\_LB, IC\_RP, IC\_RB) and specifies the data set name to be used when dynamically allocating image copies. Replace *dsn* with the appropriate data set name for the image copy.

**IC\_EXP\_DATE**

This optional keyword is set within the context of the IC\_\*\* sets (IC\_LP, IC\_LB, IC\_RP, IC\_RB) and specifies a 7-digit tape expiration date (for example, 2006365).

**IC\_LP, IC\_LB, IC\_RP, IC\_RB**

One or more of these optional keywords are set within the context of the SPACE() set and enclose the dynamic allocation parameters for the local primary, local backup, recovery site primary and recovery site backup image copies, respectively. An open parenthesis must follow the keywords and each set must contain the IC\_DSN keyword and optionally can contain the other dynamic allocation attribute keywords (IC\_CATALOG, IC\_DEVICE, IC\_SPACE, IC\_STOR\_CLASS, IC\_MGMT\_CLASS, IC\_DATA\_CLASS, IC\_EXP\_DATE, IC\_RETPD) followed by a close parenthesis.

The supporting keywords that accompany the IC\_\* keywords include IC\_CATALOG, IC\_DEVICE, IC\_DSN, IC\_SPACE, IC\_STOR\_CLASS, IC\_MGMT\_CLASS, IC\_VOLUME\_COUNT, IC\_DATA\_CLASS, IC\_EXP\_DATE, and IC\_RETPD.

**IC\_MGMT\_CLASS *mgmtclass***

This optional keyword is set within the context of the IC\_\*\* sets (IC\_LP, IC\_LB, IC\_RP, IC\_RB) and specifies the SMS management class to be used.

**IC\_RETPD**

This optional keyword is set within the context of the IC\_\*\* sets (IC\_LP, IC\_LB, IC\_RP, IC\_RB) and specifies a 4-digit retention period added to the creation date to form an expiration date.

**IC\_SPACE**

This optional keyword is set within the context of the IC\_\*\* sets (IC\_LP, IC\_LB, IC\_RP, IC\_RB) and, when specified, automatically generates the space allocations of the data set. For example, a typical generated IC\_SPACE control card would be: IC\_SPACE '(TRK, (50, 5), RLSE) '.

**IC\_STOR\_CLASS *storclass***

This optional keyword is set within the context of the IC\_\*\* sets (IC\_LP, IC\_LB, IC\_RP, IC\_RB) and specifies the SMS storage class to be used.

**IC\_VOLUME\_COUNT 'n'**

This optional keyword is set within the context of the IC\_\*\* sets (IC\_LP, IC\_LB, IC\_RP, IC\_RB) and specifies the maximum number of volumes that can be used for the Change Accumulation Image Copy data sets. Valid values are in the range of 1 to 255 or the control card is left out, it defaults to the system default.

**IMAGE\_COPY\_PREFERENCE LPLBRPRB | IMAGE\_COPY\_PREFERENCE *syscopyrows***

This optional item works in conjunction with the LOCAL\_SITE and RECOVERY\_SITE control cards and causes Change Accumulation to use the user-specified scan preference. The SYSCOPY rows output by Change Accumulation are determined by the presence of DD cards in the JCL.

- IMAGE\_COPY\_PREFERENCE uses the user-specified scan preference. This option accepts the following options:
  - LB–Scans for LB type image copies in SYSCOPY.
  - LP–Scans for LP type image copies in SYSCOPY.
  - LPLB–Scans first for LP type image copies, then for LB type image copies (and always uses LP type image copies on identically time-stamped SYSCOPY rows).
  - LPLBRB–Allows the SYSCOPY scan program to pick an RB if it came up first while scanning SYSCOPY backwards for a starting point.
  - LPLBRPRBFC–(Default) Scans for LP, LB, RP, RB and FC type image copies (using the earlier listed image copy type on identically time-stamped SYSCOPY rows).

One to five codes in total can be entered in a packed 10-character maximum field. Valid codes are LP (local primary), LB (local backup), RP (recovery primary), RB (recovery backup), and FC (Flash Copy).

**Notes:**

1. This item is not required for the Change Accumulation to run. If LOCAL\_SITE, RECOVERY\_SITE, and IMAGE\_COPY\_PREFERENCE are missing from the control cards, Change Accumulation detects the operating mode Db2\* is running under and automatically inserts either LOCAL\_SITE, RECOVERY\_SITE based on what is in ZPARM.
2. This option sets the mode in which Change Accumulation operates. If LOCAL\_SITE is coded, only local site type image copies are scanned for use. If RECOVERY\_SITE is coded, only recovery site

type image copies are scanned for use. If IMAGE\_COPY\_PREFERENCE is coded, the user-specified scanning preference is used.

### **INDEX index**

The index name. Valid values for *index* can be up to 128 characters in length.

### **LOCAL\_SITE | RECOVERY\_SITE**

This optional item works in conjunction with the IMAGE\_COPY\_PREFERENCE control card and tells Change Accumulation which SYSCOPY rows to consider when finding a starting point for processing. LOCAL\_SITE uses the LP/LB rows, RECOVERY\_SITE uses the RP/RB rows. The SYSCOPY rows output by Change Accumulation are determined by the presence of DD cards in the JCL.

- LOCAL\_SITE is the default setting and it refers to the LP/LB rows to find a starting point for processing. Equal priority is given to LP and LB rows, so if Db2 retrieves the LB row first, that's what will be used.
- RECOVERY\_SITE uses the RP/RB rows to find a starting point for processing. Equal priority is given to RP and RB rows, so if Db2 retrieves the RB row first, that's what will be used.

### **Notes:**

1. This item is not required for the Change Accumulation to run. If LOCAL\_SITE, RECOVERY\_SITE, and IMAGE\_COPY\_PREFERENCE are missing from the control cards, Change Accumulation detects the operating mode Db2 is running under and automatically inserts either LOCAL\_SITE, RECOVERY\_SITE based on what is in ZPARM.
2. This option sets the mode in which Change Accumulation operates. If LOCAL\_SITE is coded, only local site type image copies are scanned for use. If RECOVERY\_SITE is coded, only recovery site type image copies are scanned for use. If IMAGE\_COPY\_PREFERENCE is coded, the user-specified scanning preference is used.

### **LOG\_COPY\_PREFERENCE R1R2A1A2 | LOG\_COPY\_PREFERENCE log\_tokens**

Specifies the order in which the archive and active log lists in the BSDS are to be scanned when Change Accumulation searches for a log to satisfy a need for log records. The value you specify in this field must use the syntax R1 (archive log copy #1), R2 (archive log copy #2), A1 (active log #1), and A2 (active log #2). All four unique values must be specified, even if copy #2 is not used in Db2. For example:

- A1A2R1R2 - Scans the active logs before scanning the archive logs.

**Note:** This is not a recommended setting, as Db2 may attempt to open one of the active logs for output that Change Accumulation is currently reading for input. This can result in an open error within Db2.

- R1R2A1A2 - (Default) Scans the archive logs first and uses archive logs when the same range exists in an archive and active log.

### **NO\_SYSCOPY\_ROW**

Include this optional item if you want Change Accumulation to skip updating the SYSCOPY catalog table with a new row for the new image copy (or copies). Specify this optional item outside the delimiters of the GROUP keyword.

### **NO\_SYSLGRNX**

Include this optional item if you want Change Accumulation to skip reading SYSIBM.SYSLGRNX and only read the Db2 logs. Specify this optional item outside the delimiters of the GROUP keyword.

**Note:** Using NO\_SYSLGRNX can cause a significant increase in processing time due to the number of log data sets and log records read.

### **PARALLEL 'x,y'**

Indicates the number of parallel log read and log apply tasks that can run where:

**x**

(Default 0) The number of parallel log read tasks. Valid values are integers, 0-16. If a value of 0 is specified for x, this means that a maximum of 1 task per data sharing group member will run at the same time. If a non-zero value is specified for x, then that number is the maximum number of

parallel tasks that can run at the same time for log read. If there are more logs to read than the number of parallel tasks specified for *x*, a task to read the remaining logs will be launched as soon as a running task finishes and until all necessary logs have been read.

**y**

(Default 1) The number of parallel log apply tasks. Valid values are integers, 1-10. When specifying a value for the number of parallel log apply tasks, you should consider the following:

**If a single GROUP(...) set is present in the control cards:**

If a single GROUP(...) set is present in the control cards, the value of log apply parallel tasks is used to break up the job into multiple GROUP(...) sets and start a log apply task for each set. Valid values for *y* for a single GROUP(...) set:

**1**

A single group starts a single log apply task.

**2-10**

If there is a single GROUP(...) coded, and if *y* is greater than 1, the code will internally break down the SPACE(...) sets into a maximum of *y* GROUP(...) sets and will start one log apply task per GROUP(...). For example:

- If you specify a value of 10 for *y* and there are only 5 SPACE(...) sets, Change Accumulation divides the syntax into 5 GROUP(...) sets and 5 log apply tasks.
- If you specify a value of 5 for *y*, Change Accumulation divides the number of spaces between the groups evenly and then, if there are leftovers after attempting to divide them evenly among the allotted number of GROUP(...) sets, those leftovers go in the last GROUP(...) set. One log apply task is then generated for each GROUP(...) set.

**If multiple GROUP(...) sets are present in the control cards:**

**Remember:** If you use the online to generate a Change Accumulation job, only one GROUP(...) set is generated. You can however manually code multiple GROUP(...) sets in your Change Accumulation syntax. If you have manually coded multiple GROUP(...) sets in your JCL, the following considerations regarding the valid values of *y* apply.

If multiple GROUP(...) sets are present in the Change Accumulation syntax, the only valid value *y* is 1 (it is not valid to specify a value of log apply tasks greater than 1 if there are multiple GROUP(...) sets). Valid values for *y* for a multiple GROUP(...) set:

**1**

If *y* the number of groups and the associated spaces assigned to them will be used to start multiple log apply tasks instead.

**PARTITION #**

This optional item indicates the partition number, if the space is partitioned. Replace # with the appropriate partition number for your site. To include all partitions, type 0. If the space is not partitioned, do not include this control card (or comment it out). The PARTITION item is optional for each SPACE keyword specified in your job.

**RECOVERY\_SITE | LOCAL\_SITE**

This optional item works in conjunction with the IMAGE\_COPY\_PREFERENCE control card and tells Change Accumulation which SYSCOPY rows to consider when finding a starting point for processing. LOCAL\_SITE uses the LP/LB rows, RECOVERY\_SITE uses the RP/RB rows. The SYSCOPY rows output by Change Accumulation are determined by the presence of DD cards in the JCL.

- LOCAL\_SITE is the default setting and it refers to the LP/LB rows to find a starting point for processing. Equal priority is given to LP and LB rows, so if Db2 retrieves the LB row first, that's what will be used.
- RECOVERY\_SITE uses the RP/RB rows to find a starting point for processing. Equal priority is given to RP and RB rows, so if Db2 retrieves the RB row first, that's what will be used.

**Notes:**

1. This item is not required for the Change Accumulation to run. If LOCAL\_SITE, RECOVERY\_SITE, and IMAGE\_COPY\_PREFERENCE are missing from the control cards, Change Accumulation

detects the operating mode Db2 is running under and automatically inserts either LOCAL\_SITE, RECOVERY\_SITE based on what is in ZPARM.

2. This option sets the mode in which Change Accumulation operates. If LOCAL\_SITE is coded, only local site type image copies are scanned for use. If RECOVERY\_SITE is coded, only recovery site type image copies are scanned for use. If IMAGE\_COPY\_PREFERENCE is coded, the user-specified scanning preference is used.

## SPACE

Use the SPACE keyword for each space for which you want to execute the Change Accumulation process. You can specify multiple SPACE keywords in a single job. An open parenthesis must follow this keyword. Each SPACE keyword must contain a DATA\_BASE, SPACE\_NAME parameter within its delimiters. The SPACE keyword can also contain an optional PARTITION item within its delimiters.

**Note:** If you use the same end point for all spaces in a Change Accumulation run, then it is recommended that all space (..) control cards are under one group(..). Do not specify one group for every space.

## SPACE\_NAME *space*

This keyword indicates the space name. Replace *space* with the appropriate space name for your site, up to 8 characters. The SPACE\_NAME keyword is required for each SPACE keyword specified in your job.

## STARTING\_IC '*dsn*'

Include this optional item if you want to start with a full image copy other than the one listed in SYSCOPY as the last full image copy. Replace *dsn* with the data set name of the image copy with which you want to start. The data set name must be enclosed in single quotation marks. Specify this optional item inside the delimiters of each SPACE keyword.

## TOLOGPOINT

TOLOGPOINT *byte string* directs Change Accumulation to read the log and to incorporate data into the image copy up to the specified logpoint. Replace *byte string* with the desired log point value.

**Note:** TOLOGPOINT is valid for both non-data sharing and data sharing runs. If TOLOGPOINT is used, the value will be accepted as an RBA in non-data sharing and an LRSN in data sharing.

## TO\_CURRENT | TO\_QUIESCE or TO\_QUIESCE(#*n*) | TOLOGPOINT *byte string* | TO\_CONSISTENT\_IC | END\_RBA *byte string* | END\_LRSN *byte string*

This required choice enables you to specify the point up to which you want to make the image copy. TO\_CURRENT, TO\_QUIESCE, END\_RBA, END\_LRSN can be specified at either the SPACE() or GROUP() level but not both. The specification of these required choices at both the SPACE() and GROUP() levels is not valid. When using the online interface, Change Accumulation generates the TO\_CURRENT, TO\_QUIESCE, END\_RBA, END\_LRSN control cards once at the GROUP() level if the SPACE() level parms are all the same.

**Note:** Change Accumulation enables you to specify an end point (RBA/LRSN) from SYSCOPY (START\_RBA) that is of ICTYPE "Y", "S", or "W".

## TO\_CONSISTENT\_IC

When the TO\_CONSISTENT\_IC keyword is used, Change Accumulation expects the last image copy to be a share level change copy. Change Accumulation considers the last share level change copy as the end point, derives a starting point from a further search in BSDS to obtain a checkpoint before the start point of the last share level change copy and attempts to create a consistent share level reference image copy. The user is not expected to provide a specific end point when using this keyword.

### **Note:**

- The TO\_CONSISTENT\_IC keyword can be used at the space, group or global level.
- The FORCE\_COPIES keyword is not required when the TO\_CONSISTENT\_IC keyword is used and would be ignored.

## TO\_CURRENT

Reads the log and incorporates data into the image copy up to the current point in time, which is the end of the log file.

## TO\_IC\_INLINE

Indicates that a sort must be performed for the specified input image copy. You must specify manually that the image copy needs to be sorted when the input image copy name is specified directly instead of retrieved from a SYSCOPY row, as is required when the image copy is created by REORG inline or is an image copy of a compressed object.

## TO\_QUIESCE

Reads the log and incorporates data into the image copy up to a quiesce point. TO\_QUIESCE can be specified with either the (#n) option alone or the (#n) and UNIFIED options together:

### (#n)

(Optional) When you specify TO\_QUIESCE with a value in the format TO\_QUIESCE(#n), for example TO\_QUIESCE(#2), Change Accumulation retrieves the second-most recent quiesce point log point from SYSCOPY. TO\_QUIESCE(#3) retrieves the third-most recent quiesce point log point from SYSCOPY, and so forth. Change Accumulation considers the RBA validated and not subject to adjustment to assure the log point is a starting point of a log record.

### Notes:

1. You must enclose the #n value in parentheses. TO\_QUIESCE#n is not valid syntax.
2. If TO\_QUIESCE is specified without a value or with a value of n=1, it will retrieve the most recent quiesce point log point.
3. TO\_QUIESCE and TO\_QUIESCE(#1) are functionally identical.

## UNIFIED

Validates that there is a common QUIESCE RBA for all spaces in the group. This parameter can be used with the TO\_CURRENT, TO\_QUIESCE or TO\_QUIESCE(#n), END\_RBA, END\_LRSN, or TOLOGPOINT control cards. For example:

```
END_RBA X'002CA75AA18A' UNIFIED
END_LRSN X'002CA75AA18A' UNIFIED
TOLOGPOINT byte_string UNIFIED
TO_CURRENT UNIFIED
TO_QUIESCE UNIFIED
TO_QUIESCE(#2) UNIFIED
```

**Note:** If UNIFIED is specified with a TO\_QUIESCE control card for which no (#n) value is specified, a value of (#1) is used.

## UNIFIED\_WARNING

Validates that there is a common QUIESCE RBA for specified end point. If this keyword is present, Change Accumulation will make image copies even if some objects in the GROUP or SPACE cannot be copied to the specified end point. Processing will end with a RC=4 and messages ARY1292I and ARY1293E will be output.

## USE\_ABOVE\_THE\_BAR 'primary,secondary,count'

Allows the use of above-the-bar memory and specifies the number of primary, secondary and maximum segments to be allocated:

- *primary* - The number of segments (megabytes) of above-the-bar storage obtained initially.
- *secondary* - The number of segments (megabytes) of above-the-bar storage obtained when the primary segments are used up.
- *count* - The limit placed on the total number of segments that can be obtained. This stops runaway getmains by aborting if the limit is reached.

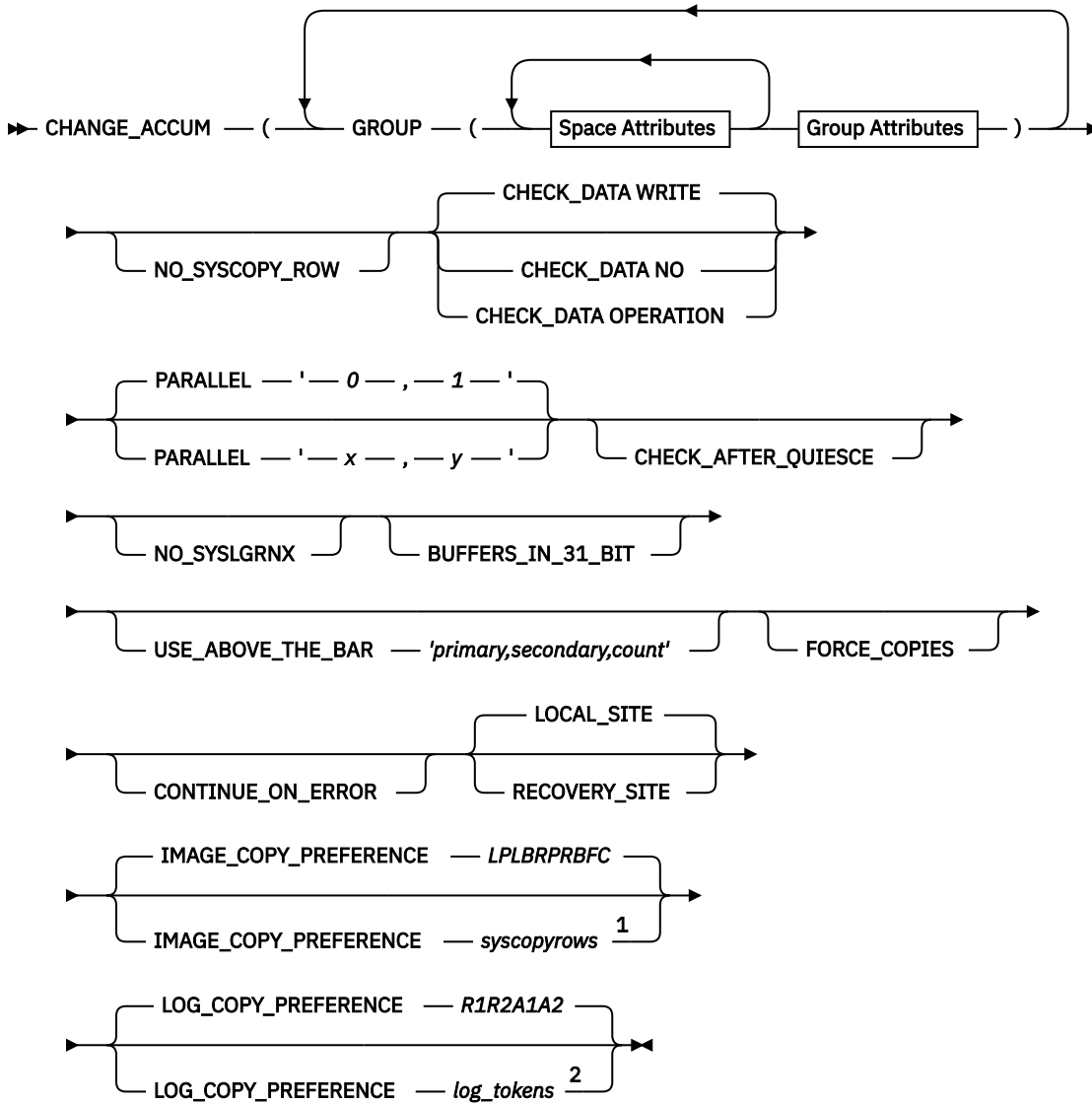
If the USE\_ABOVE\_THE\_BAR control card is not specified, it will be used by default with the following parameters: *primary*=10, *secondary*=50, *count*=20.

## Change Accumulation syntax diagram

The following syntax diagram illustrates how to construct valid Change Accumulation syntax.

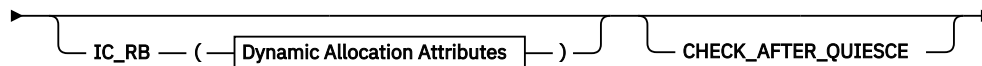
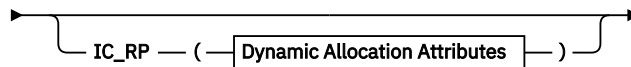
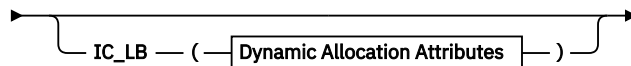
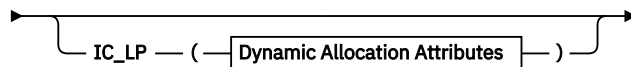
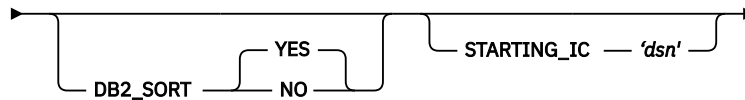
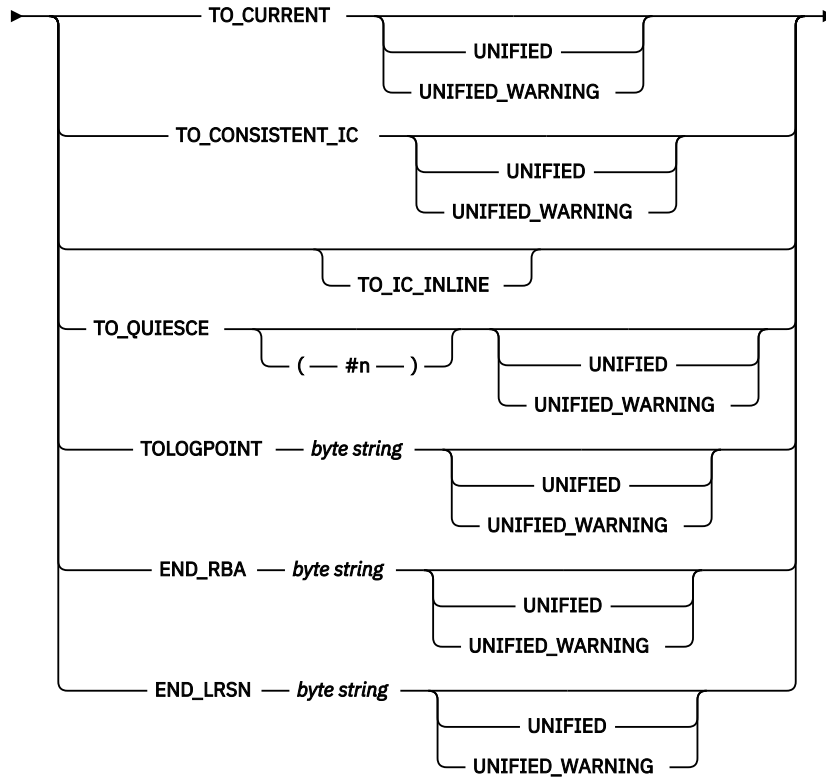
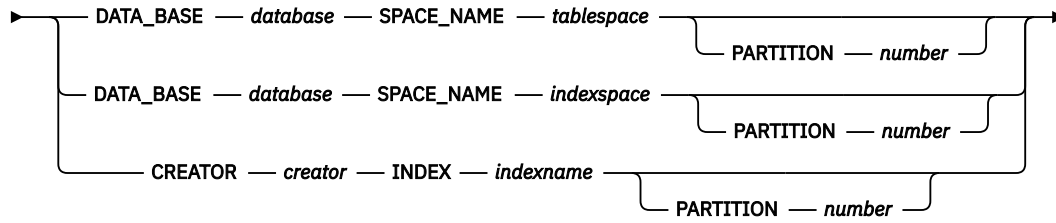
The syntax of the Db2® Change Accumulation control cards is:

### Db2® Change Accumulation control card syntax:



### Space Attributes

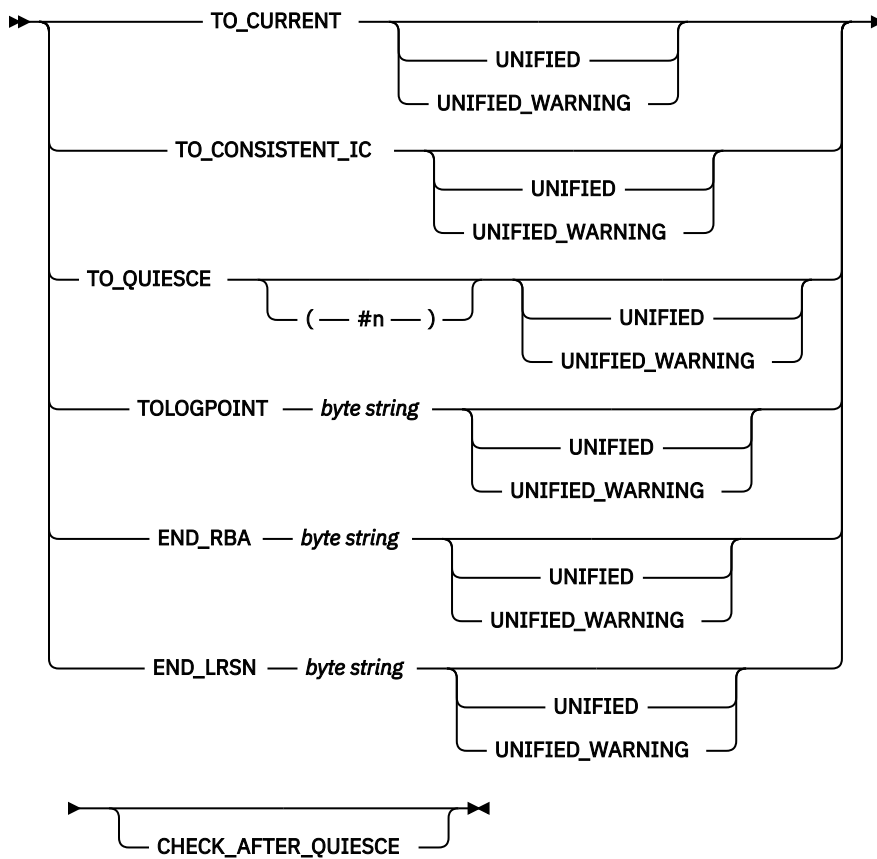
➤ SPACE — ( →



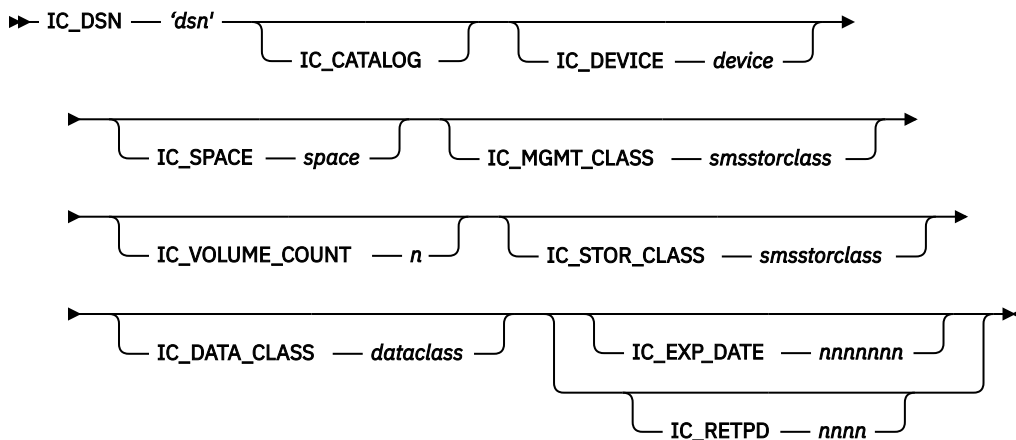
➤ ) ➤

### Group Attributes





### Dynamic Allocation Attributes



Notes:

<sup>1</sup> Refer to Db2<sup>®</sup> Change Accumulation syntax for details about the valid values accepted for the IMAGE\_COPY\_PREFERENCE control card.

<sup>2</sup> Refer to Db2<sup>®</sup> Change Accumulation syntax for details about the valid values accepted for the LOG\_COPY\_PREFERENCE control card.

## Sample scenarios

These sample scenarios describe ways in which Change Accumulation can be used.

The sample scenarios include single object change accumulation, multiple object change accumulation, partitioned space change accumulation, recovery using change accumulation, as well as a number of different usage scenarios.

## Single object change accumulation

In this example, we show a simple scenario where a Change Accumulation job is run for one space.

The space has a full image copy registered as SHRLEVEL REFERENCE and two incremental image copies; the first one registered as SHRLEVEL CHANGE and the second one as SHRLEVEL REFERENCE.

Because the last copy is a SHRLEVEL REFERENCE copy, Change Accumulation will also register its copy as SHRLEVEL REFERENCE.

The tool reads the full image copy, then applies the changes from the incremental image copies. The TO\_CURRENT keyword indicates that after this, Change Accumulation looks for a consistency recovery point to establish the image copy's RBA. Then, it reads the Db2 log and applies the changes to the consistency point RBA, where no units of recovery of this space are in flight. Finally, Change Accumulation registers the resulting full image copy in the SYSIBM.SYSCOPY table with this RBA.

The image copy data set name is the one specified in the CALPxxxx DD in the JCL. If a RECOVER takes place afterwards, it will use this image copy as a starting point and will read the log forward from this RBA.

The sample JCL is:

```
CHANGE_ACCUM(                                     -
  GROUP (                                         -
    SPACE (                                       -
      DATA_BASE TESTDB                          -
      SPACE_NAME TESTTS1                        -
      TO_CURRENT                                 -
    )                                             -
  )                                               -
)                                                 -
LOG_COPY_PREFERENCE R1R2A1A2                    -
LOCAL_SITE                                       -
USER_INDICATOR GGC                              -
)
```

## Multiple object change accumulation

Change Accumulation can process more than one table space and/or index space in the same step.

You can specify a particular RBA for each space copy, register them all with the same specific RBA, or use TO\_CURRENT. You can even choose a mixture.

### Notes:

1. The RBA chosen to be loaded into SYSCOPY is determined by rolling the RBA back to the start point of any in-flight URIDs. If there are none, the RBA may also be adjusted forward to the next SYSLOGRANGE start point (if there is one) or to the RBA of the last valid log record read from the log (if there are no further SYSLOGRANGE records). This allows Change Accumulation not to have to verify the validity of a specified log point by attempting a read of that log record in the actual log and possibly incurring a tape mount, data set allocation, or extra I/O.
2. Change Accumulation will stop at the RBA specified for a space, if you specify multiple spaces in a run that require the log to be further read, it will be.

The capability to allow multiple objects in the same step makes it easy to get a full image copy at a unique consistent recovery point for related spaces. In case of complex databases with multiple table spaces and referential integrity among them, Change Accumulation creates this consistent image copy avoiding any disruption in accessing the data. Without the tool this task always causes some data unavailability.

Change Accumulation looks for a consistent RBA (as described in Note 1) in the Db2<sup>®</sup> log and makes the copies without locking the data. Any RECOVER to this point leaves the data consistent and avoids the need for complex CHECK DATA jobs.

The tool obtains the data set names of the image copies from the CALPxxxx DDs in the JCL. Each DD defines one space image copy matching the order in the SYSINARY DD. Change Accumulation registers each image copy in the SYSCOPY, if required.

In [Figure 38 on page 479](#), Change Accumulation creates a SHRLEVEL REFERENCE full image copy for three table spaces at the same RBA (x'00027F41198A'). None of the three table spaces become unavailable during the execution of the tool.

```

CHANGE_ACCUM(
  GROUP (
    SPACE (
      DATA_BASE TESTDB
      SPACE_NAME TESTTS1
      END_RBA X'00027F41198A'
    )
    SPACE (
      DATA_BASE TESTDB
      SPACE_NAME TESTTS2
      END_RBA X'00027F41198A'
    )
    SPACE (
      DATA_BASE TESTDB
      SPACE_NAME TESTTS3
      END_RBA X'00027F41198A'
    )
  )
  LOG_COPY_PREFERENCE R1R2A1A2
  LOCAL_SITE
  USER_INDICATOR GGC
)

```

*Figure 38. Multiple Objects Change Accum (both TO\_CURRENT)*

In [Figure 39 on page 479](#), Change Accumulation creates a SHRLEVEL REFERENCE image copy for each of the three table spaces. For the first table space, TESTTS1, a particular RBA is specified, whereas for the other table space, TESTTS2, the TO\_CURRENT parameter applies. For each table space the Change Accumulation obtains its last image copy and applies all the changes in the Db2® log records since then to the recovery point specified in each case. Finally, the tool registers each image copy in SYSCOPY with each RBA as requested.

```

CHANGE_ACCUM(
  GROUP (
    SPACE (
      DATA_BASE TESTDB
      SPACE_NAME TESTTS1
      END_RBA X'00027F41198A'
    )
    SPACE (
      DATA_BASE TESTDB
      SPACE_NAME TESTTS2
      TO_CURRENT
    )
    SPACE (
      DATA_BASE TESTDB
      SPACE_NAME TESTTS3
      TO_CURRENT
    )
  )
  LOG_COPY_PREFERENCE R1R2A1A2
  LOCAL_SITE
  USER_INDICATOR GGC
)

```

*Figure 39. Multiple Objects Change Accum (to Specific RBA and TO\_CURRENT)*

## Partitioned space change accumulation

Change Accumulation is able to manage spaces at the partition level. By using the PARTITION keyword, you can specify a particular partition of the space to be accumulated. This means that an image copy is created at a consistent recovery point for that partition.

If you omit this parameter or specify PARTITION 0, Change Accumulation parameters apply to the whole space and creates a unique image copy data set for it.

If the last image copy of a space is a unique data set that refers to the whole table space, Change Accumulation uses it as a starting point to create the accumulated copy for the space partitions. The example in the chart shows this scenario.

However, if all previous image copies have been created at partition level, Change Accumulation is not able to create, from these partition image copies, the accumulated image copy for the whole space. This means that the tool needs a full SHRLEVEL REFERENCE image copy of the whole space as a starting point to produce a unique accumulated image copy of the whole space.

All the other control cards apply to the partition level as they do to space level: END\_RBA, STARTING\_IC and so on.

In [Figure 40 on page 480](#), Change Accumulation creates image copy data sets for three partitions. The most recent image copies in the SYSCOPY table are partition level image copies. The tool reads them as starting point, then applies the changes in the Db2® log and creates the new full image copies. Both are registered with the same RBA in the SYSCOPY table.

None of the space partitions become unavailable during the change accumulation process.

```

CHANGE_ACCUM(                                     -
  GROUP (                                         -
    SPACE (                                       -
      DATA_BASE  CDBD6                          -
      SPACE_NAME  CDBS6                          -
      PARTITION   1                              -
      TO_CURRENT  -                               -
    )                                              -
    SPACE (                                       -
      DATA_BASE  CDBD6                          -
      SPACE_NAME  CDBS6                          -
      PARTITION   2                              -
      TO_CURRENT  -                               -
    )                                              -
    SPACE (                                       -
      DATA_BASE  CDBD6                          -
      SPACE_NAME  CDBS6                          -
      PARTITION   3                              -
      TO_CURRENT  -                               -
    )                                              -
  )                                               -
  LOG_COPY_PREFERENCE  R1R2A1A2                  -
  LOCAL_SITE           -                         -
  USER_INDICATOR      GGC                        -
)

```

Figure 40. Image copy data sets for three partitions

## Recovery using Change Accumulation

The Db2 RECOVER utility and other recovery utilities use the image copies created by Change Accumulation in exactly the same way as it does with normal Db2 image copies. There is no difference between them.

If you use Change Accumulation, the RECOVER utility can execute faster, since the tool accumulates the incremental image copies and the changes from the Db2 log into new image copies. Therefore, the RECOVER utility only needs to read the last image copy that is a full image copy and afterwards apply the log records to the specified end RBA.

**Note:** The RBA chosen to be loaded into SYSCOPY is determined by rolling the RBA back to the start point of any in-flight URIDs. If there are none, the RBA may also be adjusted forward to the next SYSLOGRANGE start point (if there is one) or to the RBA of the last valid log record read from the log (if there are no further SYSLOGRANGE records). This allows Change Accumulation not to have to verify the validity of a specified log point by attempting a read of that log record in the actual log and possibly incurring a tape mount, data set allocation, or extra I/O.

Moreover, if you must recover to a consistent recovery point, you can recover to any of the full SHRLEVEL REFERENCE image copies created with the tool. In this case the RECOVER only needs to read the image copy.

**Important:** If the image copy created with Change Accumulation is registered as SHRLEVEL CHANGE in SYSIBM.SYSCOPY, Db2 cannot guarantee that you have a consistent recovery point if recovering to this copy. The example shows the execution of a change accumulation on two table spaces with referential integrity constraints. It creates, for each of the table spaces, a full SHRLEVEL REFERENCE image copy registered at the same point.

Figure 41 on page 481 shows the execution of a change accumulation on two table spaces with referential integrity constraints. It creates, for each of the table spaces, a full SHRLEVEL REFERENCE image copy registered at the same point.

```

CHANGE_ACCUM(
  GROUP (
    SPACE (
      DATA_BASE TESTDB
      SPACE_NAME TESTTS1
      TO_CURRENT
    )
    SPACE (
      DATA_BASE TESTDB
      SPACE_NAME TESTTS2
      TO_CURRENT
    )
  )
  LOCAL_SITE
  USER_INDICATOR GGC
)

```

Figure 41. Two table spaces with referential integrity constraints

If you do not RECOVER to current, the indexes are left in REBUILD PENDING status. You have to run REBUILD INDEX to rebuild the index from the data or you can use RECOVER INDEX if the index is defined with the COPY YES attribute.

## Image copy job with control cards for IC data sets

In this example, we show an image copy job with control cards for the image copy data sets. Use this method when the number of DDs would exceed the capacity of MVS.

The sample JCL is:

```

/*
//ARYACCUM EXEC PGM=ARY#MAIN,REGION=0000M,
//          PARM=(#SSID)
/*
//STEPLIB DD DSN=#SARYLOAD,DISP=SHR
//          DD DSN=#SDSNEXIT,DISP=SHR
//          DD DSN=#SDSNLOAD,DISP=SHR
//SYSUDUMP DD SYSOUT=*
//SYSOUT   DD SYSOUT=*
//SORTMSG  DD SYSOUT=*
//INFOM    DD DUMMY                               Log reader info messages
//DB2PARMS DD DSN=#DB2PARMS,DISP=SHR
/*
//SORTWK01 DD UNIT=SYSDA,SPACE=(CYL,(20,1),,,ROUND)
//SORTWK02 DD UNIT=SYSDA,SPACE=(CYL,(20,1),,,ROUND)
//SORTWK03 DD UNIT=SYSDA,SPACE=(CYL,(20,1),,,ROUND)
/*
//SYSINAR  DD *
CHANGE_ACCUM (
  GROUP (
    SPACE (
      DATA_BASE DBCA184A
      SPACE_NAME TSCA18AB
      IC_LP (
        IC_DSN 'RSTEST.DBCA184A.TSCA18AB.GGCICLP(+1)'
        IC_CATALOG
        IC_DEVICE SYSDA
        IC_SPACE '(TRK,(15,15),RLSE)'
      )
    )
    IC_LB (
      IC_DSN 'RSTEST.DBCA184A.TSCA18AB.GGCICLB(+1)'
      IC_CATALOG
      IC_DEVICE SYSDA
      IC_SPACE '(TRK,(15,15),RLSE)'
    )
  )
)

```

```

)
IC_RP (
  IC_DSN 'RSTEST.DBCA184A.TSCA18AB.GGCICRP(+1)'
  IC_CATALOG
  IC_DEVICE SYSDA
  IC_SPACE '(TRK,(15,15),RLSE)'
)
IC_RB (
  IC_DSN 'RSTEST.DBCA184A.TSCA18AB.GGCICRB(+1)'
  IC_CATALOG
  IC_DEVICE SYSDA
  IC_SPACE '(TRK,(15,15),RLSE)'
)
)
SPACE (
  DATA_BASE DBCA184A
  SPACE_NAME TSCA18AX
  IC_LP (
    IC_DSN 'RSTEST.DBCA184A.TSCA18AX.GGCICLP(+1)'
    IC_CATALOG
    IC_DEVICE SYSDA
    IC_SPACE '(TRK,(150,37),RLSE)'
  )
  IC_LB (
    IC_DSN 'RSTEST.DBCA184A.TSCA18AX.GGCICLB(+1)'
    IC_CATALOG
    IC_DEVICE SYSDA
    IC_SPACE '(TRK,(150,37),RLSE)'
  )
  IC_RP (
    IC_DSN 'RSTEST.DBCA184A.TSCA18AX.GGCICRP(+1)'
    IC_CATALOG
    IC_DEVICE SYSDA
    IC_SPACE '(TRK,(150,37),RLSE)'
  )
  IC_RB (
    IC_DSN 'RSTEST.DBCA184A.TSCA18AX.GGCICRB(+1)'
    IC_CATALOG
    IC_DEVICE SYSDA
    IC_SPACE '(TRK,(150,37),RLSE)'
  )
)
)
TO_CURRENT
)
LOG_COPY_PREFERENCE R1R2A1A2
USER_INDICATOR ARY
)

```

## Image copy job with DDs for image copy data sets

In this example, we show an image copy job with DDs for image copy data sets.

The sample JCL is:

```

//ARYACCUM EXEC PGM=ARY#MAIN,REGION=0000M,
//          PARM=(#SSID)
//*
//STEPLIB DD DSN=#SARYLOAD,DISP=SHR
//          DD DSN=#SDSNEXIT,DISP=SHR
//          DD DSN=#SDSNLOAD,DISP=SHR
//SYSUDUMP DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//SORTMSG DD SYSOUT=*
//INFOM DD DUMMY Log reader info messages
//DB2PARMS DD DSN=#DB2PARMS,DISP=SHR
//*
//SORTWK01 DD UNIT=SYSDA,SPACE=(CYL,(20,1),,,ROUND)
//SORTWK02 DD UNIT=SYSDA,SPACE=(CYL,(20,1),,,ROUND)
//SORTWK03 DD UNIT=SYSDA,SPACE=(CYL,(20,1),,,ROUND)
//*
//CALP0001 DD DSN=RSTEST.DBCA184A.TSCA18AB.GGCICLP(+1),
//          DISP=(NEW,CATLG,CATLG),
//          UNIT=SYSDA,
//          SPACE=(TRK,(15,15),RLSE)
//CALB0001 DD DSN=RSTEST.DBCA184A.TSCA18AB.GGCICLB(+1),
//          DISP=(NEW,CATLG,CATLG),
//          UNIT=SYSDA,
//          SPACE=(TRK,(15,15),RLSE)

```

```

//CARP0001 DD DSN=RSTEST.DBCA184A.TSCA18AB.GGCICRP(+1),
//          DISP=(NEW,CATLG,CATLG),
//          UNIT=SYSDA,
//          SPACE=(TRK,(15,15),RLSE)
//CARB0001 DD DSN=RSTEST.DBCA184A.TSCA18AB.GGCICRB(+1),
//          DISP=(NEW,CATLG,CATLG),
//          UNIT=SYSDA,
//          SPACE=(TRK,(15,15),RLSE)
//CALP0002 DD DSN=RSTEST.DBCA184A.TSCA18AX.GGCICLP(+1),
//          DISP=(NEW,CATLG,CATLG),
//          UNIT=SYSDA,
//          SPACE=(TRK,(150,37),RLSE)
//CALB0002 DD DSN=RSTEST.DBCA184A.TSCA18AX.GGCICLB(+1),
//          DISP=(NEW,CATLG,CATLG),
//          UNIT=SYSDA,
//          SPACE=(TRK,(150,37),RLSE)
//CARP0002 DD DSN=RSTEST.DBCA184A.TSCA18AX.GGCICRP(+1),
//          DISP=(NEW,CATLG,CATLG),
//          UNIT=SYSDA,
//          SPACE=(TRK,(150,37),RLSE)
//CARB0002 DD DSN=RSTEST.DBCA184A.TSCA18AX.GGCICRB(+1),
//          DISP=(NEW,CATLG,CATLG),
//          UNIT=SYSDA,
//          SPACE=(TRK,(150,37),RLSE)
//SYSINARD DD *
CHANGE_ACCUM (
  GROUP (
    SPACE (
      DATA_BASE DBCA184A
      SPACE_NAME TSCA18AB
    )
    SPACE (
      DATA_BASE DBCA184A
      SPACE_NAME TSCA18AX
    )
  )
  TO_CURRENT
)
LOG_COPY_PREFERENCE R1R2A1A2
USER_INDICATOR ARY
)
/*
//*

```

## Recovering a Db2 database subsystem using disaster recovery

In case of a disaster that renders a Db2 subsystem unusable, you can restore the subsystem at a remote site if you have implemented the disaster recovery feature of Db2 Recovery Expert.

Db2 Recovery Expert allows you to configure your disaster recovery strategy to restore from either Db2 image copies or system-level backups.

Implementing the disaster recovery feature of Db2 Recovery Expert is a multiple step process. Each of the following steps apply whether you are restoring a Db2 subsystem using either a system level backup or Db2 image copies:

1. Offload system level backup to tape or create Db2 image copies.
2. Create one or more disaster recovery profiles at the local site.
3. Build the JCL for each recovery job.
4. Run the disaster recovery profile jobs on a regular basis.
5. Transport the tapes that contain the jobs and all data sets required for recovery to the remote site.
6. When necessary, run the recovery jobs at the remote site.

## Planning a disaster recovery strategy

The first step to implementing the Db2 Recovery Expert disaster recovery feature is to decide whether you will recover your Db2 subsystem at the remote site using either a Db2 Recovery Expert system level backup or Db2 image copies.

If you select to use a system level backup, you will use Db2 Recovery Expert to create the system level backup and then you will use that system level backup to restore your Db2 subsystem at the disaster recovery site. This should speed the recovery at the disaster recovery site because the system level backup is a volume level copy of all the Db2 data sets. This volume copy can be restored quicker and easier than restoring your Db2 subsystem from image copies. Another advantage to this method includes the ability to apply log changes to recover all Db2 objects to the latest available point at the disaster recovery site with one "read" of the log. If you choose this method, you will create a system level backup using Db2 Recovery Expert and offload that backup to tape. You will then build a recovery job profile using Db2 Recovery Expert that specifies you are using a system level backup. The recovery job that is created from the profile will be run at the local site and it will create the jobs that you will run at the disaster recovery site to restore your Db2 system at the volume level. The recovery job will also create copies of the archive logs that will be used for the restore.

If you select to use Db2 image copies, you will need to create the image copies of all the Db2 objects that are needed to restore the Db2 subsystem. You will then build a disaster recovery profile using Db2 Recovery Expert that specifies you are using your own Db2 image copies of the data sets needed for the restore. The recovery job that is created from the profile will be run at the local site and can create, if you choose, copies of the archive logs.

Independent of the way that you choose, you should plan and practice your recovery procedures before a disaster strikes.

## Recovery steps at the local site overview

Preparing to recover your subsystem at a remote site begins with creating disaster recovery profiles at the local site, building the profiles, executing the jobs on a regular basis, and ensuring that the necessary data sets are sent to the remote site.

- Setting up for your disaster recovery strategy. This includes:
  - Offloading a system level backup to tape if you have chosen to restore your Db2 system using a system level backup.
  - Creating Db2 image copies if you have chosen to restore your Db2 system using image copies.
- Creating disaster recovery profiles

One primary profile should be created for each Db2 system that includes forcing a checkpoint and forcing the active log to archive, and has the "Only run Archive Log Update Process" field set to N. When built, this job does one of the following:

- If you are using the system level backup method, this job ensures that a system level backup exists for the specified subsystem and copies the Db2 Recovery Expert repository to the disaster recovery PDS, along with IDCAMS statements to create the Db2 Recovery Expert repository at the disaster recovery site. This job should be run after the Db2 Recovery Expert job that offloads a system level backup to tape.
- If you are using the image copy method, this job ensures that image copies are cataloged and deletes and redefines the VCAT-defined catalog spaces. Because this process can take some time, this job should be run at off-peak times, perhaps nightly, and should be run immediately after a job that takes image copies of the Db2 catalog.

A secondary profile should be created that has the "Only run Archive Log Update Process" field set to Y, and does not force a checkpoint or force the active log to archive. This job should be run periodically throughout the day to keep the recovery information up to date as much as possible.

- Building the disaster recovery profile in batch

When built, the primary profile produces a disaster recovery batch job. Depending on the type of recovery the job:

- For the system level backup method:
  1. Restores the Db2 Recovery Expert repository at the disaster recovery site.
  2. Restores the Db2 volumes from the most recent offloaded system backup.



3. Copies the archive logs.
  4. Rebuilds the BSDS. The PDS that contains the disaster recovery jobs and control records will contain the contents of the BSDS. This eliminates the need to mount tapes at the recovery site to build the BSDS.
- For the image copy method:
    1. Searches the catalog and finds all appropriate image copies.
    2. Catalogs the image copy data sets.
    3. Copies the archive logs.
    4. Rebuilds the BSDS. The PDS that contains the disaster recovery jobs and control records will contain the contents of the BSDS. This eliminates the need to mount tapes at the recovery site to build the BSDS.
  - Ensure the disaster recovery batch jobs are executed on a regular basis

The disaster recovery batch jobs should be inserted into a job scheduler or otherwise run on a regular basis. The primary job should be run at off-peak times, perhaps nightly, and should be run immediately after a job that takes image copies of the Db2 catalog or a job that offloads a system level backup. The secondary job should be run periodically throughout the day to keep the recovery information up to date as much as possible.

- Ensure that corresponding necessary data sets are sent to the remote site

The necessary recovery data sets should be placed on tape and shipped to a remote site. These include:

- The recovery PDS. The disaster recovery batch jobs' output is generated to a PDS. At a minimum, this PDS contains two disaster recovery jobs and other necessary members to be used at the recovery site.
- One of the following:
  - System level backups that have been taken and offloaded by Db2 Recovery Expert.
  - Image copy data sets for the Db2 catalog, application data sets, and archive log data sets. You can create a list of the names and the volsers of the archive log copy data sets and the Db2 catalog copies by executing the following query in SPUFI:

```
SELECT * FROM ARY.DR_IMAGE_COPY_V11;
SELECT * FROM ARY.ARCHIVES_V11;
```

If image copies are not cataloged, you could query SYSIBM.SYSCOPY to retrieve the volsers of the necessary data sets.

## Setting up for your chosen recovery strategy

You can use Db2 Recovery Expert to recover a Db2 subsystem from either a system level backup or from Db2 image copies. In either case you must set up the recovery media depending on what strategy you choose.

Select one of the following tasks for more information on setting up for your recovery strategy:

- Setting up for system level backup recovery
- Setting up for Db2 image copy recovery

## Offloading the system level backup to tape

If your chosen disaster recovery strategy is to restore your remote Db2 subsystem from a system level backup, you must first offload the system level backup to tape.

There are two ways to offload your system level backup to tape:

- Offloading during the creation of the system level backup. This is an option that you can select when you create the system level backup profile.

- Offloading as a stand-alone task. This option generates a task that allows you to perform an offload to tape at any time. It is dependent on a previously successful execution of a system level backup.

### **Offloading the system level backup to tape during the creation of the system level backup**

You can select to offload your system level backup to tape as part of or during the creation of the system level backup.

If you choose this option, you will specify that a system level backup will be offloaded to tape when you create the system level backup profile. For more information on creating system level backup profiles see [“About offload options” on page 246](#) .

### **Offloading the system level backup to tape as a standalone task**

If you have chosen to backup your remote Db2 subsystem with a system level backup, that system level backup must be offloaded to tape.

One way to offload your system level backup to tape is to build a batch job that will offload the system level backup. You can build the batch job using the System Restore and Offload panel of the ISPF interface. You can select the system level backup from the System Restore and Offload panel and run the job when required.

1. Open the ISPF interface Db2 Recovery Expert main menu display panel. Specify 1 for System Operations. The System Operations menu opens. Specify 3 for System Level Backup Operations. The Restore System Display panel opens.

```

ARY$REST V3R2      ----- Restore System Display ----- YYYY/MM/DD  HH:MM:SS
Option ==>                               Scroll ==> PAGE

Line Commands: S-Select for Restore D-Delete          V-View Reports O-Offload
                J-Object Report          H-Health Check  I-Image Copies
                G-Group Display

Db2 Subsystem ID *          Datasharing group
*
-----
Select a row from the list of recovery points displayed below. To enter
an RBA/LRSN and have a recovery point automatically selected for you,
enter the RESTORE primary command followed by a Db2 subsystem ID.
-----
                                         Row 1 of 6 >
Cmd Date      Time      Data Mixed On  On      Obj Partial      Nbr
V 03/06/YYYY  17:17:40 No  No  Yes Yes  No  NO  Db2 0022
  SSID: D9C1 RBA/LRSN: 00000000C20DC63434CC
- 03/04/YYYY  18:34:35 No  No  No  Yes  No  NO  Db2 0022
  SSID: D9C1 RBA/LRSN: 00000000C20B53AAF74B
- 03/04/YYYY  15:49:16 No  No  Yes Yes  No  Db2 0022
  SSID: D9C1 RBA/LRSN: 00000000C20B2EB5DC9F

***** Bottom of Data *****

```

2. The **Restore System Display** panel shows a list of valid system recovery points from which you can choose in the event that you need to restore a subsystem. Enter V (View Reports) next to the system level backup that you want to offload to tape.

The Backup Report Display panel opens showing the details for the system level backup.

```

$BREP ----- Backup Report Display ----- YYYY/MM/DD  HH:MM:SS
Option ==>                               Scroll ==> CSR

----- Row 1 of 112 +>
                Db2 Recovery Expert for z/OS
                Backup Summary Report

Utility Executed:..... Backup
Profile Name:..... PAOLOR6.D9C1
Db2 Subsystem:..... D9C1
Db2 Version:..... Vvvv
Backup Type:..... IBM System Level Backup
Backup Contains:..... Object Data and Log Data
Partial Backup:..... No

```

```

Nbr of Volumes:..... 0022
Backup RBA:..... 00000000C20DC63434CC
Last Checkpoint RBA:..... 00000000C20DC6305D36
HPGRBLP RBA:..... 00000000C20DC635F2F2
Backup Date:..... 03/06/2021
Backup Time:..... 17:17:40
Consistency Method:..... IBM System Level Backup
Supports Object Restore:.. No
I/O Suspend Time:..... 2021-03-06-17.17.29.040237
I/O Resume Time:..... 2021-03-06-17.17.40.684636
Backup Elapsed:..... 04.98 Seconds

```

Db2 Recovery Expert for z/OS  
Backup Volume Detail Report

| <-Db2 Volume-> |      | <-Target-> |        | <-----Data Types-----> |     |      |      |      |      |      |
|----------------|------|------------|--------|------------------------|-----|------|------|------|------|------|
| Volser         | Ucb# | Devtyp     | Volser | Ucb#                   | Obj | OCat | ALog | ACat | RLog | RCat |
| SBOX5A         | D800 | 3390-9     | SBOX7I | D807                   | No  | No   | Yes  | No   | No   | Yes  |
| SBOX5B         | D900 | 3390-9     | SBOX7J | D907                   | No  | No   | No   | No   | No   | No   |
| SBOX5C         | DA00 | 3390-9     | SBOX7K | DA07                   | No  | No   | Yes  | No   | No   | No   |
| SBOX5U         | DC02 | 3390-9     | SBOX7C | DA06                   | Yes | Yes  | No   | No   | No   | No   |
| SBOX5V         | DD02 | 3390-9     | SBOX7D | DB06                   | Yes | No   | No   | No   | No   | No   |

Db2 Recovery Expert for z/OS  
Volume Offload Summary Report

```

Utility Executed:..... Offload
Profile Name:..... PAOLOR6.D9C1
Offload Date:..... 03/06/2021
Offload Time:..... 17:17:42
Data Mover:..... DFSMSdss
Compress:..... Yes
Encrypted:..... No
Encryption Method:..... RSA CLRAES128
Generation:..... 0002
Nbr Of Volumes:..... 0022

```

Db2 Recovery Expert  
Volume Offload Detail Report

| <---Db2--- |      |      |                                    | <---Tape--- |        |
|------------|------|------|------------------------------------|-------------|--------|
| Volser     | Ucb# | Type | Offloaded to Filename              | FileSeq     | Volser |
| SBOX5A     | D800 | LP   | PAOLOR6.D9C1.D06.OFFL0D1.SBOX7I    | 001         | CART0B |
|            |      | RP   | PAOLOR6.D9C1.D066.OFFL0D1.P.SBOX7I | 001         | CART0D |
| SBOX5B     | D900 | LP   | PAOLOR6.D9C1.D06.OFFL0D1.SBOX7J    | 001         | CART0A |
|            |      | RP   | PAOLOR6.D9C1.D066.OFFL0D1.P.SBOX7J | 001         | CART0C |

3. Press PF3 to return to the **Restore System Display** panel.
4. Enter an O in the **Cmd** line for the system level backup that you want to offload. Press Enter. The Build Offload Job window opens.

```

Edit Generated Job   Y                (Yes/No)
  Build job in Dataset PAOLOR6.SLB.JCL
  Member              OFFLOAD         Offload Job Member
  Job Cards:
==> //PAOLOR60 JOB (XXX,POK),PAOLOR6,CLASS=A,MSGCLASS=H
==> //*JOBPARM SYSAFF=SC63
==> //*
==> //*

  Press ENTER to process or PF3 to Cancel

```

5. You can use this window to specify JOBCARD information and the output data set name for the offload JCL. Specify Y to edit the JCL. The JCL that will be used to offload the system level backup will be displayed.

```

//ARYJOFFL EXEC PGM=ARY@MAIN,REGION=006M,COND=(4,LT)
//*
//STEPLIB DD DISP=SHR,DSN=ARY.V2R1M0.SARYLOAD
// DD DISP=SHR,DSN=DBuuu.SDSNEXIT
// DD DISP=SHR,DSN=DBuuu.SDSNLOAD
//Db2PARMS DD DISP=SHR,DSN=ARY.Db2PARMS.CONTROL

```

```

//ARYBPROF DD DISP=SHR,DSN=ARY.PROFILES
//ARYBOFFL DD DISP=SHR,DSN=ARY.OFFOPTS
//ARYBPMAP DD DISP=SHR,DSN=ARY.PROFILE.MAPS
//ARYBPCAT DD DISP=SHR,DSN=ARY.PROFILE.CATS
//ARYSBACK DD DISP=SHR,DSN=ARY.SYSBACK
//ARYSB0BJ DD DISP=SHR,DSN=ARY.SYSBACK.0BJS
//ARYSBVOL DD DISP=SHR,DSN=ARY.SYSBACK.VOLS
//ARYSBSSD DD DISP=SHR,DSN=ARY.SYSBACK.SSIDS
//ARYBREPT DD DISP=SHR,DSN=ARY.BREPORT
//ARY#REPT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//ARYOUT DD SYSOUT=*
//ARYSNAPO DD SYSOUT=*
//ARY#PARM DD DSN=Db2Too1.ARY320.SARYSAMP(ARY#PARM),DISP=SHR
//ARYIN DD *
OFFLOAD PAOLOR6.D9C1
GENERATION 01
DATE 02/26/2021
TIME 18:05:03

```

## 6. Run the job.

The following is a sample of the offload to tape report.

```

                Db2 Recovery Expert for z/OS
                Volume Offload Summary Report

Utility Executed:..... Offload
Profile Name:..... PAOLOR6.D9C1
Offload Date:..... 03/06/2021
Offload Time:..... 17:17:42
Data Mover:..... DFSMSdss
Compress:..... Yes
Generation:..... 0002
Nbr Of Volumes:..... 0022

                Db2 Recovery Expert for z/OS
                Volume Offload Detail Report

<---Db2--->
Volser Ucb# Type Offloaded to Filename
-----
SBOX5A D800 LP PAOLOR6.D9C1.D06.OFFL0D1.SBOX7I 001 CART0B
                RP PAOLOR6.D9C1.D066.OFFL0D1.P.SBOX7I 001 CART0D
SBOX5B D900 LP PAOLOR6.D9C1.D06.OFFL0D1.SBOX7J 001 CART0A
                RP PAOLOR6.D9C1.D066.OFFL0D1.P.SBOX7J 001 CART0C
SBOX5C DA00 LP PAOLOR6.D9C1.D06.OFFL0D1.SBOX7K 002 CART0B
...
ARYS001I -Db2 Recovery Expert for z/OS Starting. Version 02.02.013
ARYS162I - Parmlib used for this execution
ARYS003I - Control Cards:
ARYS004I - OFFLOAD PAOLOR6.D9C1
ARYS004I - GENERATION LAST-BACKUP
ARYS004I -
ARYS123I - Backup PAOLOR6.D9C1 generation 002 was read from the repository.
ARYS004I - Performing full volume offload.
ARYS249I - Task 02 - Offload process starting for unit D907
                (Source volser SBOX5B).
ARYS249I - Task 01 - Offload process starting for unit D807
                (Source volser SBOX5A).
ARYS263I - Task 02 - Unit D907 offloaded to local primary data set
                PAOLOR6.D9C1.D06.OFFL0D1.SBOX7J
ARYS263I - Task 02 - Unit D907 offloaded to remote primary data set
                PAOLOR6.D9C1.D066.OFFL0D1.P.SBOX7J
ARYS254I - Task 02 - Offload process for unit D907
                (Source volser SBOX5B) is complete.
ARYS249I - Task 02 - Offload process starting for unit DB07
                (Source volser SBOX5D).
ARYS263I - Task 01 - Unit D807 offloaded to local primary data set
                PAOLOR6.D9C1.D06.OFFL0D1.SBOX7I
ARYS263I - Task 01 - Unit D807 offloaded to remote primary data set
                PAOLOR6.D9C1.D066.OFFL0D1.P.SBOX7I
ARYS254I - Task 01 - Offload process for unit D807
                (Source volser SBOX5A) is complete.
ARYS249I - Task 01 - Offload process starting for unit DA07
                (Source volser SBOX5C).

```

## Setting up for Db2 image copy recoveries

If your chosen disaster recovery strategy is to restore your remote Db2 subsystem from Db2 image copies, you must create the Db2 image copies that will be used.

The traditional Db2 disaster recovery restore the Db2 system from a periodic dump, and then recovers more Db2 data using image copies and archive logs transferred to the remote site on an ongoing basis. The following lists what should be available at the remote site for a Db2 Recovery Expert image copy recovery:

- Dump the entire Db2 system at the local site. In most cases you would copy everything periodically with a DFSMSdss™ volume dump and send it to the recovery site.
- Create image copies of the user table spaces, the Db2 catalog, and the Db2 directory. In most case you would run the COPY utility with RECOVERYDDN set to tape.
- Force archiving to create a consistent set of archive log and BSDS lists. Consider the use of the -ARCHIVE LOG command to force archiving. Consider also issuing the -SET LOG LOGLOAD(0) or -SET LOG CHKTIME(0) command before issuing the -ARCHIVE LOG command so that you have the checkpoint on the truncated active log. Although there is no need to stop Db2 or even to quiesce during this procedure, MODE(QUIESCE) has some advantages. It simplifies restart since there will be no indoubt or inflight URs. There still may be incommit URs and pending writes. It may also make it possible to establish a coordinated quiesce point in IMS or CICS®. Once the message DSNJ139I LOG OFFLOAD TASK ENDED is issued, you can release the batch job to run your DSNJU004 report. 3.
- Integrated catalog facility (ICF) catalog EXPORT and list. Synchronize ICF catalog backup with the cataloging of image copies and archive logs.
- Create Image copies of user page sets. In most cases you would run the COPY utility with RECOVERYDDN set to tape. If you have a lot of changes to the Db2 catalog and the Db2 directory in the daytime, you should also have frequent image copies of them. COPYTOCOPY allows you to create additional image copies any time after the original has been created.
- Archive logs. In most cases you will probably be using dual archive logging. The second archive log (in most cases sent directly to tape via the install option) is intended as a backup or can be sent to the recovery site in preparation for disaster recovery.
- Create a BSDS list report. You will use the report to determine the fully qualified name of the archive log that you need to restore from and the RBA that you will need to give in the CRESTART statement of DSNJU003. Your system should usually schedule a search for the message DSNJ139I LOG OFFLOAD TASK ENDED. Once the message is issued, you can release the batch job to run your DSNJU004 report.

## Creating disaster recovery profiles

The second step in preparing for remote site disaster recovery is to create one or more disaster recovery profiles.

The accuracy of your disaster recovery depends on how you define your disaster recovery profiles. Db2 Recovery Expert uses the contents of a disaster recovery profile to build a disaster recovery profile job. The disaster recovery profile job will be run at the disaster recovery site to recover a Db2 subsystem. You will create one or more disaster recovery profiles for each Db2 subsystem that you want to recover.

With Db2 Recovery Expert you can either recover your Db2 system to the point in time that the system backup was taken, or to some chosen point after the system backup was taken if you have the archive logs available at the disaster recovery site.

Ultimately, to ensure a complete and accurate recovery, you may need to build several disaster recovery profiles and ensure that the jobs produced from the profile are executed on a regular basis at the local site.

1. Specify 1 (System Operations) on the Db2 Recovery Expert for z/OS main menu and press Enter. From the System Operations Menu, specify 4 (Disaster Recovery Profiles) and press Enter. The **Enter Disaster Recovery Profile Like to Display** panel opens.  
From this window you can limit the disaster recovery profiles that are listed on the **Disaster Recovery Profile Display** window.

```
Enter Disaster Recovery Profile Like to Display
```

```
Profile Like *  
Creator Like TUSER*  
SSID Like *
```

- Using one or more of the fields **Profile Like**, **Creator Like**, or **SSID** fields, enter a profile name, creator name, or a subsystem ID name. You can use wildcard characters such as the "\*" as a mask.
- Press Enter.

The **Disaster Recovery Profile Display** panel opens. The **Disaster Recovery Profile Display** panel lists the profiles that meet the selection criteria.

```
RCVYXPRT V3R2 --- Disaster Recovery Profile Display -- 2021/01/14 16:12:  
Option ==> Scroll ==> CSR  
  
Line Commands: D - Delete U - Update B - Build C - Create  
                R - Rename V - View G - Group  
  
-----  
Profile Like *                               SSID Like *  
Creator Like TUSER*                          Row 1 of 1 >  
-----  
  
Cmd Name                               Creator SSID Updt  
C Press Enter to Create Profile  
***** Bottom of Data *****
```

- To create a new profile, specify C in the **Cmd** field and press Enter. The **Enter New Disaster Recovery Profile Data** window opens.

```
Enter New Disaster Recovery Profile Data  
  
Creator TWUSER  
  
Profile Name  
  
Description  
  
Db2 SSID B71D (? for system list)  
  
Update Option U (Update, View only, No access)
```

- Specify a profile name, description, and update option on this panel. Refer to the following field descriptions for information.

#### **Creator**

This field is automatically filled in with your user ID as the profile creator. To create the profile with a different user ID, type the new ID in this field.

#### **Profile Name**

Type a name for the profile. Up to 30 characters can be used.

#### **Description**

*Optional:* Type descriptive information for the profile.

#### **Db2 SSID**

Type in the Db2 SSID for the profile.

## Update option

This option controls how other users can use this recovery profile.

- Type U to allow other users to update the profile.
- Type V to allow other users to view but not update the profile.
- Type N to prevent other users from viewing or updating the profile.

6. Press Enter.

The **Update Disaster Recovery Profile** screen opens.

```
RCVYXPRT V3R2 ---- Update Disaster Recovery Profile ---- 2021/01/14 16:17:27
Option ==>
-----
Creator: TWUSER      Name: TEST                      User: TWUSER
Share Option: U (Upd,View,No)  Description:
Db2 Subsystem: B71D
-----
Disaster Recovery Method          ==> S  (Image copy/System backup)
Archive Logs used at DR          ==> C  (Copied/1/2)
Copy Localsite Logs              ==> B  (1/2/Both/Create 2 copies from 1)
Check Archive Logs location      ==> N  (Yes/No)
Force a checkpoint before Archiving ==> Y  (Yes/No)
Force the Active log to Archive   ==> Y  (Yes/No)
  Use Mode Quiesce to halt activity ==> N  (Yes/No)
    Time to attempt a full Quiesce ==>   (Blank/001-999 seconds)
    Wait synchronously            ==> Y  (Yes/No)
Only run Archive Log Update Process ==> N  (Yes/No)
Allocate Db2 managed objects      ==> N  (Yes/No/Member only)
Process Datasharing Subsystems    ==> A  (All,Ssid,Lpar)
Archive Logs needed at DR         ==> 014 (days) and/or 000 (hours)
Copy Archive Logs to DASD         ==> 007 (days) and/or 000 (hours)
Unit for copying Archive Logs     ==> CART
DR Archive Log Prefix 1           ==> B71D.ARCHLOG1.DR
DR Archive Log Prefix 2           ==> B71D.ARCHLOG2.DR
Image Copy Options
Image Copies (or SLB) used at DR  ==> R  (Localsite/Recoverysite)
Catalog x days of Image Copies at DR ==> 007 (0-365)
Coordinated DR Options
External Subsystem                ==> IAA
Multijob DR Options
Use Multijob for DR Restore       ==> N  (Yes/No/Update)
Allocation parameters
Management class                  ==>   (Blank for default)
Storage class                     ==>   (Blank for default)
Data class                        ==>   (Blank for default)
Device type                       ==>
```

You will use the fields on the Update Disaster Recovery Profile panel to set the options for this disaster recovery profile. Each of the fields are described as follows:

### Disaster Recovery Method

Specify the type of backup that will be used to recover the subsystem at the remote site.

- I: Use Db2 image copies to restore the subsystem. If you specify this option, you will need to ensure that the image copies are taken and sent to the remote site. All Db2 catalog and directory spaces plus all application spaces must be image copied.
- S: Select this option to use a Db2 Recovery Expert system level backup to restore the subsystem. If you select this option, you will need to offload the system level backup that will be used for the restore to tape. You can offload the system level backup to tape in one of two ways. You can set offload options when you create the profile for the system level backup. This will perform the offload to tape as the last step of system level backup execution job. You can also build a batch job that can be run to offload the system level backup to tape when required.

### Archive Logs used at DR

Specify whether archive logs are to be copied for use at the disaster recovery remote site. If selected, Db2 Recovery Expert can recover the Db2 system to a point in time that occurs after the

system level backup. Selecting this option also allows the original archive logs to be left at the local site where they can be available for local recoveries or other processing while the copies are sent to the recovery site.

- C: Db2 Recovery Expert will copy the local archive logs (both 1 and 2) to use at the disaster recovery site. If this option is selected, the fields **Copy Localsite Logs, Unit for copying Archive Logs, DR Archive Log Prefix 1**, and **DR Archive Log Prefix 2** become available. Selecting this option allows the original archive logs to be left at the local site where they can be available for local recoveries or other processing while the copies are sent to the recovery site.
- 1: If using dual logging, Db2 Recovery Expert will use the local copy of the first archive log.
- 2: If using dual logging, Db2 Recovery Expert will use the local copy of the second archive log.

### **Copy Localsite Logs**

If you specified to copy the local archive logs, this field tells Db2 Recovery Expert which logs to copy:

- 1: Only copy archive log 1.
- 2: Only copy archive log 2.
- B: Copy both archive logs 1 and 2.
- C: Create 2 copies from 1 archive log; Db2 Recovery Expert will create recovery site 1 and recovery site 2 logs from the local archive log 1.

### **Check Archive Logs location**

When this value is set to Y, Archive Logs location will be checked by invoking IDCAMS LISTCAT command for archive log data set. The decision whether to bypass the archive log data set or not is based on the DEVTYPE value, which shows where data set is located.

When this value is set to N, the DR process will not change. Default value is N. This field is disabled when Archive Logs used at DR ==> C (Copied)

While building the DR profile, joblog contains the following info messages:

- **ARY#YARC - Check location for EB1ALOG.ARCHLOG1.D21210.T1209260.A0018253**

When the location is DASD and the archive log is being bypassed.

- **ARY#YARC - Check location for EB1ALOG.ARCHLOG1.D21210.T1319552.A0018259  
DEVTYPE=3010200F VOLSER=ARY207 Change FILE\_SEQ\_NO to 002**

When the location is tape and the proper commands log will be added to DR members for this archive log.

### **Force a checkpoint before Archiving**

Type Y to force a checkpoint before archiving the logs. Db2 Recovery Expert issues a SET LOG LOGLOAD (0) command when this field is set to Y. Setting this field to Y will cause the Db2 checkpoint records to be included in the last archive being sent to the disaster recovery site.

### **Force the Active log to Archive**

This field allows you to force an ARCHIVE LOG command. The current active log is archived when this field is set to Y. For a data sharing group, each member's logs are archived individually. If a member of a data sharing group is excluded via the Process Datasharing Subsystems field, that member's log is not archived.

**Use Mode Quiesce to halt activity** allows you to use the MODE (QUIESCE) option of ARCHIVE LOG. Specifying **Y** halts all new update activity by the Db2 subsystem for a specified period of time in seconds. The **Time to attempt a full Quiesce** field allows you to specify 1-999 seconds, or you can leave the field blank, and Db2 Recovery Expert will use a default value specified during system installation. When the **Wait synchronously** field is set to **Y**, Db2 Recovery Expert will wait for the ARCHIVE LOG to complete. When you set the **Wait synchronously** field to **N**, Db2 Recovery Expert will monitor completion by issuing the DISPLAY THREAD command. This command is issued every 15 seconds, to detect when the ARCHIVE LOG is complete.



### **Only run Archive Log Update Process**

This value is set to N when creating a primary profile. You would set this value to Y in a secondary profile. When set to Y the recovery job will optionally copy the archive logs and back up and rebuild the BSDS.

### **Allocate Db2 managed objects**

This field allows you to generate an additional recovery managed objects step, which defines the VSAM clusters for applications Db2 managed objects. These are the options:

- Specify Y to generate the additional recovery managed objects step.
- Specify M to generate a ssidALLD member with IDCAMS DEFINE CLUSTER statements only. The additional step is not added to a recovery job, so it can be run manually when needed.
- Specify N to bypass this step.

The ssidALLD member contains objects from SYSIBM.SYSTABLEPART, SYSIBM.SYSDATABASE, SYSIBM.SYSINDEXES, and SYSIBM.SYSINDEXPART tables with STORTYPE=I. Catalog database and work file database objects always go to the ssidALLC member regardless of the STORTYPE value. For objects created prior to Db2 v12, when STORTYPE contains the null value, catalog database and work file database objects always go to the ssidALLC member; all others go to the ssidALLD member.

**Note:** This option is allowed only for the Image Copy method. When the **Only run Archive Log Update Process** option is enabled, this step is not generated.

### **Process Datasharing Subsystems**

This field allows you to choose how to process archive log sub tasks for data sharing group members.

- A: Process all data sharing group members on all LPARs.
- S: Process only the SSID under which the recovery profile is being built. This profile must also be generated under this SSID. If you choose this setting, you should ensure that only one of the profiles built for the data sharing group forces a checkpoint and archives the active log. The other profiles should have the "Only run Archive Log Update Process" field set to Y. This avoids duplicating work already done by the disaster recovery job on other subsystems.
- L: Process only the data sharing group members on the current LPAR (under which the profile is being built). If you are building profiles separately for the other LPARs in the data sharing group, then only one of the profiles needs to force a checkpoint and archive the active log. The other profiles should have the "Only run Archive Log Update Process" field set to Y. This avoids duplicating work already done by the disaster recovery job on other subsystems.

### **Archive Logs needed at DR**

Specify the number of days and/or hours of archive logs needed. This value is computed from the time the job is built at the local site. The recommended value for this field is (the longest duration between image copies at your site) X 2. Example: If weekly image copies are the longest duration, then enter 14 in this field (7 days x 2).

### **Copy Archive Logs to DASD**

Specify the number of days and/or hours of archive logs that should be copied to DASD from tape at the recovery site. Logs from the last x days and y hours are copied. Using this field can reduce or eliminate contention on the archive log tape during recovery. The recommended value for this field is the longest duration between image copies at your site. Example: If weekly image copies are the longest duration, then enter 7 in this field.

### **Unit for copying Archive Logs**

Enter the tape or DASD unit device to be used to copy the archive logs.

### **Archive Logs Expiration date**

Specify the expiration for the archive logs. You can specify the date in the form of YYYYDDD or YYDDD. If you specify an expiration date for the archive logs, then you will not specify any value in the **Archive Logs Retention period** field.

### **Archive Logs Retention period**

Specify the retention period for the archive logs. You can specify the retention period as a four digit number representing the number of days to keep the Archive logs. If you specify a retention period for the archive logs, then you will not specify any value in the **Archive Logs Expiration date** field.

### **DR Archive Log Prefix 1**

### **DR Archive Log Prefix 2**

Specify the archive log prefix 1 and 2 that the new archive logs will have at the recovery site. Note that if the subsystem is a member of a data sharing group, you must have "&SSID" somewhere in the archive log prefix.

### **Image Copies (or SLB) used at DR**

Specify which image copies or system level backups are to be cataloged at the recovery site. L is local primary and local backup. R is recovery primary and recovery backup.

### **Catalog x days of Image Copies at DR**

Specify how many days of image copies back from current are to be cataloged at the recovery site. The recommended value for this field is the longest duration between z/OS catalog backups.

### **Use Multijob for DR Restore**

Specify whether you want to use multiple jobs for the disaster recovery restore process. Using multiple jobs can reduce the time it takes to perform the restore process. You can:

- Specify Y if you want the restore process to use multiple jobs. If you used multiple jobs to offload the system level backup that is being used for the restore, then the options that were in use when the backup was offloaded will be used for the restore. If the offload was not done using multiple jobs, then default values are used for multijob options. To update or change the options you must specify U.
- Specify N to use a single job for the restore process.
- Specify U to update the multijob options that are used to create the multiple restore jobs. After pressing Enter, the **Build Restore Multijob Options** panel opens where you specify the LPARS where you want the jobs to run and the job name prefix for the multiple jobs.

### **External Subsystem**

Specify a value in this field if you are creating a disaster recovery profile that will be used to recover both a Db2 subsystem and an IMS subsystem to a coordinated point in time. Specify the IMS system ID that will be recovered in combination with the Db2 subsystem.

### **Allocation parameters**

- **Management class:** Specify the Management class to use when copying the archive logs from tape to disk. Leave blank to use the default value.
  - **Storage class:** Specify the Storage class to use when copying the archive logs from tape to disk. Leave blank to use the default value.
  - **Data class:** Specify the Data class to use when copying the archive logs from tape to disk. Leave blank to use the default value.
  - **Device type:** Specify the Device type to use when copying the archive logs from tape to disk.
7. When you finish specifying the disaster recovery profile fields, press the PF3 key. The Update Disaster Recovery Profile panel closes. The Disaster Recovery Profile Display opens. A message is issued that your profile was created. The next step in setting up the disaster recovery for your Db2 subsystem is to create a secondary profile. If you are not setting up a secondary profile for the Db2 subsystem, then you will now build the disaster recovery profile job.

## **Specifying the restore multijob options**

The restore multijob options are used to specify the LPARS where the multiple restore jobs are run and to specify a prefix that is used when generating the names for the multiple jobs.

1. From the **Update Disaster Recovery Profile** panel specify Y or U in the **Use Multijob for DR Restore** field. Press Enter. The **Build Restore Job Multijob Options** panel opens.

```

RCVYXPRT V3R2 ----- Build Restore Job ----- YYYY/MM/DD HH:MM:SS
                ----- Multijob Options -----

Option  ==>
-----
Creator: TUSER      Name: T9B1 - DFSMSDSS      SSID: T9B1
Share Option: U    (Upd,View,No)  Description:
-----
Enter the options for performing offload and restore processing:

Use Multijobs    ==> Y      (Y/N)
Multijob Prefix ==> TSMXDX (1-6 character job prefix)

Multijob LPAR list:
  LPAR Name      Max Jobs (1-99)      Max Tasks (1-8)
  RS22           02                02
  RS23           02                02

```

2. Specify whether you want to use multiple jobs for the restore process. Using multiple jobs can reduce the time it takes to perform the restore. Specify Y if you want to use multiple jobs. Specify N to use a single job for the restore process. If you select to use a single job for the restore, press Enter and return to the build Restore Job panel. If you select to perform the restore process using multiple jobs you must also specify a prefix to use for the job names and the LPARs where the jobs can run.
3. In the **Multijob Prefix** field specify a 1 to 6 character prefix that will be used to generate a job name for each of the multiple jobs. Each job name will begin with this prefix followed by a number from 01-99. If this value is not specified, then the prefix is taken from the first 6 characters of the main job's name. The first character specified for the Multijob Prefix option must begin with either an alphabetic character or a national symbol (#, @, or \$) so that when the job name is generated it will be a valid z/OS job name.
4. You specify the LPARS where you want the multiple jobs to run in the **Multijob LPAR list** fields. When specifying the LPARS for the multiple job restore:
  - To allow for workload balancing you can specify the same LPAR more than once in the LPAR list. For example, you might specify in the LPAR list:
    - LPAR1
    - LPAR2
    - LPAR3
    - LPAR1
  - When defining the LPAR list, you will need to consider the total number of tape drives that are available to each LPAR and the total number of tape drives that are required for processing if the maximum number of jobs are submitted to complete the offload. To calculate the maximum number of tape drives you multiply the maximum number of jobs by the maximum number of tasks for each LPAR, and then add all the values. In the Multijob Options panel example, the maximum number of jobs is 8 (2x2+2x2).
  - The main job that controls the distribution of the multijobs to the specified LPARs will also control the distribution of the volumes required for the recovery.
5. Specify the LPAR name in the **LPAR Name** field. The LPAR name can be from 1 to 8 characters. You can specify a single asterisk (\*) to indicate that all the jobs are to be run on the same LPAR as the main job.
6. Specify a 2 digit number from 01-99 in the **Max Jobs** field. This number indicates the maximum number of jobs that can be submitted to run on the LPAR. The main job will submit multiple jobs to the specified LPAR until this limit is reached. When this limit is reached, if more jobs are needed, the main job will move to the next LPAR list entry. The default value is 4.
7. Specify a 2 digit number from 01-8 in the **Max Tasks** field. This number specifies the maximum number of tasks that are to be created in each multijob. When the multijob is submitted, it will create as many tasks as are needed, up to this limit, to perform offload or restore processing. The default value is 4.
8. Press Enter.

## Renaming the disaster recovery profile

You can use the Rename line command to change the name, creator, or description of a disaster recovery profile.

You can rename profiles created under your user ID, regardless of the value assigned to the Update Option field. You can also rename a profile created by another user if the profile has the value of the Update Option field set to Update (U).

1. From the Disaster Recovery Profile Display panel specify **R** in the **Cmd** line next to the profile that you want to rename. Press **Enter**. The Rename Disaster Recovery Profile panel opens.
2. The **New Profile Creator** field is automatically filled with the user ID that created the profile. If you have been granted permission, you can change the user ID in the New Profile Creator field. Permission to change the creator user ID is granted using the ADMIN\_USERID parameter in the SYSPARM library.
3. To rename the profile, specify a new name in the **New Profile Name** field.
4. To change the profile description, specify a new description in the **New Profile Description** field.
5. Press **Enter**. The profile is updated.

## Creating a secondary disaster recovery profile

Creating a secondary disaster recovery profile is only necessary if you are using the continuous archive log transfer method of recovery. Only a primary profile is needed for a consistent point-in-time recovery.

The secondary disaster recovery profile must be built using nearly the same specifications as those used in the primary profile with the following exceptions:

- Force a checkpoint before Archiving: This value should be set to N in the secondary profile.
- Force the Active log to Archive: This value should be set to N in the secondary profile.
- Only run Archive Log Update Process: The value in this field must be set to Y in the secondary profile.

These settings are specified in the **Update Disaster Recovery Profile** panel; see [Creating disaster recovery profiles](#).

## Creating application recovery jobs

If you have elected to restore a Db2 system using Db2 image copies, you need to be sure that you have created recovery jobs for all of the applications.

There are many options for creating the recovery jobs. The jobs can be created using Db2 Recovery Expert application profiles. See Chapter 9, “Recovering database objects,” on page 299 for more information. The jobs can also be created using the Db2 Automation Tool. There is also recovery JCL created during the profile build process. This JCL is automatically shipped to the remote site when the PDS created by building profiles is shipped.

## Building disaster recovery jobs

After you define a disaster recovery profile, you must build from the profile a series of jobs that can be used to restore a Db2 subsystem at a remote site.

The process of building the jobs from the primary disaster recovery profile should be a regularly scheduled batch job. Disaster recovery profile jobs can only be built using the batch build process.

The build should be scheduled as frequently as you want to establish a point of consistency for recovery. This can be daily or weekly depending on recovery objectives. The output from the build job is a PDS containing the JCL necessary to recover the Db2 subsystem at the remote site.

**Note:** A PDS/E should be used to hold the output from the build jobs. This eliminates the need to frequently compress the output data set.

If you have selected to restore your Db2 system from system level backup, when the primary profile is built, Db2 Recovery Expert performs the following tasks:

1. Restores the Db2 Recovery Expert repository at the disaster recovery site.
2. Restores the Db2 volumes from the most recent offloaded system backup.
3. Copies the archive logs.
4. Rebuilds the BSDS for use at the disaster recovery site. The PDS that contains the disaster recovery jobs and control records will contain the contents of the BSDS. This eliminates the need to mount tapes at the recovery site to build the BSDS.

If you have selected to restore your Db2 system from Db2 image copies, when the primary profile is built, Db2 Recovery Expert performs the following tasks:

1. Searches the catalog and finds all appropriate image copies that will be needed at the recovery site.
2. Generates control cards to catalog the image copies at the DR site.
3. Creates the copies and the archive logs to be used at the DR site if requested in the profile.
4. Generates an updated BSDS for use at the DR site with the copied archive log names and stores the resulting file in the PDS to be shipped to the recovery site. The PDS that contains the DR jobs and control records will contain the contents of the BSDS. This eliminates the need to mount tapes at the recovery site to build the BSDS. Also, the BSDS is updated with the new archive log name created if the archive logs were copied.
5. Generates IDCAMS control cards to delete all table space and index space data sets and to create all user-defined table spaces at the DR site. It uses the current table space and index space data set attributes to ensure that the data sets are created with the same attributes at the DR site. The PDS is now ready to be shipped to the recovery site along with the application image copies and the newly created copies of the archive logs.

**Note:** A copy of the BSDS is created prior to any updates by Db2 Recovery Expert. The original BSDS is never updated by Db2 Recovery Expert.

The PDS is now ready to be shipped to the recovery site along with the application image copies and the newly created copies of the archive logs.

1. From the **Disaster Recovery Profile Display** panel, specify B in the **Cmd** line next to the profile for which you want to build a recovery job and press Enter.

The **Build Job** panel opens.

```

Build Job for TUSER.TEST

Build Online or Batch  B          (Batch)
Edit Generated Job    Y          (Yes/No)

Build job in Dataset  TUSER.DAH.TEST
Member                TESTRBRD

Job Cards:
==> //OBJREST JOB TUSER,CLASS=A,NOTIFY=&SYSUID
==> //*
==> //*
==> //*

```

2. Complete the fields on this panel.

**Build Online or Batch**

For disaster recovery profiles, B(atch) is the only option allowed.

**Edit Generated Job**

Enter Y if you want to edit the job after it has been generated. The job appears in an edit session after it has been generated. If you type N, after job generation the **Disaster Recovery Profile Display** screen reappears.

**Build job in Dataset**

Enter the fully qualified data set name (without quotes) where you want to save the generated job. This data set must already exist.

**Note:** Multiple subsystems' disaster recovery jobs can be generated to the same PDS. The Db2 SSID prefixes all recovery job members.

**Member**

If the data set to hold the generated job is a PDS, enter a member name for the job output here. If the member does not exist, Db2 Recovery Expert will create it.

**Job Cards**

Enter a valid job card for your site.

- When you finish entering data in this panel, press Enter. The following panel opens:

```
Build Job for TUSER.TEST

You have selected your job to be built in batch mode. The
batch generation JCL will be stored in dataset
TUSER.DAH.TEST
Please specify in the dataset below where you want the
JCL built by the batch module to be placed.

Build job in Dataset  TUSER.DAH2.TEST

Jobcard data to be used on the generated job:
==> //JOB CARD JOB TUSER,CLASS=A,NOTIFY=&SYSUID
==> // *
==> // *
==> // *
```

- From the **Build Job** panel, type in the data set name (and member name, if the data set is a PDS) to hold the utility job that will be generated by the batch JCL job. You must also enter a valid job card to be included in the utility JCL. Press Enter to process the job.

**Note:** During the build process, user-defined spaces that are migrated generate a message and a return code 12. You can add a parameter to the ARY@BULD EXEC statement to define an alternate return code value for any user defined table spaces or index spaces that are migrated. This does not affect any objects defined in the catalog or directory (DSNDB06 and DSNDB01); if these objects are migrated, the return code 12 cannot be overridden. To use this feature, add the following to the ARY@BULD program EXEC statement:

```
PARM='USERMIG=nn'
```

Where *nn* is the return code.

For example, to set the return code to "06" when user spaces are migrated:

```
//ARY@BULD EXEC PGM=ARY@BULD,REGION=0008M,PARM='USERMIG=06'
```

- Ship the disaster recovery PDS that is created to the remote disaster recovery site.

**Sample JCL generated from a system level backup primary profile**

This section shows a sample of the JCL that is generated from system level backup primary profile. When this job is run at the local site, it will generate the jobs that can be used to recover a Db2 subsystem at a remote site.

```
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/** *
/** Step: ARY@BULD *
/** *
/** Desc: This job will generate the JCL for DR profile
/** PAOL0R6.D9CGIC in a batch mode. *
/** The generated job will be placed in data set *
/** PAOL0R6.SLB.JCL. *
/** *
/** Return Codes: *
/** *
/** *
/** (00) - Disaster Recovery Jobs built successfully *
/** (12) - Problem occurred during the DR build process
```

```

//* *
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/* Run ARY DR Build *
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//ARY@BULD EXEC PGM=ARY@BULD,REGION=006M
//STEPLIB DD DISP=SHR,DSN=ARY.V2R1M0.SARYLOAD
// DD DISP=SHR,DSN=Vvvv.SDSNEXIT
// DD DISP=SHR,DSN=Vvvv.SDSNLOAD
//Db2PARMS DD DISP=SHR,DSN=ARY.Db2PARMS.CONTROL
//ARYBPROF DD DISP=SHR,DSN=ARY.PROFILES
//ARYBOFFL DD DISP=SHR,DSN=ARY.OFFOPTS
//ARYBPMAP DD DISP=SHR,DSN=ARY.PROFILE.MAPS
//ARYBPCAT DD DISP=SHR,DSN=ARY.PROFILE.CATS
//ARYSBACK DD DISP=SHR,DSN=ARY.SYSBACK
//ARYSBOBJ DD DISP=SHR,DSN=ARY.SYSBACK.OBJS
//ARYSBVOL DD DISP=SHR,DSN=ARY.SYSBACK.VOLS
//ARYSBSSD DD DISP=SHR,DSN=ARY.SYSBACK.SSIDS
//ARYBREPT DD DISP=SHR,DSN=ARY.BREPORT
//ISPFIL DD DISP=SHR,DSN=PAOLOR6.SLB.JCL
//ISPLOG DD SYSOUT=*,DCB=(RECFM=VA,LRECL=125,BLKSIZE=129)
//ISPWK1 DD UNIT=SYSALLDA,SPACE=(CYL,(30,30)),
// DCB=(RECFM=FB,LRECL=133,BLKSIZE=1330)
//ARYERROR DD SYSOUT=*
//SYSTSPRT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//ARYDEBUG DD SYSOUT=*
//ARY#DATA DD *
DISASTER_RECOVERY ( -
Db2_SUBSYSTEM D9C1 -
GEN_TO_DATASET PAOLOR6.SLB.JCL -
PROFILE_NAME 'D9CGSLB' -
PROFILE_CREATOR PAOLOR6 -
EXECUTION_LIB_1 ARY.V2R1M0.SARYLOAD -
JOB_CARD_1_1 '//PAOLOR62 JOB (XXX,POK),DRJOB2,CLASS=A,' -
JOB_CARD_1_2 'MSGCLASS=X' -
JOB_CARD_2_1 '/*JOBPARM SYSAFF=SC63' -
JOB_CARD_3_1 '/*' -
JOB_CARD_4_1 '/*' -
)
/*

```

The following shows the syntax of the input control cards:

```

//ARY#DATA DD *
DISASTER_RECOVERY ( -
Db2_SUBSYSTEM D9C1 -
USER_INDICATOR ARY -
PROFILE_NAME 'D9CGSLB' -
PROFILE_CREATOR PAOLOR6 -
EXECUTION_LIB_1 ARY.V2R1M0.SARYLOAD -
GEN_TO_DATASET PAOLOR6.SLB.JCL -
JOB_CARD_1_1 '//PAOLOR62 JOB (XXX,POK),DRJOB2,CLASS=A,' -
JOB_CARD_1_2 'MSGCLASS=X' -
JOB_CARD_2_1 '/*JOBPARM SYSAFF=SC63' -
JOB_CARD_3_1 '/*' -
JOB_CARD_4_1 '/*' -
BPROF_DSN ARY.PROFILES -
BOFFL_DSN ARY.OFFOPTS -
BPMAP_DSN ARY.PROFILE.MAPS -
BPCAT_DSN ARY.PROFILE.CATS -
SBACK_DSN ARY.SYSBACK -
SBOBJ_DSN ARY.SYSBACK.OBJS -
SBVOL_DSN ARY.SYSBACK.VOLS -
SBSSD_DSN ARY.SYSBACK.SSIDS -
BREPT_DSN ARY.BREPORT -
PARML_DSN ARY.ARY320.SARYSAMP -
PARML_MEMBER ARY#PARM -
Db2CNTL_DSN ARY.Db2PARMS.CONTROL -
)
/*
. . . . .

```





```

BMAP_DSN ARY.PROFILE.MAPS -
BPCAT_DSN ARY.PROFILE.CATS -
SBACK_DSN ARY.SYSBACK -
SBOBJ_DSN ARY.SYSBACK.OBJS -
SBVOL_DSN ARY.SYSBACK.VOLS -
SBSSD_DSN ARY.SYSBACK.SSIDS -
BREPT_DSN ARY.BREPORT -
PARML_DSN ARY.ARY320.SARYSAMP -
PARML_MEMBER ARY#PARM -
Db2CNTL_DSN ARY.Db2PARMS.CONTROL -
)
//*
. . . . .

```

## Building the secondary profile

The process of building the secondary disaster recovery profile should be a regularly scheduled batch job.

When the secondary profile is built, the disaster recovery batch job that is produced simply updates the archive log and backs up and rebuilds the BSDS. The build should be scheduled as often as practical to achieve the goal of adding the archive logs to the recovery list as soon as they are created. You should specify that the output of the secondary profile build be directed to the same PDS as was specified for the associated primary profile build.

**Note:** Disaster recovery profiles can only be built using the batch build process.

## Recovering at the remote site from system level backups

This task details the steps that are required to recover a Db2 subsystem at a remote using the contents of the Db2 Recovery Expert system level backup disaster recovery PDS.

The following steps describe and also show real job output for a successful system level restore using Db2 Recovery Expert.

**Note:** To prevent issues with possible duplicate records in the repository, #REPOJOB should be run only once, in Step 2 below. This job defines and loads the data repository files required for disaster recovery processing.

1. Ensure that the following preparatory steps are completed:
  - The z/OS catalog is available (or has already been restored) at the recovery site.
  - In the disaster recovery example that follows, we assume that the volumes at the remote site have been initialized with the same volume serial numbers (VOLID) as the ones used at the local site.
2. The first job to run at the disaster recovery site is #REPOJOB. As noted above, this job should be run only once. #REPOJOB performs the following steps:
  - a) Defines the Db2 Recovery Expert data repository files.

The following is a sample of the JCL:

```

//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//* Disaster Recovery Define Product VSAM Repository Files
//*
//* Return Codes:  0 - Successful
//*
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//REPODEFN EXEC PGM=IDcams,REGION=006M
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//SYSIN DD DISP=SHR,DSN=PA0LOR6.ARYJOBS.D9C1.DR(ARYREPOC)
//*

```

- b) Loads the Db2 Recovery Expert data repository files required for disaster recovery processing.

The following shows a sample of the JCL:

```

//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//* Disaster Recovery Load Repository Records

```

```

//*
//* Return Codes:  0 - Successful
//*
** * * * * *
//REPOLOAD EXEC PGM=ARY#YMCR,REGION=006M
//STEPLIB DD DISP=SHR,DSN=RSDEMO.ARY220.IBMTAPE.SARYLOAD
// DD DISP=SHR,DSN=RSRTE.EMC.MFE700.LINKLIB
// DD DISP=SHR,DSN=RSRTE.VENDOR.FDR5467.LOAD
//Db2PARMS DD DISP=SHR,DSN=RSTEST.ARY320.CONTROL
//ARYBPROF DD DISP=SHR,DSN=RSTEST.ARY320.PROFILES
//ARYBOFFL DD DISP=SHR,DSN=RSTEST.ARY320.OFFOPTS
//ARYBPMAP DD DISP=SHR,DSN=RSTEST.ARY320.PROFILE.MAPS
//ARYBPCAT DD DISP=SHR,DSN=RSTEST.ARY320.PROFILE.CATS
//ARYSBACK DD DISP=SHR,DSN=RSTEST.ARY320.SYSBACK
//ARYSBOBJ DD DISP=SHR,DSN=RSTEST.ARY320.SYSBACK.OBJS
//ARYSBVOL DD DISP=SHR,DSN=RSTEST.ARY320.SYSBACK.VOLS
//ARYSBSSD DD DISP=SHR,DSN=RSTEST.ARY320.SYSBACK.SSIDS
//ARYBREPT DD DISP=SHR,DSN=RSTEST.ARY320.BREPORT
//ARY#RPOI DD DISP=SHR,DSN=PAOLOR6.ARYJOBS.D9C1.DR(ARYREPOD)

```

The following shows the output from the system backup offload job run at the local site.

```

Db2 Recovery Expert for z/OS Backup Summary Report
Utility Executed:..... Restore
Profile Name:..... PAOLOR6.D9C1
Db2 Subsystem:..... D9C1
Db2 Version:..... 0910
Restore Type:..... Offload
Restored:..... Object Data Only
Nbr of Volumes:..... 0010
Backup RBA:..... 00000000C20DC63434CC
Db2 Recovery Expert for z/OS
Backup Volume Detail Report
<--Db2 Source Volume-->
Volser Ucb# Sym# Devtyp Restored From Filename File
-----
SB0X5B D900 0000 3390-9 PAOLOR6.D9C1.D066.OFFL0D1.P.SB0X7J
...
SB0X5R D902 0000 3390-9 PAOLOR6.D9C1.D066.OFFL0D1.P.SB0X7H 004
SB0X5S DA02 0000 3390-9 PAOLOR6.D9C1.D066.OFFL0D1.P.SB0X7A 005
SB0X5T DB02 0000 3390-9 PAOLOR6.D9C1.D066.OFFL0D1.P.SB0X7B 005

```

3. The second job to run at the disaster recovery site is ssid#JC1. This job performs the following steps:

a) Invokes the Db2 Recovery Expert job to restore the volume backups from tape.

The following shows the JCL for this step:

```

//*
** * * * * *
//*
//* Step:      ARYREST
//*
//* Desc:      This step will invoke the System Restore job.
//*
//*            When this job is complete, Db2 can be restarted.  If
//*            you did not restore the Db2 logs, you will need to
//*            respond Yes to the WTOR:
//*            XXXX CONDITIONAL RESTART RECORD INDICATES TRUNCATION
//*            AT RBA XXXXXXXXXXXXXXXXXXXX. REPLY Y OR N
** * * * * *
//ARYREST EXEC PGM=ARY@MAIN,REGION=006M,COND=(4,LT)
//STEPLIB DD DISP=SHR,DSN=RSDEMO.ARY220.IBMTAPE.SARYLOAD
// DD DISP=SHR,DSN=RSRTE.EMC.MFE700.LINKLIB
// DD DISP=SHR,DSN=RSRTE.VENDOR.FDR5467.LOAD
//Db2PARMS DD DISP=SHR,DSN=RSTEST.ARY320.CONTROL
//ARYBPROF DD DISP=SHR,DSN=RSTEST.ARY320.PROFILES
//ARYBOFFL DD DISP=SHR,DSN=RSTEST.ARY320.OFFOPTS
//ARYBPMAP DD DISP=SHR,DSN=RSTEST.ARY320.PROFILE.MAPS
//ARYBPCAT DD DISP=SHR,DSN=RSTEST.ARY320.PROFILE.CATS
//ARYSBACK DD DISP=SHR,DSN=RSTEST.ARY320.SYSBACK
//ARYSBOBJ DD DISP=SHR,DSN=RSTEST.ARY320.SYSBACK.OBJS
//ARYSBVOL DD DISP=SHR,DSN=RSTEST.ARY320.SYSBACK.VOLS
//ARYSBSSD DD DISP=SHR,DSN=RSTEST.ARY320.SYSBACK.SSIDS
//ARYBREPT DD DISP=SHR,DSN=RSTEST.ARY320.BREPORT

```

```

//ARY#REPT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//ARYOUT DD SYSOUT=*
//ARYSNAPO DD SYSOUT=*
//ARY#PARM DD DISP=SHR,
//          DSN=RSTEST.ARY220.IBMTAPE.SARYSAMP(ARY#PARM)
//ARYIN DD *
          RESTORE "PAOLOR6".D9C1 FULL MODE Db2"
          GENERATION 02
          DATE 03/06/2021
          TIME 13:09:35
          FROM-OFFLOAD
          RESTORE-TO-VOLSERS
          RESTORE-LOGS

/*
/**

```

**Note:** There are two keywords that you might want to add to the ARYIN DD \* statement:

- **RESTORE-TO-VOLSERS:** This keyword can be added to the system restore job at the disaster recovery site. It is required if your UCBs at the disaster recovery site do not match the UCBs at your local site. More specifically, if the UCBs at the disaster recovery site are not formatted with the same VOLSERS as were used at your local site (the case for most customers) this keyword is needed. It is also required for restoring from an offload which was run with the OFFLOAD-T0-VOLSERS control card.
- **RESTORE-LOGS:** If the system backup being used for restore contains the LOGS (either archive or active), adding this keyword will cause the volumes containing the log data to be restored. You would add this keyword if you do not want to apply any additional log records after the system backup.

The following shows the output from this step that restores the volume's backups from tape:

```

ARYS001I -Db2 Recovery Expert for z/OS Starting. Version V3R2
ARYS162I - Parmlib used for this execution
ARYS003I - Control Cards:
ARYS004I - RESTORE PAOLOR6.D9C1
ARYS004I - GENERATION 02
ARYS004I - DATE 03/06/2021
ARYS004I - TIME 13:09:40
ARYS004I - RECOVERY-SITE
ARYS004I - FROM-OFFLOAD
ARYS123I - Backup PAOLOR6.D9C1 generation 02 was read from the repository.
ARYS013I - Backup profile PAOLOR6.D9C1 was read from the repository.
ARYS038I - Performing profile volume map validation...
ARYS146I - Removing volser SBOX5C from this restore.
          It contains only log data
ARYS146I - Removing volser SBOX5K from this restore.
          It contains only log data
ARYS146I - Removing volser SBOX5D from this restore.
          It contains only log data
ARYS146I - Removing volser SBOX5E from this restore.
          It contains only log data
..
..
ARYS039I - Volume map validation complete.
ARYS137I - Varying volumes offline.
ARYS136I - Disconnecting user catalogs.
ARYS217I - User catalog UCAT.DB9CDATA disconnected.
ARYS217I - User catalog UCAT.DB9CLOGS disconnected.
ARYS217I - User catalog UCAT.VSBOX01 disconnected.
ARYS137I - Varying volumes online.
ARYS004I - Restoring volumes from offloaded backup...
ARYS277I - Task 02 - Volser SBOX5B was restored
          from PAOLOR6.D9C1.D066.OFFL0D1.
ARYS277I - Task 01 - Volser SBOX5I was restored
          from PAOLOR6.D9C1.D066.OFFL0D1.
ARYS277I - Task 02 - Volser SBOX5J was restored
          from PAOLOR6.D9C1.D066.OFFL0D1.
..
..
ARYS277I - Task 02 - Volser SBOX5T was restored
          from PAOLOR6.D9C1.D066.OFFL0D1.
ARYS277I - Task 01 - Volser SBOX5U was restored
          from PAOLOR6.D9C1.D066.OFFL0D1.
ARYS277I - Task 02 - Volser SBOX5V was restored

```



```

INDEX -
( NAME ('DB9CL.D9C1.BSDS01.INDEX') ) -
IDC0508I DATA ALLOCATION STATUS FOR VOLUME SBOX5E IS 0
IDC0509I INDEX ALLOCATION STATUS FOR VOLUME SBOX5E IS 0
IDC0181I STORAGECLASS USED IS DB9CLOG1
IDC0181I MANAGEMENTCLASS USED IS MCDb22
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0

```

- d) Rebuilds the BSDS from the 80-byte record file, placing it back into 4089-byte records.

The following is a sample of the input JCL:

```

/**
** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
** *
** * Disaster Recovery Rebuild Boot Strap Dataset into 4080 byte recs *
** *
** * Return Codes: 0 - Successful *
** *
** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
** *
** * D9C1RBSR EXEC PGM=ARY@YRBS,REGION=006M
** * STEPLIB DD DISP=SHR,DSN=RSDEMO.ARY220.IBMTAPE.SARYLOAD
** * DD DISP=SHR,DSN=RSRTE.EMC.MFE700.LINKLIB
** * DD DISP=SHR,DSN=RSRTE.VENDOR.FDR5467.LOAD
** * BDSI#IN DD DISP=SHR,DSN=PAOLOR6.ARYJOBS.D9C1.DR(D9C1BSDS)
** * BDSI#OUT DD DSN=&BSDS,DISP=(NEW,PASS,DELETE),
** * UNIT=3390,SPACE=(TRK,(10,10),RLSE),
** * DCB=(RECFM=V,LRECL=4093)
** *

```

- e) Restores the BSDS by placing the 4089-byte records into a VSAM file.

The following sample shows the input JCL:

```

/**
** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
** *
** * Disaster Recovery Copy Boot Strap Data set into VSAM data sets *
** *
** * Return Codes: 0 - Successful *
** *
** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
** *
** * D9C1CPBS EXEC PGM=IDCAMS
** * SYSPRINT DD SYSOUT=*
** * SYSOUT DD SYSOUT=*
** * BSDSI DD DSN=&BSDS,DISP=(OLD,DELETE,DELETE)
** * BSDS1 DD DISP=SHR,DSN=D9C1LOG.BSDS01
** * BSDS2 DD DISP=SHR,DSN=D9C1LOG.BSDS02
** * SYSIN DD *
REPRO INFILE(BSDSI) OUTFILE(BSDS1) REUSE
REPRO INFILE(BSDSI) OUTFILE(BSDS2) REUSE
** *

```

The following steps show the IDCAMS output for the restore of the BSDS.

```

IDCAMS SYSTEM SERVICES
REPRO INFILE(BSDSI) OUTFILE(BSDS1) REUSE
IDC0005I NUMBER OF RECORDS PROCESSED WAS 777
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
REPRO INFILE(BSDSI) OUTFILE(BSDS2) REUSE
IDC0005I NUMBER OF RECORDS PROCESSED WAS 777
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
IDC0002I IDCAMS PROCESSING COMPLETE. MAXIMUM CONDITION CODE WAS 0

```

- f) Creates a conditional restart.

The following is a sample of the input JCL:

```

/**
** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
** *
** * Disaster Recovery Create Conditional Restart Control Record *
** *
** * Return Codes: 0 - Successful *
** *
** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
** *
** * D9C1CRCR EXEC PGM=DSNJU003,REGION=006M

```

```
//STEPLIB DD DISP=SHR,DSN=RSDEMO.ARY220.IBMTAPE.SARYLOAD
// DD DISP=SHR,DSN=RSRTE.EMC.MFE700.LINKLIB
// DD DISP=SHR,DSN=RSRTE.VENDOR.FDR5467.LOAD
// DD DISP=SHR,DSN=DSN.IDS2.SDSNEXIT
// DD DISP=SHR,DSN=RSRTE.DSN.V910.SDSNLOAD
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD DISP=SHR,DSN=I9B2LOG.BSDS01
//SYSUT2 DD DISP=SHR,DSN=I9B2LOG.BSDS02
//SYSIN DD DISP=SHR,DSN=PAOLOR6.ARYJOBS.D9C1.DR(D9C1CRCR)
//*
```

The following statements show the conditional restart record creation output.

```
DSNJCNVB CONVERSION PROGRAM HAS RUN DDNAME=SYSUT1
DSNJCNVB CONVERSION PROGRAM HAS RUN DDNAME=SYSUT2
CRESTART CREATE,SYSPITR=C20DCC61FA97,FORWARD=YES,BACKOUT=YES
DSNJ408I DSNRJFCR CHECKPOINT RBA FOUND,
        RBA = 0000126F8B90, TIME = 22:45:09 MAR
DSNJ411I DSNRJRCR CRESTART CREATE FOR CRCRID = 0006, DDNAME = SYSUT1
DSNJ408I DSNRJFCR CHECKPOINT RBA FOUND,
        RBA = 0000126F8B90, TIME = 22:45:09 MAR
DSNJ411I DSNRJRCR CRESTART CREATE FOR CRCRID = 0006, DDNAME = SYSUT2
DSNJ225I CRESTART OPERATION COMPLETED SUCCESSFULLY
DSNJ200I DSNJU003 CHANGE LOG INVENTORY UTILITY
        PROCESSING COMPLETED SUCCESSFULLY
```

**Note:** Notice that this is a different type from the image copy disaster recovery method. It is a SYSPITR (system point in time record).

- g) Prints the contents of the BSDS.

The following is a sample of the input JCL:

```
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//* Disaster Recovery Print the Boot Strap Dataset 1
//*
//* Return Codes: 0 - Successful
//*
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//D9C1PRNT EXEC PGM=DSNJU004,REGION=006M
//STEPLIB DD DISP=SHR,DSN=RSDEMO.ARY220.IBMTAPE.SARYLOAD
// DD DISP=SHR,DSN=RSRTE.EMC.MFE700.LINKLIB
// DD DISP=SHR,DSN=RSRTE.VENDOR.FDR5467.LOAD
// DD DISP=SHR,DSN=DSN.IDS2.SDSNEXIT
// DD DISP=SHR,DSN=RSRTE.DSN.V910.SDSNLOAD
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD DISP=SHR,DSN=I9B2LOG.BSDS01
//*
```

- h) Uncatalogs the tape archive logs.

The following is a sample of the input JCL:

```
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//* Disaster Recovery Uncatalog Archive Logs on Tape
//*
//* Return Codes: 0 - Successful
//*
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
//D9C1DELA EXEC PGM=IDCAMS,REGION=006M
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//SYSIN DD DISP=SHR,DSN=PAOLOR6.ARYJOBS.D9C1.DR(D9C1DELA)
//*
```

- i) Copies the uncataloged tape archive logs to DASD and catalogs them. This step speeds the recoveries at the disaster recovery site because the tape logs will be copied to disk and all recovers that apply the log will use the disk copy instead of the tape copy.

The following is a sample of the input JCL:

```
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*
```

```
//* Disaster Recovery Copy Archive Logs from Tape to DASD *
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//* Return Codes: 0 - Successful *
//* * * * * * * * * * * * * * * * * * * * * * * * * * * *
//* * * * * * * * * * * * * * * * * * * * * * * * * * * *
//D9C1YCPL EXEC PGM=ARY@YCPL,REGION=006M *
//STEPLIB DD DISP=SHR,DSN=RSDEMO.ARY220.IBMTAPE.SARYLOAD *
// DD DISP=SHR,DSN=RSRTE.EMC.MFE700.LINKLIB *
// DD DISP=SHR,DSN=RSRTE.VENDOR.FDR5467.LOAD *
//SYSPRINT DD SYSOUT=* *
//SYSOUT DD SYSOUT=* *
//ARY@CNTL DD DISP=SHR,DSN=PAOL0R6.ARYJOBS.D9C1.DR(D9C1CPYL) *
```

4. Change your remote site DSNZPARM settings as follows:

- a) Change RESTART to DEFER.
- b) Set the site as local or recovery.
- c) Change the SYSADM and SYSOPR user IDs to the user ID that will be recovering the Db2 catalog.

5. Delete the structures in the XCF.

**Note:**

- If you are RESTORING two members in a data sharing environment, deleting the LCA and LOCK structures in the coupling facility is very important.
  - Db2 Recovery Expert automatically resets the CF structures before RESTORE in data sharing.
6. Start Db2 using the new reassembled DSNZPARMs. It is recommended that Db2 be started with ACCESS(MAINT). In a data sharing member, ensure that you start all the Db2 members.
  7. Reply to conditional restart message. For each Db2 subsystem, reply Y to the outstanding message. The following statements show the responses to a CRCR outstanding message:

```
448 DSNJ245I -D9C2 CONDITIONAL RESTART RECORD INDICATES TRUNCATION
      AT LRSN C20D7649C742. REPLY Y TO CONTINUE, N TO CANCEL
R 448,Y
```

8. Run job ssid#JC2. This job executes the IBM RESTORE SYSTEM LOGONLY utility. Since the Db2 object data sets were restored from the system level backup, this utility applies log records to all objects in the system to restore them to the most recent point available at the disaster recovery site. The following is a sample of the input JCL:

```
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/** Profile: PAOL0R6.D9C1 DR *
/** Job: 02 of 03 *
/** Desc: *
/** User: PAOL0R6 *
/** Date: Monday June 14, 2021 *
/** Time: 14:14:15.21 *
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/** Step: ARYLOG *
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/** Desc: This step will invoke the IBM DSNUTILB stand alone *
/** utility to Restore the System Logs. *
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/** Db2 must be up and you must have responded Yes to the *
/** WTOR: *
/** XXXX CONDITIONAL RESTART RECORD INDICATES TRUNCATION *
/** AT RBA XXXXXXXXXXXXX. REPLY Y OR N *
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/** ARYLOG EXEC PGM=DSNUTILB,REGION=006M,PARM=(I9A2) *
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/**STEPLIB DD DISP=SHR,DSN=DSN.IDS2.SDSNEXIT *
// DD DISP=SHR,DSN=RSRTE.DSN.V910.SDSNLOAD *
//SYSPRINT DD SYSOUT=* *
//SYSOUT DD SYSOUT=* *
//UTPRINT DD SYSOUT=* *
```

```
//SYSIN DD *
    RESTORE SYSTEM LOGONLY
/*
```

9. Run job ssid#JC3. This job is used to force application table spaces to start in RW mode. This job starts all application table spaces in the Db2 subsystem with read-write access. While optional, we recommend this job. If any table space is not in RW mode, the recovery will fail.  
The following is a sample of the input JCL:

```
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/* Profile: PAOLOR6.D9C1 DR
/* Job: 03 of 03
/* Desc:
/* User: PAOLOR6
/* Date: Monday June 14, 2021
/* Time: 14:14:15.11
/*
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/* Step:
/*
/* Desc: This job is an optional Disaster Recovery job. This
/* job is to be run after the Db2 Subsystem has been
/* started and the Db2 Catalog and Directory have been
/* recovered.
/*
/* This step will start all spaces in the entire Db2
/* subsystem in RW (Read Write) mode. If any spaces
/* have an invalid status pending, the recovery of that
/* object will fail and your recovery job will be
/* terminated. Starting all spaces in RW mode will
/* ensure that your application recovery job will
/* not fail and require a utility restart.
/*
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/*
/* EXEC PGM=IKJEFT1A,REGION=006M
//STEPLIB DD DISP=SHR,DSN=RSDEMO.ARY220.IBMTAPE.SARYLOAD
// DD DISP=SHR,DSN=RSRTE.EMC.MFE700.LINKLIB
// DD DISP=SHR,DSN=RSRTE.VENDOR.FDR5467.LOAD
// DD DISP=SHR,DSN=DSN.IDS2.SDSNEXIT
// DD DISP=SHR,DSN=RSRTE.DSN.V910.SDSNLOAD
//SYSTSPRT DD SYSOUT=*
//SYSTSIN DD DISP=SHR,DSN=PAOLOR6.ARYJOBS.D9C1.DR(D9C1STRF)
```

10. If you started Db2 with ACCESS MAINT, stop Db2 and restart it using normal access. You need to do this for each member in a data sharing environment.



## Contents of a system level backup disaster recovery PDS

If you are restoring a Db2 subsystem using a system level backup, when the disaster recovery job that was created is built in batch and submitted, the following members are generated and appear in the specified output PDS.

| <i>Table 28. Contents of a system level backup disaster recovery PDS</i> |                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Member name</b>                                                       | <b>Description</b>                                                                                                            | <b>Comments</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| #REPOJOB                                                                 | This job defines the VSAM files and loads the repository records.                                                             | <p>This job contains the following steps:</p> <ul style="list-style-type: none"> <li>• Step REPODFN - an IDCAMS step to define the VSAM files needed by Db2 Recovery Expert. It uses member ARYREPOC. It defines the following VSAM data sets: Db2PARMS, PROFILES, OFFOPTS, PROFILE.MAPS, PROFILE.CATS, SYSBACK, SYSBACK.OBJS, SYSBACK.VOLS, SYSBACK.SSIDS, and REPORT.</li> <li>• Step REPOLOAD - invokes Db2 Recovery Expert program ARY#YMCR to load the repository records. It uses member ARYREPOD.</li> </ul>                                                                                                                                                                                                                                                                                                                          |
| ssid#JC1                                                                 | This job includes the recovery JCL that will be used to restore the subsystem at the remote site using a system level backup. | <p>This job contains the following steps:</p> <ul style="list-style-type: none"> <li>• Step ARYREST - This step invokes the Db2 Recovery Export restore system utility using the system level backup.</li> <li>• Step ssidDELC - an IDCAMS step to DELETE the BSDS and ACTIVE LOG data sets for both data sharing members. It uses member ssidDELC.</li> <li>• Step ssidALLC - an IDCAMS step to DEFINE the BSDS and ACTIVE LOG data sets. It uses member ssidALLC.</li> <li>• Step ssidRBSR - invokes a Db2 Recovery Expert program, ARY@YRBS, to rebuild the BSDS into 4,080-byte records. It uses member ssidBSDS.</li> <li>• Step ssidCRCR - an IDCAMS step that performs a REPRO to insert the BSDS data created in the previous step, ssidRBSR, into the two BSDS data sets.</li> </ul>                                                |
|                                                                          |                                                                                                                               | <ul style="list-style-type: none"> <li>• Step ssidPRNT - invokes DSNJU004 to print the contents of the BSDS for member ssid.</li> <li>• Step ssidRBSR - invokes a Db2 Recovery Expert program, ARY@YRBS, to rebuild the BSDS into 4,080-byte records. It uses member ssidBSDS.</li> <li>• Step D9C2CPBS - an IDCAMS step that performs a REPRO to insert the BSDS data created in the previous step, ssidRBSR, into the two BSDS data sets.</li> <li>• Step ssid2CRCR - invokes DSNJU003 to create a CRCR in the BSDS. It uses member ssidCRCR. This is for the second Db2 member ssid2.</li> <li>• Step ssidDELA - an IDCAMS step to delete the ARCHIVE data sets on tape.</li> <li>• Step ssid22YCPL - invokes the Db2 Recovery Expert program, ARY@YCPL, to copy the archives logs from tape to DASD. It uses member ssidCPYL.</li> </ul> |

Table 28. Contents of a system level backup disaster recovery PDS (continued)

| Member name | Description                                                                                                                                                                               | Comments                                                                                                                                                                                                                                           |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ssid#JC2    | RESTORE SYSTEM with the LOGONLY option.                                                                                                                                                   | This step invokes the IBM DSNUTILB stand-alone utility to restore the system logs. Db2 must be up and you must have responded yes to the WTOR: XXXX CONDITIONAL RESTART RECORD INDICATES TRUNCATION AT RBA XXXXXXXXXXXX. REPLY Y OR N message.     |
| ssid#JC3    | Restarts all the Db2 spaces in RW mode.                                                                                                                                                   | This job is optional. This disaster recovery job can be run after the Db2 subsystem has been started and the Db2 catalog and directory have been successfully restored. Although optional, we recommend running this job. It uses member ssidSTRF. |
| ARYREPOC    | Defines clusters for Db2 Recovery Expert VSAM files.                                                                                                                                      | This member contains all the IDCAMS DEFINE CLUSTERS for the Db2 Recovery Expert VSAM files.                                                                                                                                                        |
| ARYREPOD    | Controls records (data) for the Db2 Recovery Expert VSAM files.                                                                                                                           | This member is a data file containing the data that is loaded into the Db2 Recovery Expert VSAM files.                                                                                                                                             |
| ssidALLC    | Defines the VSAM clusters for the Db2 catalog and directory, BSDS, active logs, and user-defined VCAT spaces.                                                                             | This member is used by job ssid#JC1.                                                                                                                                                                                                               |
| ssidBSDS    | Contains a copy of the bootstrap data set in 80-byte records.                                                                                                                             | This member is used by job ssid#JC1.                                                                                                                                                                                                               |
| ssidCPYL    | Contains the control cards for copying the archive logs from the tape to the recovery site.                                                                                               | This member is used by job ssid#JC1. It is a list of all the archive logs that will be copied to disk.                                                                                                                                             |
| ssidCRCR    | Contains the control card for creating the system point-in-time conditional restart.                                                                                                      | This member is called twice in ssid#JC1. It is called once for each Db2 member.                                                                                                                                                                    |
| ssidDELA    | Contains the control cards to delete the archive logs (with the NOSCRATCH option) from the recovery site z/OS catalog. Those logs are on tape and will be copied to DASD, then cataloged. | This member is used by job ssid#JC1.                                                                                                                                                                                                               |
| ssidDELC    | Contains the control cards to uncatalog the active logs and BSDS at the disaster site if they exist.                                                                                      | This member is used by job ssid#JC1.                                                                                                                                                                                                               |



```

//REPOLOAD EXEC PGM=ARY#YMCR,REGION=006M
//STEPLIB DD DISP=SHR,DSN=RSDEMO.ARY220.IBMTAPE.SARYLOAD
// DD DISP=SHR,DSN=RSRTE.EMC.MFE700.LINKLIB
// DD DISP=SHR,DSN=RSRTE.VENDOR.FDR5467.LOAD
//Db2PARMS DD DISP=SHR,DSN=RSTEST.ARY320.CONTROL
//ARYBPROF DD DISP=SHR,DSN=RSTEST.ARY320.PROFILES
//ARYBOFFL DD DISP=SHR,DSN=RSTEST.ARY320.OFFOPTS
//ARYBPMAP DD DISP=SHR,DSN=RSTEST.ARY320.PROFILE.MAPS
//ARYBPCAT DD DISP=SHR,DSN=RSTEST.ARY320.PROFILE.CATS
//ARYSBACK DD DISP=SHR,DSN=RSTEST.ARY320.SYSBACK
//ARYSBOBJ DD DISP=SHR,DSN=RSTEST.ARY320.SYSBACK.OBJS
//ARYSBVOL DD DISP=SHR,DSN=RSTEST.ARY320.SYSBACK.VOLS
//ARYSBSSD DD DISP=SHR,DSN=RSTEST.ARY320.SYSBACK.SSIDS
//ARYBREPT DD DISP=SHR,DSN=RSTEST.ARY320.BREPORT
//ARY#RPOI DD DISP=SHR,DSN=PAOLOR6.IC.JCL(ARYREPOD)

```

3. The second job to run at the disaster recovery site is ssid#JC1. This job performs the following steps:
- a) Issues IDCAMS DELETE to delete all index space and table space data sets from the z/OS catalog. The following is a sample of the JCL generated by Db2 Recovery Expert:

```

//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//** *
//** Disaster Recovery Delete Noscratch Db2 Data sets *
//** *
//** Return Codes: 0 - Successful *
//** *
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//** *
//D9C1DELCL EXEC PGM=IDCAM,REGION=006M
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//SYSIN DD DISP=SHR,DSN=PAOLOR6.IC.JCL(D9C1DELCL)
DELETE ('DB9CL.D9C1.BSDS01')
DELETE ('DB9CL.D9C1.BSDS02')
DELETE ('DB9CL.D9C1.LOGCOPY1.DS01')
DELETE ('DB9CL.D9C1.LOGCOPY1.DS02')
DELETE ('DB9CL.D9C1.LOGCOPY1.DS03')
DELETE ('DB9CL.D9C1.LOGCOPY2.DS01')
DELETE ('DB9CL.D9C1.LOGCOPY2.DS02')
DELETE ('DB9CL.D9C1.LOGCOPY2.DS03')
DELETE ('DB9CL.D9C2.BSDS01')
DELETE ('DB9CL.D9C2.BSDS02')
DELETE ('DB9CL.D9C2.LOGCOPY1.DS01')
DELETE ('DB9CL.D9C2.LOGCOPY1.DS02')
DELETE ('DB9CL.D9C2.LOGCOPY1.DS03')
DELETE ('DB9CL.D9C2.LOGCOPY2.DS01')
DELETE ('DB9CL.D9C2.LOGCOPY2.DS02')
DELETE ('DB9CL.D9C2.LOGCOPY2.DS03')
DELETE ('DB9CD.DSNDBC.DSNDB01.DBD01.I0001.A001')
DELETE ('DB9CD.DSNDBC.DSNDB01.DSNLLX01.I0001.A001')
DELETE ('DB9CD.DSNDBC.DLCLDB.DRRICOPY.I0001.A001')
DELETE ('DB9CD.DSNDBC.DLCLDB.ARCHIVES.I0001.A001')
DELETE ('DB9CD.DSNDBC.DSNDB06.TABS1EBP.I0001.A001')
DELETE ('DB9CD.DSNDBC.ADBDCH.ADBCKPTX.I0001.A001')
DELETE ('DB9CD.DSNDBC.ADBDCH.ADBCHKX1.I0001.A001')
DELETE ('DB9CD.DSNDBC.ADBDCH.ADBHLDX1.I0001.A001')
SET MAXCC = 0

```

- b) Recreate the Db2 catalog VSAM files. All VSAM and non-VSAM catalog files, log files, BSDS, and user VCAT-defined objects are created with the proper allocations. The following is a sample of the JCL generated by Db2 Recovery Expert:

```

//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//** *
//** Disaster Recovery Allocate Db2 Data sets *
//** 1. Db2 Catalog and Directory Spaces *
//** 2. Boot Strap Datasets *
//** 3. Active Logs *
//** 4. User Defined VCAT Spaces *
//** *
//** Return Codes: 0 - Successful *
//** *
//** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//** *
//D9C1ALLC EXEC PGM=IDCAM,REGION=006M
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//SYSIN DD DISP=SHR,DSN=PAOLOR6.IC.JCL(D9C1ALLC)

```

```

DEFINE CLUSTER -
( NAME ('DB9CL.D9C1.BSDS01') -
REUSE -
RECORDSIZE(4089 4089) -
FREESPACE(0 20) -
KEYS(4 0) -
CONTROLINTERVALSIZE(04096) -
STORAGECLASS(DB9CLOG1) -
MANAGEMENTCLASS(MCdbb22) -
VOLUMES(SBOX5E) -
TRACKS(00000078,00000002) -
SHAREOPTIONS(2 3) ) -
DATA -
( NAME ('DB9CL.D9C1.BSDS01.DATA') ) -
INDEX -
( NAME ('DB9CL.D9C1.BSDS01.INDEX') ) -
...

```

- c) (Optional) Re-create the Db2 managed VSAM files. All user STOGROUP-defined objects are created with the proper allocations if the Allocate Db2 managed objects option is set to Y. The following is a sample of the JCL generated by Db2 Recovery Expert:

```

/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/**
/** Disaster Recovery Allocate Db2 Managed Datasets *
/**
/** Return Codes: 0 - Successful *
/**
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/**
//D9C1ALLD EXEC PGM=IDCAMS,REGION=006M
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//SYSIN DD DISP=SHR,DSN=PAOL0R6.IC.JCL(D9C1ALLD)
DEFINE CLUSTER -
( NAME ('D9C1.DSNDDBC.A1234DB.A1234TB1.I0001.A001') -
LINEAR -
CONTROLINTERVALSIZE(04096) -
STORAGECLASS(SCD9C1G1) -
DATACLASS(DEFAULT) -
MANAGEMENTCLASS(STANDARD) -
VOLUMES(ARY123) -
CYLINDERS(00000001,00000001) -
SHAREOPTIONS(3 3) ) -
DATA -
( NAME ('D9C1.DSNDDBD.A1234DB.A1234TB1.I0001.A001') ) -
...

```

- d) Catalog all the image copies from the last *n* number of days (as specified in the disaster recovery profile). The following is a sample of the JCL generated by Db2 Recovery Expert:

```

/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/**
/** Disaster Recovery Catalog Image Copies *
/** 1. Make sure all image copies needed at DR are cataloged *
/**
/** Return Codes: 0 - Successful *
/**
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/**
//D9C1CATL EXEC PGM=IDCAMS,REGION=006M
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//SYSIN DD DISP=SHR,DSN=PAOL0R6.IC.JCL(D9C1CATL)
/**

```

- e) Rebuilds the BSDS from the 80-byte record file, placing it back into 4089-byte records. The following is a sample of the JCL generated by Db2 Recovery Expert:

```

/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/**
/** Disaster Recovery Rebuild Boot Strap Dataset into 4080 byte recs *
/**
/** Return Codes: 0 - Successful *
/**
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/**

```





```

/*
/* Desc: This step will invoke the IBM Recover Utility      *
/* for indexes on DSADB01.SYSUTILX.                        *
/* ** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/* RC02001 EXEC PGM=DSNUTILB,REGION=006M,COND=(4,LT),
/* PARM=(D9C1,)
/*
/* STEPLIB DD DISP=SHR,DSN=DB9C9.SDSNEXIT
/* DD DISP=SHR,DSN=DB9C9.SDSNLOAD
/* SYSPRINT DD SYSOUT=*
/* SYSOUT DD SYSOUT=*
/* UTPRINT DD SYSOUT=*
/* SYSIN DD *
REBUILD INDEX
ALL TABLESPACE DSADB01.SYSUTILX
SORTDEVT VIO
/* *****
/*
/* You may or may not use the following JCL.
/*
/* *****
/* ** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/* Step: RC05001
/*
/* Desc: This step will invoke the IBM Recover Utility
/* for more catalog and directory objects
/* ** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/* RC05001 EXEC PGM=DSNUTILB,REGION=006M,COND=(4,LT),
/* PARM=(I9A2,)
/*
/* STEPLIB DD DISP=SHR,DSN=DSN.IDS2.SDSNEXIT
/* DD DISP=SHR,DSN=RSRTE.DSN.Vvvv.SDSNLOAD
/* SYSPRINT DD SYSOUT=*
/* SYSOUT DD SYSOUT=*
/* UTPRINT DD SYSOUT=*
/* SYSIN DD *
RECOVER
TABLESPACE DSADB06.SYSCOPY
RECOVERYSITE
REBUILD
INDEXSPACE (DSADB06.DSNUCH01)
SORTDEVT VIO
SORTNUM 6
SORTKEYS
REBUILD
INDEXSPACE (DSADB06.DSNUCX01)
SORTDEVT VIO
SORTNUM 6
SORTKEYS
RECOVER
TABLESPACE DSADB01.SYSLGRNX
RECOVERYSITE
.
.
.
RECOVER
TABLESPACE DSADB06.SYSRTSTS
RECOVERYSITE
/*
/*
/* ** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/* Step: RC06001
/*
/* Desc: This step will invoke the IBM Rebuild Index to
/* rebuild indexes on some directory spaces.
/* ** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/*
/* RC06001 EXEC PGM=DSNUTILB,REGION=006M,COND=(4,LT),
/* PARM=(I9A2,)
/*
/* STEPLIB DD DISP=SHR,DSN=DSN.IDS2.SDSNEXIT
/* DD DISP=SHR,DSN=RSRTE.DSN.Vvvv.SDSNLOAD
/* SYSPRINT DD SYSOUT=*
/* SYSOUT DD SYSOUT=*
/* UTPRINT DD SYSOUT=*
/* SYSIN DD *
REBUILD INDEX
ALL TABLESPACE DSADB01.SCT02
SORTDEVT VIO

```





9. Run job ssid#JC4. This job restores Db2 application objects. You may have your own application recovery jobs created that already take issues like tape stacking in the backups into account. In this case, you can omit this JCL. The following is a sample of the JCL from member ssid#JC4:

```

/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/**
/** Step:      RC08001                                     *
/**
/** Desc:      This step will invoke the IBM Recover Utility to    *
/**              recover all user spaces.                         *
/**
/** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
/**
/** RC08001 EXEC PGM=DSNUTILB,REGION=006M,COND=(4,LT),
/**              PARM=(I9A2,)
/**
/** STEPLIB DD DISP=SHR,DSN=DSN.IDS2.SDSNEXIT
/**              DD DISP=SHR,DSN=RSRTE.DSN.Vvvvv.SDSNLOAD
/** SYSPRINT DD SYSOUT=*
/** SYSOUT   DD SYSOUT=*
/** UTPRINT  DD SYSOUT=*
/** SYSIN    DD *
/** LISTDEF RECVRALL
/**              INCLUDE TABLESPACES TABLESPACE A*.*
/**              INCLUDE TABLESPACES TABLESPACE B*.*
/**              .
/**              .*
/**              INCLUDE INDEXSPACES COPY NO INDEXSPACE $*.*
RECOVER
LIST RECVRALL
RECOVERSITE
REBUILD INDEX
LIST REBLDALL
SORTDEVT VIO
SORTNUM 6
SORTKEYS
/**

```

### Contents of a Db2 image copy disaster recovery PDS

If you are restoring a Db2 subsystem using Db2 image copies, when the disaster recovery job that was created is built in batch and submitted, the following members are generated and appear in the specified output PDS.

| <i>Table 29. Contents of a Db2 image copy disaster recovery PDS</i> |                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Member name</b>                                                  | <b>Description</b>                                                | <b>Comments</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| #REPOJOB                                                            | This job defines the VSAM files and loads the repository records. | <p>This job contains the following steps:</p> <ul style="list-style-type: none"> <li>• Step REPODFN - an IDCAMS step to define the VSAM files needed by Db2 Recovery Expert. It uses member ARYREPOC. It defines the following VSAM data sets: Db2PARMS, PROFILES, OFFOPTS, PROFILE.MAPS, PROFILE.CATS, SYSBACK, SYSBACK.OBJS, SYSBACK.VOLS, SYSBACK.SSIDS, and REPORT.</li> <li>• Step REPOLOAD - invokes Db2 Recovery Expert program ARY#YMCR to load the repository records. It uses member ARYREPOD.</li> </ul> |

Table 29. Contents of a Db2 image copy disaster recovery PDS (continued)

| Member name | Description                                                                                                              | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ssID#JC1    | This job includes the recovery JCL that will be used to restore the subsystem at the remote site using Db2 image copies. | <p>This member is the first job that will be run when doing a Db2 image copy recovery. It includes the following steps:</p> <ul style="list-style-type: none"> <li>• Step ssidDELC - an IDCAMS step to DELETE all the Db2 data sets. This includes the BSDS and LOG data sets. It uses member ssidDELC. It deletes these data sets with the NOSCRATCH option.</li> <li>• Step ssidALLC - an IDCAMS step to define the Db2 catalog and directory spaces, the boot strap data sets, the active logs and all user-defined VCAT spaces. It uses member ssidALLC.</li> <li>• Step ssidALLD - an optional IDCAMS step to define all user STOGROUP-defined spaces. It uses member ssidALLD. It is generated if the <b>Allocate Db2 managed objects</b> option is set to Y.</li> <li>• Step ssidCATL - an IDCAMS step that verifies that all image copy data sets are cataloged.</li> <li>• Step ssidRBSR - invokes a Db2 Recovery Expert program, ARY@YRBS, to rebuild the BSDS into 4080 byte records. It uses member ssidBSDS.</li> <li>• Step ssidCPBS - an IDCAMS step that performs a REPRO to insert the BSDS data created in the previous step, ssidRBSR, into the two BSDS data sets.</li> </ul> |
|             |                                                                                                                          | <ul style="list-style-type: none"> <li>• Step ssidCRCR - invokes DSNJU003 to create a CRCR in the BSDS. It uses member ssidCRCR. This CRCR is the time of the system level backup taken before at the local site.</li> <li>• Step ssidPRNT - invokes DSNJU004 to print the contents of the BSDS for member ssid.</li> <li>• Step ssidRBSR - invokes a Db2 Recovery Expert program, ARY@YRBS, to rebuild the BSDS at the disaster recovery site from the 4,080-byte records. It uses member ssid2BSDS. This is for Db2 member ssid2.</li> <li>• Step ssidCPBS - an IDCAMS step that performs a REPRO to insert the BSDS data created in the previous step, ssid2RBSR, into the two BSDS data sets for the second member, ssid2.</li> <li>• Step ssid2CRCR - invokes DSNJU003 to create a CRCR in the BSDS. It uses member ssidCRCR for the second data sharing group member, ssid2.</li> <li>• Step ssid2PRNT - invokes DSNJU004 to print the contents of the BSDS for member ssid2.</li> <li>• Step ssid2YCPL - invokes the Db2 Recovery Expert program, ARY@YCPL, to copy the archives logs from tape to disk. It used member ssidCPL.</li> </ul>                                                |

Table 29. Contents of a Db2 image copy disaster recovery PDS (continued)

| Member name | Description                                                                                                                                                                              | Comments                                                                                                                                                                                                                                               |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ssid#JC2    | This job restores the Db2 data sets in the correct order.                                                                                                                                | This job uses DSNUTILB and invokes the IBM Db2 stand-alone recovery utility, RECOVER, to restore the Db2 data sets in the correct order. It first restores SYSUTILX from the logs, then DBD01, then SYSCOPY, and so on.                                |
| ssid#JC3    | Restarts all the Db2 spaces in RW mode.                                                                                                                                                  | This job is optional. This Db2 Disaster Recovery job can be run after the Db2 subsystem has been started and the Db2 catalog and directory have been successfully restored. Although optional, we recommend running this job. It uses member D9C1STRF. |
| ssid#JC4    | This job restores Db2 application objects.                                                                                                                                               | This job uses DSNUTILB and invokes the IBM Db2 stand-alone recovery utility, RECOVER, to restore all user tablespaces and indexspaces.                                                                                                                 |
| ARYREPOC    | Defines clusters for Db2 Recovery Expert VSAM files.                                                                                                                                     | This member contains all the IDCAMS DEFINE CLUSTERS for the Db2 Recovery Expert VSAM files.                                                                                                                                                            |
| ARYREPOD    | Controls records (data) for the Db2 Recovery Expert VSAM files.                                                                                                                          | This member is a data file containing the data that is loaded into the Db2 Recovery Expert VSAM files.                                                                                                                                                 |
| ssidALLC    | Defines the VSAM clusters for the Db2 catalog and directory; BSDS; active logs; and user defined VCAT spaces.                                                                            | This member is used by job ssID#JC1.                                                                                                                                                                                                                   |
| ssidALLD    | Defines the VSAM clusters for the user defined STOGROUP spaces.                                                                                                                          | This member is used by job ssID#JC1.                                                                                                                                                                                                                   |
| ssidBSDS    | Contains a copy of the bootstrap data set in 80 byte records.                                                                                                                            | This member is used by job ssID#JC1.                                                                                                                                                                                                                   |
| ssidCATL    | Contains the control cards for cataloging the image copies at the recovery site.                                                                                                         | This member is used by job ssID#JC1.                                                                                                                                                                                                                   |
| ssidCPYL    | Contains the control cards for copying the archive logs from the tape to the recovery site.                                                                                              | This member is used by job ssID#JC1. It is a list of all the archive logs that will be copied to disk.                                                                                                                                                 |
| ssidCRCR    | Contains the control card for creating the conditional restart record.                                                                                                                   | This member is called twice in ssID#JC1. It is called once for each Db2 member.                                                                                                                                                                        |
| ssidDELA    | Contains the control cards to delete the archive logs (with the NOSCRATCH option) from the recovery site MVS catalog. Those logs are on tape and will be copied to DASD, then cataloged. | This member is used by job ssID#JC1.                                                                                                                                                                                                                   |

Table 29. Contents of a Db2 image copy disaster recovery PDS (continued)

| Member name | Description                                                                                           | Comments                                                                                        |
|-------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| ssidDELC    | Contains control cards to uncatalog Db2 spaces at the recovery site, before restoring them from tape. | This member is used by job ssid#JC1.                                                            |
| ssidSTRF    | Contains the control cards for starting application table spaces in the Db2 subsystem with RW access. | This member is used by job ssid#JC3.                                                            |
| D9C2BDS     | Contains a copy of the bootstrap data set in 80-byte records.                                         | This member is used by job D9C1#JC3. It is for the second member in a data sharing group, D9C2. |

## Recovering both Db2 and IMS subsystems

You can use Db2 Recovery Expert along with IMS Recovery Expert to perform a remote site disaster recovery of both Db2 and IMS subsystems to a common point in time.

In order to use this feature, you will create a disaster recovery profile for a Db2 system using Db2 Recovery Expert and a disaster recovery profile for an IMS system using IMS Recovery Expert. The Db2 profile will specify the IMS system name that is to be recovered to a common point in time and the IMS profile will specify the Db2 system.

When disaster recovery processing is performed at the disaster recovery site, a common recovery point will be determined depending on the availability of a system level backup (SLB) and archives of both subsystems at the disaster recovery site. Db2 Recovery Expert will modify the recovery JCL to use the common timestamp.

## Setting up the IMS and Db2 disaster recovery profiles

Create the IMS and Db2 disaster recovery profiles from the Update Disaster Recovery Profile panel, as with non-combined IMS and Db2 profiles. The only difference is the value specified in the **External Subsystem** field.

In the Db2 Recovery Expert Update Disaster Recovery Profile panel (ARY\$DPRU), you will specify the IMS system that will be recovered with the Db2 system in the **External Subsystem** field.

In the IMS Recovery Expert Update Disaster Recovery Profile panel (BSY\$DPRM), you (or the administrator who is creating the profile) will specify the Db2 system that will be recovered with the IMS system in the **External Subsystem** field.

The Db2 Recovery Expert Update Disaster Recovery Profile panel is described in [Creating disaster recovery profiles](#).

## Creating the recovery job at the local site

When you build the recovery job for a combined Db2 and IMS disaster recovery, Db2 Recovery Expert adds a member in the recovery PDS that identifies the Db2 subsystem that is to be recovered in combination with an IMS system.

Db2 Recovery Expert will create a member called "xxxxTIME" in the recovery PDS where "xxxx" is the SSID of the Db2 subsystem that will be recovered. In addition, IMS Recovery Expert will create a xxxxTIME member in its recovery PDS where "xxxx" is the SSID of the IMS subsystem that will be recovered. You must ensure that both subsystems are using the same recovery PDS.

The xxxxTIME member for both subsystems will include the following information:

- Timestamp of the highest archive log that was copied

- Timestamp of the SLB that was selected for restoring the system
- Indication whether the system is data-sharing or not (by either using Db2= or RBA=)
- Data set name of the control file used by this system.
- Each earlier SLB that matches the profile selection criteria, in case Db2 Recovery Expert will have to fall back.

An example of the contents of the *db2-ssid*TIME member:

```
000002 Db2=2011206 12545.417312
000003 SLB=2011203 191829.85000
000004 CTL-ARY.TST0220.CONTROL
000005 BACKUP=01,07/19/2021,19:18:22
000006 BACKUP=01,07/16/2021,11:57:00
```

During the execution of the disaster recovery preparation job, an additional disaster recovery job is generated for the Db2 subsystem and placed in the recovery PDS with the member name *db2-ssid#JC0*.

**Note:** A similar job with the member name *ims-ssid#JC0* is generated when IMS Recovery Expert executes the disaster recovery preparation job and it is also placed in the same recovery PDS.

The job in member *db2-ssid#JC0* for the Db2 subsystem includes a step called COORDDR that will determine the coordinated disaster recovery timestamp as well as modify the disaster recovery JCL and control cards to support the recovery of the IMS and Db2 subsystems to this timestamp. When the disaster recovery preparation job is executed for a non data-sharing Db2 subsystem, additional steps to rebuild the BSDS and the Db2 Recovery Expert repository are generated.

The following is a sample of the JCL for the COORDDR step:

```
//COORDDR EXEC PGM=ARY#CDR,REGION=006M
//STEPLIB DD DISP=SHR,DSN=BRSRTE.WRK022X.LOADLIB
// DD DISP=SHR,DSN=RSRTE.EMC.MFE700.LINKLIB
// DD DISP=SHR,DSN=RSRTE.EMC.MFE700.LINKLIB
// DD DISP=SHR,DSN=RSRTE.EMC.MFE700.LINKLIB
// DD DISP=SHR,DSN=RSRTE.VENDOR.FDR5467.LOAD
//SYSPRINT DD SYSOUT=*
//ARY@MSGS DD SYSOUT=*
//ARY@CNTL DD *
PDBAT.TEST.PDS
E9A1
BATA
```

## Running the recovery jobs at the disaster recovery site

In the recovery PDS, there are two jobs that must be run at the recovery site. The job associated with the Db2 system is called *db2ssid#JC0*. The job associated with the IMS system is called *imssid#JC0*. You run these two jobs at the remote site to determine the recovery timestamp and modify the recovery procedures and JCL to use this timestamp.

1. Run the *db2ssid#JC0* job. The *db2ssid#JC0* job will invoke the ARY#CDR program to determine the most current timestamp that may be used for recovery of both the IMS and Db2 subsystems. The time that will be used depends on the availability of recovery assets at the disaster recovery site.

In some situations, the SLB that was selected for recovery during the preparation job will not be good as a starting point for disaster recovery. This might happen if the selected recovery timestamp is earlier than that of the SLB. If this happens, ARY#CDR will have to select an earlier SLB and modify the recovery process to use it.

The following is a sample of the ARY#CDR output:

```

Coordinated DR recovery for the following systems is starting:
Subsystem=IAA Highest archive: 2011156 124046.101344
                SLB timestamp: 2011155 112233.440000
Subsystem=E9A1 Highest archive: 2011202 125425.417312
                SLB timestamp: 2011203 191829.850000

Selected coordinated recovery point: 2011156.124046.101344
Selected SLB will be used for recovery of SSID=IAA

Selected SLB can not be used for recovery of SSID=E9A1
An earlier backup was found for SSID=E9A1, Date=07/19/2021, Time=11:57:00

Updating timestamp in recovery JCL for IAA
System recovery timestamp was updated for IAA

Updating CRCR timestamp for E9A1
The following conditional restart recovered was read for E9A1
CRESTART CREAT,SYSPITR=C7E0694749B60000,FORWARD=YES,BACKOUT=YES
Updating restore SLB for SSID=E9A1
System restore backup information was updated for E9A1

ARY#VCDR finished successfully, recovery procedures may proceed

```

2. After a timestamp for recovery is selected, the following members are modified:
  - *db2ssid*CRCR – This member holds the Db2 conditional record that includes the RBA or LRSN that will be used to conditionally restart Db2.
  - *db2ssid*#JC1 – This member includes the JCL to perform the SLB restore for Db2.
  - *imssid*#JC1 – This member includes the JCL to perform the SLB restore for IMS.
3. Run the *imssid*#JC0 job. This job will invoke program BSY#CDR which will update the IMS recovery jobs in the disaster recovery PDS with the common timestamp that is to be used for recovery.
4. After a timestamp is selected and all jobs and control cards are modified to use it, both the *db2ssid*#JC1 and *imssid*#JC1 jobs are run. These jobs restore the Db2 Recovery Expert repository and the IMS Recovery Expert repository, and then perform a system recovery from the system level backup. To properly identify the system level backup, the repository must be restored to the time when the disaster recovery preparation job ran. If the configuration is such that Db2 and IMS are using different repositories, both the *db2ssid*#JC1 and *im-ssid*#JC1 jobs must be executed. Users may choose to run these jobs in parallel.

In configurations where the repository is shared between the IMS and the Db2 systems, both the *db2ssid*#JC1 and *imssid*#JC1 jobs also must be run. Both will restore the same repository to different points in time. Each of these jobs has the time when the job was generated. Submit the one that was generated earlier, and after successful completion, submit the other job.
5. The recovery process continues from this point using Db2 Recovery Expert for Db2 recovery and IMS Recovery Expert for IMS recovery.

## Running timestamp determination process in simulate mode

At the local site, you can run the coordinated disaster recovery timestamp determination process in simulate mode to preview the recovery timestamp. This process of running the ARY#CDR program using the SIMULATE parameter allows you to review the timestamp, and does not result in any data set changes.

1. Edit the Db2 member *Db2ssid*#JC0 in the recovery PDS and update the COORDDR step to run in simulate mode as shown below:

```
//COORDDR EXEC PGM=ARY#CDR,PARM='SIMULATE',REGION=006M
```

2. Remove all other steps from the JCL.
3. Submit the JCL. A successful execution in simulate mode will complete with the return code RC=4. After the job has completed a report with the recovery timestamp selection is displayed in the generated output.

## Performing common advisor tasks

---

This section describes several tasks that you can perform while using any of the advisors.

### Logging in to a database

From any advisor you can use the **Database Login** window to log in to the Db2 subsystem location that you selected.

1. Specify the user ID that you want to use to connect to the Db2 location in the **User ID** field.
2. Specify the password for the user ID in the **Password** field.
3. You can optionally specify your SQL authorization ID (SQLID) if necessary in the **Current SQLID (optional)** field.
4. Check the **Remember this password (encrypted)** check box to store the password used to connect to this location for future use by Db2 Recovery Expert. The user ID and current SQLID that you specified are always remembered. In future sessions, the display of the **Database Login** window for a location is suppressed if the password for that location is stored.
5. Check the **Use this information for all database locations** check box to specify that the specified user ID, password, and current SQLID should be used (without prompting) at all other database locations accessed during the current Db2 Recovery Expert session.
6. Click **Login** to access the database.
7. Click the **Cancel** button to cancel the request and return to the previous screen.

### Saving advisor settings for future use

You can save the recovery information that you specify in each of the advisors for future use. After saving, the information is referred to as a specification. You can access saved specifications using the **Specifications Advisor**. Using saved recovery specifications can help you improve your efficiency and reduce the time it takes to generate recovery plans.

#### Saving a specification

You use the **Save Specification** window to save a specification.

There is no requirement to save current advisor settings as a persistent specification. If you choose to save the settings, the specification is stored in Db2 at the selected location. The specification is then accessible through the Specifications Advisor. If a specification has previously been saved, its properties are shown by default. Access to a specification is controlled by a sharing option that is assigned to the specification when it is created.

1. Using the Recovery Advisor, the Log Based Recovery Advisor, the Transaction Recovery Advisor, the Log Analysis Advisor, or the System Restore Advisor, click the **Save** button.  
The **Save Specification** window opens.
2. The **Location** field displays the SSID of the Db2 database where the specification will be saved. This is a read only field.
3. The **Owner** field displays your user ID or the user ID of the person who originally saved the specification. You can specify a new user ID for the owner. When you change the owner field, the save operation becomes a save as operation.
4. The **Name** field displays the name of an existing specification or is empty if this is a new specification. For new specifications, enter a name for the specification in the **Name** field. You can specify a new name for the specification. When you change the name field, the save operation becomes a save as operation.
5. The **Description** field displays a description of an existing specification or is empty if this is a new specification. For new specifications, enter a description for the specification in the **Description** field. You can change the description of an existing specification.



6. If your primary or secondary authorization ID matches the owner of the specification, you have ownership of (and full access to and use of) the specification. For all other users, their access is controlled by the selection made in the **Sharing** group of radio buttons:
  - Select **Other users have no access** radio button to prevent any other user from accessing the specification.
  - Select **Other users can copy the specification** radio button to allow other users to copy the specification.
  - Select **Other users can use/modify the specification** radio button to allow other users to use and modify the specification.
7. Click **OK** to save the specification. Control returns to the advisor window from which the save was invoked.

## Using the Specification Advisor

Using the **Specification Advisor** you can open, copy, rename, import, export, and delete specifications.

1. Open the **Specification Advisor** by selecting the **Specifications** tab from the web interface.
2. The **Specification Advisor** opens with a list of the available specifications. You can filter the list of specifications that are displayed using the following **Filters** fields:

### Location

Specifies the Db2 location where the specification that you want to use resides. Use the pull-down list to select a location.

### Creator(s) like

Specifies a filter for the creator of the specification. You can use a mask followed by a percent sign as a wild card when filtering, for example, TDSM% will filter on all names that begin with TDSM.

### Owner(s) like

Specifies a filter for the owner of the specification. You can use a mask followed by a percent sign as a wild card when filtering, for example, TDSM% will filter on all names that begin with TDSM.

### Name(s) like

Specifies a filter for the name of the specification. You can use a mask followed by a percent sign as a wild card when filtering, for example, TDSM% will filter on all names that begin with TDSM.

3. After specifying or changing the filter information, click the **Refresh** button to update the list of specifications that are displayed in the **Specifications** pane.
4. To open a specification, select the specification and click the **Open** icon. The specification is opened in the advisor that was originally used to create the specification.
 

Db2 Recovery Expert verifies that you are authorized to open the selected specification. If not, the open operation fails. If you are only authorized to copy the specification, a message displays explaining this, and asks you if you want to make a copy. If the specification is in use (that is, there is a task currently running for it), the specification opens to the point where that task was initiated. If the specification is in use by a different user, the open operation fails, and a message displays explaining why, and asks you if you want to make a copy of the specification.
5. To rename a specification, select the specification and click the **Rename** icon. The Rename Specification window displays. Use this window to specify your rename information.
 

When renaming a specification, Db2 Recovery Expert first verifies that you are authorized to use (not just copy) the specification. If not, the rename operation fails. If you are only authorized to copy the specification, a message displays explaining this, and asks you if you want to make a copy instead of renaming it. If the specification is in use by a different user, the rename operation fails, and a message displays explaining why, and asks you if you want to make a copy of the specification.
6. To copy a specification, select the specification and click the **Copy** icon. The Copy Specification window displays. Use this window to specify your copy information.
 

When copying a specification, Db2 Recovery Expert first verifies that you are authorized to use or copy the specification. If not, the copy operation fails.

7. To export a specification, select the specification and click the **Export** icon. The Export Specification window is a standard "File Save As" window, allowing you to export the selected specification to a local file on the client computer. Specifications are saved in XML files.

When exporting a specification, Db2 Recovery Expert first verifies that you are authorized to use or copy the specification. If not, the export operation fails.

8. To import a specification, select the specification and click the **Import** icon. The import operation displays a standard "File Open" window, allowing you to select a local file from the client computer containing an exported specification. The exported specification is opened, as if opened from the database.
9. To delete a specification, select the specification and click the **Delete** icon. A prompt opens to confirm the delete operation. Click **OK** and the specification is deleted.

When deleting a specification, Db2 Recovery Expert first verifies that you are authorized to use (not just copy) the specification. If not, the delete operation fails. If the specification is in use by a different user, the delete operation fails, and a message displays explaining why. If the specification is in use by the current user, a message displays explaining that there is a task running that must be cancelled before the specification can be deleted, and asking if the user wishes to cancel the task.

10. To leave the **Specification** advisor, select another advisor.

## Copying a specification

You use the **Copy Specification** window to copy specifications. In order to copy a specification, your user ID must have been granted copy sharing permission when the specification was saved.

1. From the **Specification Advisor**, select the specification that you want to copy. Click the **Copy** icon. The **Copy Specification** window opens.
2. The **Old owner** field displays the ID of the current owner of the specification. This is a read-only field.
3. The **Old name** field displays the current name of the specification. This is a read-only field.
4. Specify a new owner ID in the **New owner** field.
5. Specify a new name for the specification in the **New name** field.
6. Click **OK**. The specification is copied. Control returns to the advisor and the newly copied specification appears in the list of specifications.

## Renaming a specification

You use the **Rename Specification** window to rename a specification. In order to rename a specification, your user ID must have been granted use or modify sharing permission when the specification was saved.

1. From the **Specification Advisor**, select the specification that you want to rename. Click the **Rename** icon. The **Rename Specification** window opens.
2. The **Old owner** field displays the ID of the current owner of the specification. This is a read-only field.
3. The **Old name** field displays the current name of the specification. This is a read-only field.
4. Specify a new owner ID in the **New owner** field.
5. Specify a new name for the specification in the **New name** field.
6. Click **OK**. The specification is renamed. Control returns to the advisor and the renamed specification appears in the list of specifications.

## Viewing the properties of a selected object

The **Recovery Advisor**, the **Log Analysis Advisor**, and the **Log Based Recovery Advisor** each has a step where you select one or more objects for recovery or analysis. When selected, the object's properties are listed in the **Properties** pane.

When you select an object from the **Available Objects** list in the **Objects** window of the **Recovery Advisor**, the **Log Analysis Advisor**, or the **Log Based Recovery Advisor** window, the **Properties** pane is

populated with detailed information for the selected object. The properties listed vary by object selected, but the list of possible properties are:

- Action on LOB column check error (R | I)
- The maximum number of exceptions to be reported only (nn)
- The scope of rows to be checked (P | X | A | R)
- Status to verify whether to continue processing when in a restricted state (Y | N)
- Maximum number of objects to copy in parallel (nn)
- Number of tape drives to allocate for objects processed in parallel (nn)
- Copy table spaces only or table spaces and indexes (TS | TP)
- Create local site primary copy (Y | N)
- Create local site backup copy (Y | N)
- Create recovery site primary copy (Y | N)
- Create recovery site backup copy (Y | N)
- Use DFSMSdss concurrent copy (Y | N)
- Check pages for validity (Y | N)
- Reset page RBAs to zero (Y | N)
- The direction of log processing (F | B)
- Reuse existing Db2-managed data sets (Y | N)
- The scope of indexes to be rebuilt (A | P)
- Sort and build index keys in parallel (Y | N)
- Reuse existing Db2-managed data sets (Y | N)
- Apply log records only (Y | N)
- Maximum number of objects to restore in parallel (nn)
- The site from which RECOVER should use image copies (location)
- Recover to a particular image copy (IC)
- The access with which to start the space(es) (UT | RW)
- Whether to stop the space(es) before restarting (Y | N)

## Point in time conversion job

In some cases, Db2 Recovery Expert generates and submits a batch job during recovery plan generation to perform log analysis to convert timestamps and log RBAs.

This job is required when you specify either a timestamp or a log RBA as the point in time for the recovery, when running against a non-data sharing subsystem. The job performs log analysis to convert from the timestamp that you specified to the corresponding log RBA, or vice versa.

The JCL for the job is automatically generated, using the job cards that you specified on the Generation Options window. You do not have any further opportunity to review or customize this JCL before execution. Db2 Recovery Expert automatically submits and monitors the job, and when it finishes, the point in time information is read from the job output and passed into the rest of the recovery plan generation process, which continues as usual. Messages reporting the progress and status of this job are displayed on the main Db2 Recovery Expert window.

Depending on how you originally chose the point in time, this job might not be required. For example, if you browse recovery history events or quiet times as the source for selecting the point in time, then both timestamp and log RBA information are already available (although only one or the other is displayed in the user interface). In this case, Db2 Recovery Expert automatically uses both pieces of information, and does not require the point in time conversion job.

## Exporting job JCL or results

From the **Export** window you can specify whether the build JCL or the job results from any of the advisors will be exported to a z/OS data set or to a local file.

Before you begin you must ensure that data set parameters (for example record length) allow for writing of JOB output to the data set.

1. From each advisor's **JCL** window click the **Export** button.
2. Select one of the following radio buttons:
  - Select the **Export to a z/OS data set** radio button to direct the recovery JCL to a z/OS data set. If you select this option you must specify the name for the data set in the **Data set name** field.
  - Select the **Export to a local file** radio button to direct the recovery JCL to a local file. Use the **Browse** button to search the local directories and select the file.
3. Click **OK**. The recovery JCL is exported and control returns to the advisor's **Recovery Plan** window.

## No usable recovery plans generated

You might encounter a situation where Db2 Recovery Expert does not generate any recovery plans.

Understanding why you do not have any viable recovery plans or cannot recover an object as expected requires an understanding of how Db2 Recovery Expert attempts to perform a recovery using the available resources and supported utilities.

### Resources

Image copies (IC), active logs, and archive logs provide the application data to be recovered. Image copies are recorded in the Db2 System Catalog (DSC) and optionally in the Schema Level Repository (SLR). Logs are recorded only in the Boot Strap Data Set (BSDS). Regular SLR updates preserve information that would otherwise be lost from the DSC when objects are dropped or altered. Frequent image copies, especially after any successful recovery or significant update, reduce potential conflicts with un-logged updates and other limitations with log processing.

### Utilities

- RECOVER, REBUILD INDEX, LOAD, and DSN1COPY are Db2 utilities.
- RESTORE DATASET is a DFSMSdss function command.
- Log Analysis is included with Db2 Recovery Expert to generate redo and undo SQL.

## No objects to recover error (ARYZ017E)

If you encounter error message ARYZ017E informing you of a no objects to recover error, you must ensure that you have selected objects that can be recovered. Certain object types such as plans, packages, and Automation Tool profiles are used only to select other recoverable object types. These object types themselves are never directly recovered. This type of indirect selection can result in no objects to recover. Common issues with indirect selection include:

- a plan that uses only a pack list, that has no direct dependencies
- a storage group that is not used by any table space partitions or index partitions

## No usable recovery plans warning (ARYR913W)

In the ISPF user interface, if you encounter error message ARYR913W informing you that there are no usable recovery plans for certain database objects, the **Recovery Plans Error Details** panel appears. This panel is very similar to the **Recovered Objects** panel shown for successfully generated plans. By default, only unrecoverable objects (objects that have no available recovery options) are shown, but you can change this with the **Show objects** field, which allows you to show all objects, recoverable objects only, or unrecoverable objects only.

In the Recovery Advisor (graphical) user interface, if you encounter error message ARYR913W informing you that there are no usable recovery plans for certain database objects, the **Recovery Plans** panel shows the unrecoverable objects in the **Plans** subpanel, while the **Properties** subpanel shows messages indicating why a given recovery plan cannot be used to recover the selected object.

There are many possible reasons why Db2 Recovery Expert generates message ARYR913W. To resolve the situation, you must understand what Db2 Recovery Expert is attempting to do and determine what factor is preventing Db2 Recovery Expert from generating a recovery plan.

## Recovery methods

The recovery methods are described by:

1. The utility that is used to acquire the beginning data.
2. The resource for the data that is used.
3. The second utility, if necessary, that is required to modify the data.
4. The direction of log processing that is required to modify the data. (redo or undo SQL)
5. The location of the starting point for the log range.
6. The location of the point in time (PIT) that you specified.

The following table outlines the possible recovery methods that are examined by Db2 Recovery Expert:

*Table 30. Possible recovery methods*

| <b>First utility</b> | <b>Data resource</b> | <b>Second utility</b> | <b>Log</b> | <b>Starting location</b> | <b>PIT</b> |
|----------------------|----------------------|-----------------------|------------|--------------------------|------------|
| DSN1COPY             | Last Image Copy      | n/a                   | n/a        | n/a                      | = Last IC  |
| DSN1COPY             | Last IC              | RECOVER               | Redo       | Last IC                  | > Last IC  |
| DSN1COPY             | Last IC              | Log Analysis          | Redo       | Last IC                  | > Last IC  |
| DSN1COPY             | Last IC              | Log Analysis          | Undo       | Last IC                  | < Last IC  |
| DSN1COPY             | Full IC              | Log Analysis          | Undo       | Full IC                  | < Full IC  |
| RECOVER              | Last IC              | n/a                   | n/a        | n/a                      | = Last IC  |
| RECOVER              | Last IC              | n/a                   | Redo       | Last IC                  | > Last IC  |
| RECOVER              | Last IC              | Log Analysis          | Redo       | Last IC                  | > Last IC  |
| RECOVER              | Last IC              | Log Analysis          | Undo       | Last IC                  | < Last IC  |
| RECOVER              | Full IC              | Log Analysis          | Undo       | Full IC                  | < Full IC  |
| Change Accumulation  | Last IC              | n/a                   | Redo       | Last IC                  | > Last IC  |
| LOAD                 | Full IC              | n/a                   | n/a        | n/a                      | = Full IC  |
| LOAD                 | Full IC              | Log Analysis          | Redo       | Full IC                  | > Full IC  |
| LOAD                 | Full IC              | Log Analysis          | Undo       | Full IC                  | < Full IC  |
| Log Analysis         | SQL from log         | n/a                   | Undo       | Current                  | < Current  |
| REBUILD              | Current TS Data      | n/a                   | n/a        | n/a                      | = Current  |
| RESTORE              | Full IC              | n/a                   | n/a        | n/a                      | = Full IC  |
| RESTORE              | Full IC              | RECOVER               | Redo       | Full IC                  | > Full IC  |
| RESTORE              | Full IC              | Log Analysis          | Redo       | Full IC                  | > Full IC  |
| RESTORE              | Full IC              | Log Analysis          | Undo       | Full IC                  | < Full IC  |

Table 30. Possible recovery methods (continued)

| First utility           | Data resource       | Second utility | Log  | Starting location             | PIT   |
|-------------------------|---------------------|----------------|------|-------------------------------|-------|
| SLB                     | System-Level Backup | RECOVER        | Redo | Determined by Recover Utility | =SLB  |
| SLB and RECOVER LOGONLY | System-Level Backup | RECOVER        | Redo | Determined by Recover Utility | > SLB |

The recovery point in time (PIT) always affects which methods are relevant for each object, and is typically compared with the most recent image copies both before and after the PIT. If the last image copy is incremental, then a full image copy before the PIT is required.

The log range required for a recovery method cannot contain objects with any of the following parameters:

- CHECK DATA with LOG(NO)
- LOAD with LOG(NO)
- REORG with LOG(NO)

## Constraints

- Recreated tables are not supported by RECOVER, RESTORE, or Undo SQL from current.
- DSN1COPY does not support user-managed spaces defined as NOREUSE.
- Image copies created with the CONCURRENT option are supported only by RECOVER and RESTORE.
- Image copies created without the CONCURRENT option are supported by every utility except RESTORE.
- RECOVER might not require a last image copy if the object is newer than the oldest recorded log, otherwise the full image copy must be recorded in the DSC.
- LOAD uses only full image copies to avoid duplicate rows from partially updated windows on incremental copies.
- Log Analysis does not support:
  - Tables that have a user defined data type.
  - Column names, table name, or creator that cannot be translated into EBCDIC (CCSID 37)
  - Objects that are LOG NO or have a related object that is LOG NO.
  - Dropped objects with XML columns
  - Cloned tables.
- REBUILD is used as the first utility only when the parent table is not being recovered, and only when recovering to current.
- The utilities used for recovery are typically either un-logged or limit log processing. Frequent image copies help to ensure a recoverable environment.
- Recovery constraints for using SYSIBM.SYSCOPY RECOVER events as a base:
  - Only applicable to plans: 'Using RECOVER', 'Using Advanced Recovery', 'Using Redirected Recovery' and 'Using Redirected Recovery (Change Accumulation)'.
  - Only 'Using RECOVER' and 'Using Redirected Recovery' plans support log ranges containing RECOVER TOLOGPOINT events.
  - RECOVER with TOCOPY to an incremental image copy is not used as starting recovery point if Log Apply is disabled.
  - If certain intersections exist between PARTLEVEL image copies and image copies for whole space, RECOVER TOCOPY might be considered as LOG NO event for 'Using Advanced Recovery' and 'Using Redirected Recovery (Change Accumulation)' plans.

## Recovering a Db2 object using the schema level repository

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The **Recovery Advisor** helps you to recover dropped or versioned Db2 objects using the information in the Db2 Recovery Expert schema level repository (SLR). The SLR is a collection of Db2 tables that are used to archive Db2 object metadata and recovery information. Using the SLR you can recover dropped objects to a point in time. In addition you can recover objects back to a specific version.

The versioning information that Db2 Recovery Expert keeps in the SLR is updated by running the SLR update program. The SLR update program compares the objects in the Db2 catalog to the last known version of the objects in the SLR and if an object has changed, a new entry for that object is added. If kept current by frequently running the update program, the versioning information in the SLR can present a complete historical view of the object. The information tracks when any attribute of the object is changed. You therefore have the opportunity to recover an object to one of several versions.

**Note:** Running the SLR update program can be resource intensive. If you are only interested in recovering an object to just before it was dropped and not interested in recovering an object to a specific version, you can use the **Log Based Recovery Advisor** to recover a dropped object using the Db2 log.

### Using the Recovery Advisor

This section provides an overview of the process for recovering one or more Db2 objects using the **Recovery Advisor**. The **Recovery Advisor** helps you build a job to recover one or more objects using the Db2 Recovery Expert schema level repository for recovery information.

1. Access Db2 Recovery Expert web interface and click the **Recovery Advisor** tab from the main page of the web interface.  
The **Welcome** window of the **Recovery Advisor** opens. The **Welcome** window gives an overview of the advisor.
2. Click **Next**.  
The **Location** window opens. You use the **Location** window to select the Db2 subsystem where the objects that you want to recover reside.
3. Click **Next**.  
The **Objects** window opens. You use the **Objects** window to select the objects that you want to recover.
4. Click **Next**.  
The **Point in Time** window opens. You use the **Point in Time** window to specify the point in time to which you want to recover the selected objects.
5. Click **Next**.  
The **Recovery Plan** window opens. Click **Generate** to retrieve a list of possible recovery plans for the objects. When retrieving the recovery plans you can specify whether you will perform in-place recovery, redirected recovery, or DDL recovery. You will also specify options that will be used when generating the recovery plans. The recovery plans are retrieved and listed in the **Plans** pane.
6. Select a recovery plan from the list of plans and click **Next**.
7. The **JCL** window opens displaying the JCL that will be used for the recovery job. From this window you can edit the JCL.
8. Click **Next** to run the job. When the job completes, the **Result** window opens and displays the results job. Select the recovery job whose results you want to review.
9. When you have finished reviewing the results, click **Close**.  
You return to the **Results** window of the advisor, where you can choose to save or delete the results.

## Opening the Recovery Advisor

Each of the advisors in the web interface opens with a Welcome window.

1. Click the **Recovery Advisor** tab from the main page of the web interface. The **Welcome** window of the **Recovery Advisor** opens. This window presents an overview of the object recovery process using this advisor.
2. The **Skip this Welcome page in the future** check box (which by default is not selected) allows you to suppress the display of the **Recovery Advisor Welcome** window in the future. This applies only for new object recovery specifications; when a saved specification is opened, the **Welcome** window is always omitted.
3. On each window of the **Recovery Advisor**, you can use one or more of the following controls to navigate through the process:

### **Back**

Move back one window in the object recovery process.

### **Next**

Move ahead one window in the object recovery process.

### **Save**

Save the recovery process and selections up to this point in a specification. (This opens a new window for naming and saving the specification.)

### **Close**

End the recovery process without saving it and close the **Recovery Advisor**. All work and selections up to this point are lost.

### **Help**

Connect to the IBM Db2 Recovery Expert online help system.

4. After you have reviewed the information on the **Welcome** window, click **Next**. The **Location** window opens.

## Selecting a Db2 subsystem location

Use the **Location** window of the **Recovery Advisor** to select the Db2 subsystem on which the objects that you want to recover reside.

The locations displayed on this window are discovered automatically through communication between the Db2 Recovery Expert server and all running database agents. If there are several attached agents, the discovery process can take some time.

The Db2 subsystems available for your use are fetched when the agent starts. To refresh this list, right-click anywhere in the **Locations** pane. A **Refresh Location** option appears that you can select to refresh the list of subsystems. Additionally, an administrator can use SDSF (System Display and Search facility) to issue a `/MODIFY <agent-job-name>,REFRESH TOPOLOGY` command after having started or stopped a Db2 subsystem.

1. Drill down to the Db2 subsystem that contains the objects that you want to recover by expanding the elements in the **Locations** pane. The locations presented are organized in different ways. If you think of the locations by physical organization (that is, what system, and then what subsystem on that system), you can drill down through z/OS Systems. If you think of the locations in the abstract (that is, a simple list of subsystems), you can drill down through z/OS Subsystems or z/OS Data Sharing Groups.
2. Select the Db2 subsystem. The properties of the Db2 subsystem display in the **Properties** pane. Depending on the location that you selected, you might see only a portion of the properties listed below:
  - Version
  - Mode
  - Highest log RBA



- Subsystem ID
  - Active?
  - System restore
  - System services address space
  - Database services address space
  - Distributed data facility address space
  - IP address
  - IP address V6
  - Host name
  - Port number
  - Resync port number
  - Data sharing group attachment name
  - Data sharing group name
  - Data sharing member name
3. When you select a Db2 subsystem, the status of the Db2 subsystem displays in the **Status** pane. The status information that might be listed is:
    - Db2 restart RBA
    - Db2 restart time
    - Last checkpoint
    - Log copy 1
    - Log copy 2
    - Log high offloaded RBA
    - Log high written RBA
    - Number of logs awaiting offload
  4. Click **Next**. If a connection to that location has not yet been established during the Db2 Recovery Expert session, a connection is established now.
  5. If this is the first time during the Db2 Recovery Expert session that you have selected this location, and if login information has not been previously stored, the **Database Login** window displays. Enter the login information and click **OK**.
  6. The **Objects** window opens.

## Selecting objects for recovery

You use the **Objects** window of the **Recovery Advisor** to select the objects that you want to recover.

The first time you expand each high level element in the list of available objects (for example, Storage Groups, Databases, Table Spaces), the number of matching objects is determined. If this number exceeds the threshold specified in user preferences, a filter dialog is displayed.

**Important:** When you are selecting objects for recovery, remember that any recovery plan might include undo or redo SQL. You must ensure that there is a primary, or unique, key on the tables for which you are generating SQL; but the key cannot be a GENERATED ALWAYS column. Without a primary key, you might not get the desired results because of the inability to uniquely identify rows that were changed by the original SQL.

1. The **Available objects** list displays the objects that are available for recovery on the Db2 subsystem that you selected. The objects are organized by object type. You drill down to the desired object and select it.

The objects appear in different colors to identify their locations:

**Black**

In both the repository and the Db2 catalog

**Blue**

In the Db2 catalog only

**Red**

In the repository only

2. In the **Available Objects** pane, you can also right-click a table space, a database, or a table partition node to display a menu with commands that you can use to change the display status. This gives you a convenient way to reset or check object statuses from within Db2 Recovery Expert. The available commands are **Display**, **Start**, and **Stop**. Selecting any of the options displays another dialog that allows you to perform the selected operation on the selected object.
3. When you select an object, its properties display in the **Properties** pane. The **Repository Status** field in the **Properties** pane also identifies an object's location. Each of the properties that are listed in the Properties pane vary by object type.
4. Click the **Include** button to add the object to the list of objects to recover. The object appears in the **Selected objects** list. You can continue to add objects to the **Selected objects** list until you have selected all of the objects that you want to recover.  
To remove an object from the **Selected objects** list, click the **Remove** button. To remove all the objects from the list, click the **Remove All** button.
5. You can use the **Exclude** button to exclude an object from a larger set of objects that are to be recovered. For example, if you choose to include all objects that are found in a database with the exception of one dependent object, then you would select the database using the **Include** button; and then select one of the dependent database objects and using the **Exclude** button move it to the **Selected objects** list.
6. You can use the **Filter** button to vary the display of objects as they appear in the **Available objects** list. The **Available objects** list displays the objects organized by object type. This organizational scheme is consistent throughout the tree. To vary the objects displayed beneath each object type on any level, select the object type and press the **Filter** button. You can also open the object type filter window by right clicking on the object type and selecting **Create Filter** from the menu. A filter window opens where you can specify the filter criteria.

In addition you can modify and remove filters by right clicking on an object type and selecting from the menu either **Modify filter** or **Remove filter** . The available object types are as follows:

- Storage Groups
- Databases
- Table Spaces
- Tables
- Indexes
- Views
- Synonyms
- Aliases
- Data types
- Triggers
- Functions
- Stored Procedures
- Sequences
- Sequence Aliases
- Roles
- Plans
- Packages

- Global Variables
  - Automation Tool Profiles
7. You can define a pattern that will match multiple objects that will be selected for recovery at the time the recovery job is run. To define a pattern, select the node labeled **Pattern** under the type of object you wish to select and click the **Include** button. A popup window opens, specific to the type of object that you selected. Specify the pattern and click **OK**. The object type pattern will appear in the **Selected objects** list.
- When you expand a pattern in the **Selected objects** list, you can see all matching objects that are found in the repository or currently exist in the Db2 subsystem.
8. Click **Next**. The **Point in Time** window opens.

## Specifying recovery plan options

From the **Specify recovery options** window you specify the type of recovery that will be performed and the options that will be used to generate the recovery plans. Several sets of options are presented to you depending on the type of recovery that you want to perform.

1. Select the type of recovery:
  - To perform an in-place recovery, clear the **Generate DDL only** and **Generate Redirected Recovery** check boxes. An in-place recovery recovers an object to a target Db2 subsystem that is the same as the object's original source Db2 subsystem.
  - To perform an in-place DDL only recovery, check the **Generate DDL only** check box. An in-place DDL only recovery recovers only the DDL for the object to a target Db2 subsystem that is the same as the object's original source Db2 subsystem.
  - To perform a Redirected Recovery, check the **Generate Redirected Recovery** check box. A Redirected Recovery recovers an object to a target Db2 subsystem that is different from the object's original source Db2 subsystem.
  - To perform a DDL only Redirected Recovery, check the **Generate DDL only** and the **Generate Redirected Recovery** check boxes. A DDL only Redirected Recovery recovers only the DDL for an object to a target Db2 subsystem that is different from the object's original source Db2 subsystem.
2. If you are performing an in-place or a Redirected Recovery (not DDL-only), click the **General** tab and specify the following options:
  - Objects that are in a restricted state might require manual intervention to successfully recover without causing unwanted results. Specify what you want Db2 Recovery Expert to do if it encounters objects in a restricted state (for example, read-only objects or table spaces with COPY pending) by selecting one of the following radio buttons:
    - **Stop the recovery if objects in a restricted state are encountered.** This is the recommended option as well as the default.
    - **Proceed with the recovery, if possible, even if objects are in a restricted state.**
  - The Check Data utility checks table spaces for violations of referential and table check constraints and it reports information about the violations that it detects. The **Generate Check Data utility** check box is selected by default. If you do not want to check data during the recovery process then you should turn this utility off by clearing the **Generate Check Data utility** check box. Checking the table space data will consume resources. Your recovery performance is improved if the Check Data utility is not running.
  - Objects that have been selected for recovery may be related to additional objects as a result of referential integrity. Under **Include additional objects that are related to the selected one(s) via referential integrity**: Choose the **Yes** radio button to include the additional objects in the recovery; the **Relations only** radio button to create the relations but not include the related objects themselves in the recovery; or the **No** radio button to ignore related objects and relations.
  - The **LOAD from full IC** recovery plan may be used to recover many types of objects. If you want to use this plan to recover recreated tables, you must select the **Allow LOAD from full IC for**

**recreated tables** check box. It should be noted that in some cases using this plan for recreated tables may fail.

- The **Use workfiles for Undo/Redo SQL** option specifies whether workfiles are used when running Undo/Redo SQL recovery plans. Select the **Use workfiles for Undo/Redo SQL** check box to use workfiles. Clear the **Use workfiles for Undo/Redo SQL** check box to use 64 bit storage. Using workfiles may impact performance and should only be selected when scanning more than 500 Db2 logs for activity.
  - The **Ignore ALTER statements** option will ignore ALTER statements during recovery plan generation. Please use with caution: enabling it may cause invalid plans if ignored ALTER affects data row format or other parameters important for recovery (for example, ALTER TABLE ALTER COLUMN). On the other hand, it allows you to generate additional plans for some scenarios with other ALTER statements (for example, ALTER TABLE APPEND YES/NO) and avoid some Unrecoverable object errors.
  - The **Allow copies created for other versions to be used for recovery** option allows users to select an image copy that is different from the current image copy version and use that image copy for the recovery. Select the **Allow copies from previous versions** check box to allow the use of previous image copy versions.
  - The **Ignore unrecoverable objects** option specifies whether unrecoverable objects in a profile are ignored when generating recovery plans. Select the check box to generate recovery plans for all objects in the profile that are recoverable and ignore all objects in the profile that are unrecoverable. Clear the check box to indicate that if any objects in the profile are unrecoverable, then no recovery plans are generated and an error message listing the unrecoverable objects is issued.
  - The **Notify if Data Capture Changes enabled** option specifies whether a warning message is issued if Data Capture Changes is enabled on the table that is being recovered. Select the check to issue the message. Clear the check box to prevent the message from being issued.
  - The **Action for missing recovery resources** option specifies what action to take when an unrecoverable resource, such as a Db2 log or image copy, is detected. Specify **I** (Ignore) to prevent Db2 Recovery Expert from checking data sets for unrecoverable resources. Specify **W** (Warning) to continue recovery plan generation and issue a warning message for unrecoverable resources. Specify **E** (Error) to issue an error message for unrecoverable resources and exclude those resources from plan generation.
  - **Statistics Options** lets you select a check box, **Copy statistics** if you want to use a set of temporary data sets when copying statistics from a source object to the corresponding target objects. The statistics options are used to set the RTS Copy Utility data set allocation options.
3. Click the **Index Rebuild Options** tab to specify the maximum number of tablespaces that can be processed in a single Rebuild Index step. If you have more objects to recover in a plan/job, several consecutive steps will be generated. Specify 0 to disable the limit. The default is 30.
  4. If you are performing an in-place recovery, click the **RECOVER; COPY; Parallel Jobs; DDL Options;** and **Log Apply and Log Read** tabs to specify the recovery options. For **RECOVER**, the **Limit of objects per step** field is used to specify the maximum number of objects that can be processed in a single Recover utility step. If you have more objects to recover in a plan/job, several consecutive steps will be generated. Specify 0 to disable the limit. The default is 30.
  5. If you are performing a Redirected Recovery, click the **COPY; Parallel Jobs; DDL Options; Log Apply and Log Read; Statistics Options;** and **Redirected Recovery** tabs to specify the recovery options.
  6. If you are specifying a DDL only Redirected Recovery, click the **DDL Options** and **Redirected Recovery** tabs to specify the recovery options.
  7. If you are performing a DDL only in-place recovery, click the **DDL Options** tab to specify the recovery options.
  8. Click **OK**. The recovery plans are generated and control returns to the Recovery Plan window.

## Specifying recovery plan options for the RECOVER utility

You use the **RECOVER** page of the **Specify recovery options** notebook to specify the parameters that are used with the RECOVER utility.

Specify values for the following fields:

### Number of tape drives to allocate for objects processed in parallel (TAPEUNITS)

Select this option and provide a numeric value to set the number of tape drives to allocate for objects processed in parallel. The default value is 4.

### The site from which RECOVER should use image copies

Select this option and provide a site from which RECOVER should use image copies. The default value is *Subsystem default* which means however the subsystem is configured.

### Recover unchanged objects

Select this check box to include all changed and unchanged objects in the recovery. Clear the check box to exclude unchanged objects from the recovery. Excluding unchanged objects will save processing time during the recovery. The default value is to include all changed and unchanged objects.

## Specifying recovery plan options for the COPY utility

You use the **Copy** page of the **Specify recovery options** notebook to specify the parameters that are used with the COPY utility.

### Specify the parameters to use with the COPY utility

Select one of the following radio buttons to control whether or not Db2 Recovery Expert generates an image copy at the end of the recovery:

- Select the **Do not create image copies after recovery** radio button to bypass creating any image copies after recovery. This is the default selection.
- Select the **Copy table spaces only** radio button to create an image copy of only the table spaces after the recovery.
- Select the **Copy table spaces and indexes** radio button to create image copies of COPY YES indexes as well as of table spaces after the recovery.

If you selected either **Copy table spaces only** or **Copy table spaces and indexes** you must also specify the type of copies that you want to create. You can select one or more of the following:

- **Create local site primary copy**
- **Create local site backup copy**
- **Create recovery site primary copy**
- **Create recovery site backup copy**

### Number of tape drives to allocate for objects processed in parallel (TAPEUNITS)

Specify in this text box the number of tape drives to allocate for objects processed in parallel. The default value for TAPEUNITS is 4.

### Check pages for validity (CHECKPAGE)

Select this check box to verify that all pages are valid when using COPY.

### Use DFSMdss concurrent copy (CONCURRENT)

Select this check box to use DFSMdss concurrent copy.

### Automatic Image Copies

Select this check box to specify or update the options that are used to create the automatic image copies.

The **Update DSN Specification** button lets you to change or update the copy data set name template, using the following options:

- **Unit Type:** Specify a valid unit where the data set will be written.

- **Data Class:** If your site uses SMS to manage data sets, specify the SMS Data Class that should be used.
- **Storage Class:** If your site uses SMS to manage data sets, specify the SMS Storage that should be used.
- **Management Class:** If your site uses SMS to manage data sets, specify the SMS Management Class that should be used.
- **Work Storage Class:** If the work volume(s) specified are SMS-managed, specify an SMS storage class.

For **Work Volumes**, specify the work volumes to use during the creation of the image copies. You must specify at least one, up to a maximum of six volumes.

**Note:** If Db2 has striping on, you must use SMS managed work volumes.

The Tape specific parameters options are as follows:

- **Stack Copies on Tape:** Specify whether you want to stack image copies on a single tape when possible.
- **Tape Stack Limit:** If stacking image copies, enter the number of image copies that you want to stack on one tape before dismounting the tape.
- **Expiration Date:** Enter either the tape expiration date in YYYYDDD format, or the tape retention period in number of days.
- **Retention Period:** Enter either the tape expiration date in YYYYDDD format, or the tape retention period in number of days.
- **Maximum Tapes:** Specify the maximum number of tapes for each image copy.

## Specifying recovery plan options for running parallel jobs

Use the **Parallel Jobs** page of the **Specify recovery options** notebook to specify the options for running parallel jobs.

These options specify the number of parallel processing jobs that are allowed and the maximum number of concurrent jobs that can be submitted at any given time. Examples of utilities that can be run in parallel are recoveries to independent table space groups and DSN1COPY and RECOVER utilities.

**Tip:** If you do not want to run parallel jobs, set the number of parallel jobs requested to 0, then the entire recovery will use a single JOB.

Based on the information that you enter, Db2 Recovery Expert evaluates the objects that have been selected for recovery to determine if their recovery can be spread across several jobs. This allows multiple recovery jobs to be submitted at once. During the recovery process, the generated JCL has an initial JOB for status checks to prepare for recovery and DDL to recreate objects. The maximum number of requested JOBs follow to process independent groups of objects. Utilities that cannot run parallel are included in the final job.

**Note:** Db2 Recovery Expert performs an analysis to determine which utilities run in parallel and which do not.

To set the parallel utilities, enter a number in the following boxes:

### Number of parallel jobs for data recovery

In this text box specify the maximum number of jobs in a parallel job group.

### Specify maximum number of concurrent jobs

In this text box specify the maximum number of jobs that the agent processes in parallel. This represents the maximum number of jobs that can run at any given point.

## Specifying recovery plan DDL options

The **DDL Options** page of the **Specify recovery options** notebook specifies the options that are used when generating just DDL for an object or set of objects. These options include those that effect whether

authorization statements are generated, whether DDL is generated for specific object types, and the options that will control binding the DDL jobs.

The following options apply to authorizations:

#### **Grants**

Check this check box to generate authorization statements when recovering objects.

Using the **DDL Options** you control whether DDL will be generated for an object and the object's dependent objects. When generating DDL for an object, Db2 Recovery Expert generates recovery DDL for the selected object and all its lower level dependent objects. By not selecting an object type, you can inhibit the generation of DDL for those dependent objects of a specific object type. To control the generation of DDL select one or more of the following check boxes:

#### **Storage Groups**

Check this check box to generate DDL for **Storage Group** object types.

#### **Databases**

Check this check box to generate DDL for **Database** object types.

#### **Indexes**

Check this check box to generate DDL for **Index** object types.

#### **Aliases**

Check this check box to generate DDL for **Alias** object types.

#### **Functions**

Check this check box to generate DDL for **Function** object types.

#### **Synonyms**

Check this check box to generate DDL for **Synonym** object types.

#### **Sequences**

Check this check box to generate DDL for **Sequence** object types.

#### **Roles**

Check this check box to generate DDL for **Role** object types.

#### **Table Spaces**

Check this check box to generate DDL for **Tablespace** object types.

#### **Tables**

Check this check box to generate DDL for **Table** object types.

#### **Views**

Check this check box to generate DDL for **View** object types.

#### **DataTypes**

Check this check box to generate DDL for **Data Type** object types.

#### **Stored Procedures**

Check this check box to generate DDL for **Procedure** object types.

#### **Triggers**

Check this check box to generate DDL for **Trigger** object types.

#### **Sequence Aliases**

Check this check box to generate DDL for **Sequence Alias** object types.

#### **Global Variables**

Check this check box to generate DDL for **Global Variable** object types.

The following options apply to binding packages and plans:

#### **Binds**

Check this check box to generate package or plan bind statements. Once checked, the supporting bind option become available.

#### **Packages**

Select this radio button to indicate that bind statements are to be generated only for packages. This option is only available when the **Binds** check box is selected.

## Packages and Plans

Select this radio button to indicate that bind statements are to be generated for packages and plans. This option is only available when the **Binds** check box is selected. This option is only available when the **Binds** check box is selected.

## Add

Select this radio button to indicate that the named package does not exist, and that a new package is to be created. If the package already exists, execution stops, and a diagnostic error message is returned. This option is only available when the **Binds** check box is selected.

## Replace

Select this radio button to indicate that the existing package is to be replaced by a new one with the same package name and creator. This option is only available when the **Binds** check box is selected.

## DBRM Library 1 – 4

Specify the DBRM libraries to be used for the bind jobs. You can specify up to 4 DBRM libraries. This option is only available when the **Binds** check box is selected.

## SQLID for DDL

By default, the generated DDL for a recreated object uses the SQLID that was specified when the object was originally created. To override the default you can specify a different SQLID in the **SQLID for DDL** field and it will be used when generating the DDL for the recreated objects.

## Specifying Log Read and Log Apply recovery options

The **Log Read and Log Apply** page of the **Specify recovery options** notebook specifies the options that are used when generating Advanced Recovery or Redirected Recovery plans.

### Log Reader Copy Preference

Includes the LOG\_COPY\_PREFERENCE keyword in the syntax. Specifies the order in which the archive and active log lists in the BSDS are to be scanned when searching for a log to satisfy a need for log records. Scans the archive logs first and uses archive logs when the same range exists in an archive and active log. You will use the drag and drop function to change the scan order. Click on the archive or active log type and drag it to the new position for scanning.

### Number of PARALLEL log read

Specifies the number of parallel log read tasks that can run at the same time. Valid values are integers, 0-16. A value of 0 specifies that a maximum of 1 task per data sharing group member can run at the same time. A non-zero value specifies the number that is the maximum number of parallel tasks that can run at the same time. If there are more logs to read than the number of parallel tasks specified, a task to read the remaining logs is launched as soon as a running task finishes. This will occur until all necessary logs have been read.

### Number of PARALLEL log apply

Specifies the number of parallel log apply tasks that can run at the same time. Valid values are integers, 1-10. If a single GROUP(...) set is present in the control cards, the value in the **Number of PARALLEL log apply** field is used to break up the job into multiple GROUP(...) sets and start a log apply task for each set. Valid values are

- **1:** A single group starts a single log apply task.
- **2-10:** If there is a single GROUP(...) , the code will internally break down the SPACE(...) sets into a maximum of Number of PARALLEL log apply GROUP(...) sets and will start one log apply task per GROUP(...).

For example, if you specify a value of 10 and there are only 5 SPACE(...) sets, Db2 Recovery Expert divides the syntax into 5 GROUP(...) sets and 5 log apply tasks.

If you specify a value of 5 for Number of PARALLEL log apply, the number of spaces between the groups are divided evenly and then, if there are leftovers after attempting to divide them evenly among the allotted number of GROUP(...) sets, those leftovers go in the last GROUP(...) set. One log apply task is then generated for each GROUP(...) set.



### **Bypass SYSIBM.SYSLGRNX Proc**

Indicates whether the reading of SYSIBM.SYSLGRNX is bypassed and only the Db2 logs are read. A value of Y skips reading SYSIBM.SYSLGRNX and only reads the Db2 logs. A value of N does not skip reading SYSIBM.SYSLGRNX.

### **Continue on Errors**

Causes most errors to be ignored and the processing to continue. If this option is specified and errors higher than RC=4 are encountered, they will be overridden, a RC=4 will be reported, and the job will not fail. I/O errors and other serious issues (out-of-memory, for instance) will not be ignored and will still cause aborts.

### **Reuse VSAM Data Set**

Indicates whether a VSAM data set can be reused on WRITE\_TO\_VSAM or WRITE\_TO\_BOTH jobs. If Reuse VSAM Data Set is set to N (No), a VSAM data set is newly allocated (with new extent structure). If Reuse VSAM Data Set is set to Y (Yes), an existing VSAM data set will be reused (thus preserving the data set's size and extent structure). **Note:** If some of the recovered objects are encrypted (created with nonempty **KEYLABEL** keyword), the Reuse VSAM Data Set field must be set to N. You must have at least READ access to the STGADMIN.SMS.ALLOW.DATASET.ENCRYPT security profile in the FACILITY class is required; otherwise, the recovered data set will be created non-encrypted.

**Note:** Log Apply cannot be disabled for LBDR profiles, because Redirected Recovery of dropped objects is allowed only with Log Apply enabled. Additionally, for source and target SSIDs on different LPARs, Log Apply must be enabled.

## **Specifying statistics options**

The **Statistics Options** page of the **Specify recovery options** notebook specifies the statistics options that become active when the **Copy statistics** check box on the **General** tab is enabled. When the box is not checked, the fields on the **Statistics Options** page are grayed out.

### **Device type**

Specifies the device type that is used for the RTS utility temporary data sets.

### **Space unit**

Specifies the unit type for the primary and secondary quantity allocation.

### **Primary quantity**

Specifies the primary quantity that is used for the allocation of temporary data sets.

### **Secondary quantity**

Specifies the secondary quantity that is used for the allocation of temporary data sets.

### **SMS data class**

Specifies the SMS data class that is used for the allocation of temporary data sets.

### **SMS storage class**

Specifies the SMS storage class that is used for the allocation of temporary data sets.

### **SMS management class**

Specifies the SMS management class that is used for the allocation of temporary data sets.

## **Specifying redirected recovery options**

The **Redirected Recovery Options** page of the **Specify recovery options** notebook specifies the options that are used when generating plans to recover an object to a target Db2 subsystem that is different from the original source Db2 subsystem.

### **Object Translation**

You use the **Object Translation** fields to specify the new name for each object that is part of the redirected recovery. Click the **Add** icon to insert a row in the table. From the **Object Type** field, select the type of object that you are recovering. In the **Source Name** field specify the original name of the object that is being recovered. In the **Target Name** field specify the new name for the object that will be used on the target Db2 subsystem.

**Note:** If you are performing redirected recovery of an object across LPARS, the object is recovered on the different LPAR using the latest image copy of the source object. Any recovery information that is included in the data log is not applied.

### Single character wildcards

Specifies a string of up to 8 characters that can include the question mark "?" or underscore "\_" wildcard characters. The string is used to search for a match to values specified in the **Source Name** or **Target Name** fields. The wildcard character "?" or "\_" will match any single character. For example, if you enter the string ?xyz, it will match axyz, bxyz or cxyz. If you enter the string xyz\_, it will match xyza, xyzb, or xyzc.

### Arbitrary string wildcards

Specifies a string of up to 8 characters, that includes the asterisk "\*" or percent sign "%" wildcard characters. The string is used to search for a match to the values specified in the **Source Name** or **Target Name** fields. The wildcard character "\*" or "%" will match one or more characters. For example, if you enter the string \*xyz, it will match firstxyz, secondxyz or thirdxyz. If you enter the string xyz%, it will match xyzfirst, xyzsecond, or xyzthird.

### Recovery Method

Specifies whether Redirected Recovery should use the IBM RECOVER utility, Change Accumulation, or Both. Specify **Recover** to use only the RECOVER utility. If an object cannot be recovered by RECOVER, it will be marked as unrecoverable. Specify **Change Accumulation** to use only the Change Accumulation process (Advanced Recovery). This method has fewer restrictions than RECOVER. Specify **Both** to use any utility appropriate for an object. The RECOVER utility is preferred; if an object can be recovered by RECOVER, this utility will be used. Otherwise, Change Accumulation will be used. An object is marked as unrecoverable if neither method is suitable for the object. The default setting is **Both**. The RECOVER utility is available only for the Redirected Recovery to the same subsystem, so if the target subsystem is different from the source, the only available value for this field is **Change Accumulation**. The **Change Accumulation Options** settings are related only to the Change Accumulation method, so if **Recover** is specified, these options should not be used. **Note:** the **Recover** utility option may be not honored, if **Allow to use RECOVER for Redirected Recovery** is disabled at the subsystem level, in the **Log Read and Log Apply Defaults** panel (see [“Registering Db2 subsystems”](#) on page 206, which describes this panel). The **Allow to use RECOVER for Redirected Recovery** option should only be enabled after applying the corresponding Db2 APAR, PH27043.

### Log Apply

The **Log Apply** field indicates whether Log Apply and incremental copies will be used. If **Log Apply** is enabled (Y), Log Apply is performed and incremental copies are used. If not, recovered data will be taken only from the specified full image copy, not from logs or incremental copies.

### Detailed JCL Comments

Specifies whether generated jobs include detailed JCL comments describing the function of each job step. Select the check box to include comments.

### Sort Data Pages

Specifies whether to sort data pages during redirected recovery. By default, this is enabled. De-selecting this option is not recommended unless directed by IBM customer support.

### SYSCOPY Scan Operating Mode

Specifies which SYSCOPY rows to consider when finding a starting point for processing. Valid values are:

- **Zparm** (Default) Detects the operating mode Db2 is running under and automatically inserts the corresponding control card. This option omits the LOCAL\_SITE, RECOVER\_SITE, and IMAGE\_COPY\_PREFERENCE control cards and uses the value found in the ZPARAMs on the Db2.
- **Local** Refers to the Local Primary and Local Backup rows to find a starting point for processing. Includes the LOCAL\_SITE keyword in the syntax.
- **Recover** Uses the Recovery Primary and Recovery Backup rows to find a starting point for processing. Includes the RECOVERY\_SITE keyword in the syntax.
- **User** Uses the user-specified scan preference defined in the **SYSCOPY Selection Preference** field to find a starting point for processing. Includes the IMAGE\_COPY\_PREFERENCE keyword in the syntax.

### **SYSCOPY Selection Preference**

Specifies the order in which the image copy types will be scanned in SYSCOPY for a starting point. This selection preference is only applied if the **SYSCOPY Scan Operating Mode** is set to **User**. You will use the drag and drop function to change the scan order. Click on the image copy type and drag it to the new position for scanning. The image copy types are:

- **Local Primary** Scans for Local Primary type image copies in SYSCOPY.
- **Local Backup** Scans for Local Backup type image copies in SYSCOPY.
- **Recovery Primary** Scans for Recovery Primary type image copies in SYSCOPY.
- **Recovery Backup** Scans for Recovery Backup type image copies in SYSCOPY.
- **Flash Copy** Uses Db2 Recovery Expert managed flash copy data sets in addition to Db2 V11 and higher flash copy data sets as image copy starting points in the processing.

**Note:** The following applies with the default order:

- Scans first for Local Primary type image copies, then for Local Backup type image copies. Local Primary type image copies are used when identically time-stamped SYSCOPY rows are detected.
- Allows the SYSCOPY scan program to pick an Recovery Backup if it comes up first while scanning SYSCOPY backwards for a starting point.

### **XML Options**

The XML options are used when performing redirected recovery of a table object that includes XML and the target system is part of a data sharing environment.

#### **XML jobs data set**

Specifies the name of a data set where the JCL for the jobs that are required to complete the redirected recovery of table objects with XML are stored as members.

**Note:** XML objects require an automatically generated sequence number for each row. The jobs generated to this data set update the Db2 catalog for consistency with the translated XML data that includes the automatically generated sequence numbers. After recovery completes, you must manually run the jobs that are included in this data set. These jobs will use the prefix specified in the **XML jobs member prefix** field and the SSID of the LPAR member in the data sharing environment. You must update the jobs with a SYSAFF card and run on the LPAR that matches the SSID in the job name.

#### **XML jobs member prefix**

Specifies the prefix that is used in the automatically generated names of each member added to the XML jobs data set. Following the prefix, the generated name includes the SSID.

#### **XML template data set**

Specifies the name of a data set where the common job template is stored as a member during the plan generation for the redirected recovery of a table object that includes XML.

#### **XML template member**

Specifies the name of the member that is added to the XML template data set.

## **Specifying a point in time**

You use the **Point in Time** window of the **Recovery Advisor** to specify the point in time to which you want to recover the selected objects.

1. Select one of the following radio buttons:

- Select the **Current** radio button (or **Last IC** if you are performing a redirected recovery; see below) to specify that you will recover the selected objects to the current date and time. You would select this option when you want to recover data that is logically consistent but has a physical error or other corruption in how it is stored.

**Note:** When performing redirected recovery, a **Last IC** radio button appears, instead of **Current**, which is not available for redirected recovery. **Last IC**, which is only available for redirected recovery, lets you use the last image copy point as the point in time. Any recovery information that is included in the log data is not applied.

- Select the **Timestamp** radio button to specify a time value as the point to which the objects will be recovered. You would select this option when you want to recover previous versions of the selected objects, or when data has become logically inconsistent and you can identify a prior timestamp when the data was consistent. If you choose this option, you will select a specific time using the date and time icon. You can also browse for recovery point options using the browse button.
  - Select the **Log RBA** radio button to specify that an RBA from the log will be used as the point to which the objects will be recovered. Select this option when data has become logically inconsistent and you can identify a prior log RBA when the data was consistent. If you choose this option, you can specify a specific RBA in the adjacent text box. You can also browse for RBA point options using the browse button. This option is only available for non-data sharing environments.
  - Select the **LRSN** radio button to specify that a LRSN will be used as the point to which the objects will be recovered. Select this option when data has become logically inconsistent and you can identify a prior LRSN when the data was consistent. If you choose this option, you can specify a specific LRSN in the adjacent text box. You can also browse for LRSN point options using the browse button. This option is only available for data sharing environments.
2. If you choose the browse button for help in selecting a timestamp value, a log RBA value, or a LRSN value:
    - Click the browse button next to the **Timestamp** radio button to open the **Select Point in Time** window. From this window you can select a time value to which the dropped objects can be restored. You can choose from a list of available object level definitions, recovery history events, or quiet times. When control returns to the **Point in Time** page, the selected recovery point is displayed in the **Timestamp** text box.
    - Click the browse button next to the **Log RBA** radio button to open the **Select Point in Time** window. From this window you can select the RBA to which the dropped objects will be restored. You can choose from a list of available object definition levels, recovery history events, or quiet times. When control returns to the Point in Time page, the selected recovery point is displayed in the **Log RBA** text box.
    - Click the browse button next to the **LRSN** radio button to open the **Select Point in Time** window. From this window you can select the LRSN to which the dropped objects will be restored. You can choose from a list of available recovery history events or quiet times. When control returns to the Point in Time page, the selected recovery point is displayed in the **LRSN** text box.
  3. Click **Next**. The **Recovery Plan** page opens.

## Selecting an object level, history event, or quiet time recovery point

From the **Select Point in Time** window of the **Recovery Advisor** you can choose the type of recovery point that will be used to recover the objects. The types of recovery points from which you can select are object definition levels, recovery history events or quiet times. You can also specify a specific image copy data set name.

1. From the **Point in Time** page of the **Recovery Advisor** select the browse button to the right of the **Timestamp** radio button, the **Log RBA** radio button, or the **LRSN** radio button. The **Select Point in Time** window opens.
2. Select one of the following radio buttons:
  - **Object Definition Levels** - Select this radio button to choose an object definition level for a recovery point. A given object can have many versions over time. The versions are referred to as object definition levels. The available definition levels that can be used as a recovery point are listed in the **Levels** text box. **Object Definition levels** are not available for selection when using a log RBA or LRSN point in time.
  - **Recovery History Events** - Select this radio button to choose a history event for a recovery point. History events for any of the selected objects are listed from the SYSIBM.SYSCOPY table, the schema repository's SYSCOPY table, and the DLC.SYSCOPY\_V11 table (if present). The history events available to use as a recovery point are listed in the **Events** text box.
  - **Quiet Times** - Select this radio button to choose a quiet time for a recovery point. The available quiet times available to use as a recovery point are listed in the **Quiet time found** text box. Quiet

times are listed from the quiet time tables. The default quiet time tables are SYSTOOLS.ARYQTG and SYSTOOLS.ARYQT. You can change the quiet times tables location using the **Quiet Time Tables** page of the **Preferences** notebook.

- **Copy with Specific Data Set Name** – Select this radio button to specify the data set name of an image copy that is used for the recovery point. Specify the data set name in the **Data Set Name** field or use the **Find** button to search for the data set.

**Note:** If a specified data set is a SHRLEVEL CHANGE copy, PIT\_RBA is used as the recovery logpoint. Otherwise, START\_RBA is used.

3. The number of elements listed in the **Levels**, **Events**, and **Quiet Times** text boxes is limited by the **Filter trigger** value specified on the **Limits** page of the **Preferences** notebook. If the number of elements to be listed exceeds this value, the **Point in Time Filter** window opens. From this window you can specify a timestamp range that will filter the elements that are displayed.

You can also filter the items that are listed in the **Levels** text box, the **Events** text box, and the **Quiet times** text box at any time using the **Filter** button.

4. At any time, you can click the **Refresh** button to refresh the list of elements.

5. If you selected:

- **Recovery History Events** - You can show events that are not points of consistency. You can use the **Show events that are not points of consistency** check box to control whether or not events that are not suitable points of consistency for recovery are shown (for example, other than quiesce events or SHRLEVEL NONE or SHRLEVEL REFERENCE image copies). By default, the check box is not selected, so only points of consistency are shown. You can use the **Allow TOCOPY recovery for SHRLEVEL CHANGE copies** check box to control which logpoint is used for such copies. If the check box is not selected, PIT\_RBA is used and TOLOGPOINT recovery will be generated (this is the default and is recommended). If the check box is selected, START\_RBA is used and TOCOPY recovery will be generated.
- **Quiet Times** - You can run a quiet time report on demand, updating the quiet time tables, and providing more quiet times from which to select. To run a quiet time report, click the **Run New Report** button. The **Log Analysis Advisor** opens, allowing you to run a quiet time report. After the report runs, click **Refresh** to display any additional quiet times discovered.

6. Click **OK**. Control returns to the **Point in Time** window. The following recovery points are specified depending on your selection:

- For **Object Definition Levels**, the **Level End Timestamp** from the selected row is entered in the **Timestamp** edit box. If there is no **Level End Timestamp**, that is, you selected a level which still exists, the point in time selection is changed to **Current**.
- For **Recovery History Events**, the timestamp from the selected event is entered in the **Timestamp** edit box.
- For **Quiet Times**, the midpoint of the **Start Timestamp** and **End Timestamp** from the selected quiet time is entered in the **Timestamp** edit box, or the **End RBA/LRSN** value is entered in the **Log RBA/LRSN**.

## Understanding recovery plans

Recovery plans are the jobs that can be run to recover Db2 objects.

When you generate a recovery plan, a request is made to the Db2 Recovery Expert server to complete the recovery set by expanding patterns and also searching containment and other types of relationships. All objects that are found are added automatically to the recovery set, without your confirmation.

Further analysis is then performed to determine additional relationships such as RI constraints, and XML and LOB relationships.

While RI relationships for each selected table are determined, Db2 Recovery Expert creates a list of relationships (by referential constraints), each referring to a list of tables.

If the composite list of tables includes any that were not previously in the recovery set, the **Select Related Tables** window displays.

This Recovery Plans window shows the relationships found, along with the tables to which they refer. By default, all relationships (and tables) are selected for inclusion in the recovery set. You can clear any relationship or any table in a relationship. Clearing individual tables in a relationship might result in the partial inclusion of relationships, which will be reflected on the window.

**Note:** Use caution if you decide to remove related objects from the recovery set. Removing objects that were automatically selected might result in incorrect recoveries or recoveries that fail.

To ensure that you do not recover a table that you do not want, you must deselect each occurrence of the table under any constraint that might include it. If you select a constraint because you do not want a table that is under that constraint, you might still recover that table because it might exist under another constraint.

Another request is made to the server to continue generating recovery plans, using the augmented recovery set. After the plans are generated, they are displayed on the **Plans** window.

The jobs that initially appear in the **Plans** window have generic job names. To view the actual names used in the recovery process, you must generate the JCL by selecting a plan and either viewing the JCL or running the recovery. If you specify parallel jobs in the **Recovery Plan Generation Options** window, you see serial and parallel jobs within each plan folder. Upon generating the JCL, the same job name is generated for all serial jobs. For parallel jobs, the last character in the job name is incremented and a unique name is generated for each job in the parallel job folder.

A message displaying the status of the task is displayed in the **Messages** pane of the main window, while it is running and after it has ended. You can monitor the task and open the related specification from there.

The following is a list of recovery plans that can be used to perform an object recovery. Not all recovery plans are available for all objects. Depending on the objects or subsystems that you select, you see different available plans.

- Using DSN1COPY
- Using DSN1COPY and RECOVER LOGONLY
- Using DSN1COPY of IC and redo SQL
- Using DSN1COPY of IC and undo SQL
- Using DSN1COPY of full IC and undo SQL
- Using RECOVER TOCOPY
- Using RECOVER
- Using RECOVER to IC and redo SQL
- Using RECOVER to IC and undo SQL
- Using RECOVER to full IC and undo SQL
- Using Advanced Recovery
- Using LOAD
- Using LOAD from full IC and redo SQL
- Using LOAD from full IC and undo SQL
- Using undo SQL
- Using REBUILD INDEX
- Using DFSMSdss RESTORE DATASET
- Using DFSMSdss RESTORE DATASET with RECOVER LOGONLY
- Using DFSMSdss RESTORE DATASET and redo SQL
- Using DFSMSdss RESTORE DATASET and undo SQL
- Using Restore from System Level Backup
- Using Restore from System Level Backup and RECOVER LOGONLY
- Using Restore of VSAM dataset only

- Using Restore of VSAM dataset and RECOVER LOGONLY

## Generating recovery plans for XML and LOB columns

Db2 Recovery Expert can generate recovery plans for most objects defined with LOB and XML columns using Undo/Redo SQL for Db2 on version 9 and higher. This section describes the instances when Db2 Recovery Expert can be used to generate recovery plans for objects containing LOB and/or XML columns—and when it cannot.

Db2 Recovery Expert can produce a recovery plan for any object containing a LOB column regardless of whether or not

- The object was dropped
- The object requires Undo/Redo SQL

**Note:** For recovery plans that involve an image copy with subsequent Undo/Redo SQL, both the base table space and the associated LOB spaces need to have image copies with the same RBA/LRSN. The last image copy prior to the recovery point must have the same RBA for both the base table space and the associated LOB space(s).

Advanced Recovery plans are not subject to this restriction. Advanced recovery can recover dropped LOB/XML spaces with image copies with different RBAs/LRSNs.

Db2 Recovery Expert can produce a recovery plan for any object containing an XML column that has not been dropped, even if Undo/Redo SQL is required for that object.

Db2 Recovery Expert can produce a recovery plan for any dropped object containing a table defined with an XML column if all of the following are true:

- The dropped object is recovered to an image copy point.
- An image copy exists for both the base table space and the auxiliary table space.
- Both the image copies of the base table space and the auxiliary table space have the same RBA/LRSN.

**Note:** After the recovery is executed, the objects will be recovered to the full image copy; however, inserts cannot be performed on the XML table.

Db2 Recovery Expert does not produce a recovery plan for any dropped object containing a table with an XML column and where Undo/Redo SQL is required to recover the object to the requested recovery point.

## Viewing recovery method information

Db2 Recovery Expert can generate several recovery plans for you to choose from to recover an object. Each of these plans use different methods for recovering the object. You can display the reasons why a recovery method is or is not available for the objects that you want to recover.

To enable this feature check the **Display recovery method information** check box that is found on the **General** page of the **Preferences** notebook. By default, the **Display recovery method information** box is unchecked. A folder named **Recovered Objects** will be included when with the recovery plans that are generated to recover the objects. You will expand this folder to see the recovery methods that will be used to recover the objects.

When you select a recovery method in the list of recovery methods for a specific object information about the recovery method is displayed in the **Properties** pane. If a specific recovery method is not available for that object, a red circle appears next to the recovery option. An explanation appears in a popup and in the **Properties** pane informing the user of the reason the object cannot be recovered using that specific method. If a recovery method is available for an object, a green circle appears next to the recovery option, and information about why the object can be recovered using that specific method is displayed in the Properties pane.

The following is a list of possible reasons why a recovery method will not work for an object. Not all explanations apply to all types of recovery plans. For more information, review the messages section of the user's guide.

- ARYJ040I - The object is not eligible for data recovery.
- ARYJ041I - Recreating the clone table would conflict with the existing base table.
- ARYJ042I - The method uses only DDL with no data recovery.
- ARYJ043I - The method does not support this object type.
- ARYJ044I - The index is dependent on data recovery.
- ARYJ045I - The method does not allow recreated tables.
- ARYJ046I - The method does not support this point in time.
- ARYJ047I - DSN1COPY does not support NOREUSE data sets.
- ARYJ048I - REDO/UNDO SQL does not support GENERATED ALWAYS columns.
- ARYJ049I - REDO/UNDO SQL does not support non-EBCDIC identifiers.
- ARYJ050I - REDO/UNDO SQL does not support distinct types.
- ARYJ051I - REDO/UNDO SQL does not support the first data set of a non-partitioned space.
- ARYJ052I – Table space method supersedes recovering all tables.
- ARYJ053I - Redo SQL does not support a recreated table from a previous table space version.
- ARYJ054I - This method is not enabled in the product control file.
- ARYJ055I - Last image copy before point in time unavailable.
- ARYJ056I - Last image copy after point in time unavailable.
- ARYJ057I - Full image copy before point in time unavailable.
- ARYJ058I - Full image copy after point in time unavailable.
- ARYJ059I - LOG NO event between current and point in time.
- ARYJ060I - Log processing not allowed with this method.
- ARYJ061I - Log processing required with this method.
- ARYJ062I - Log processing not supported for NOT LOGGED intervals.
- ARYJ063I - Full image copy has been deleted from SYSIBM.SYSCOPY.
- ARYJ064I - Concurrent copy excluded from this method.
- ARYJ065I - Concurrent copy required with this method.
- ARYJ066I - REDO/UNDO SQL requires Db2 V9 or higher for LOB column support.
- ARYJ067I - RECOVER does not support COPY NO indexes.
- ARYJ068I - This method must provide the lowest total cost.
- ARYJ069I - REDO/UNDO SQL does not support IMPLICITLY HIDDEN columns.
- ARYJ070I - System Backup Recovery Services is disabled in the PCF.
- ARYJ071I - System backup usable for object restore was not found.
- ARYJ072I - Load does not support XML columns.
- ARYJ073I - Load does not support LOB table spaces.

## Calculating recovery plan cost

Each generated recovery plan has an associated cost. In Db2 Recovery Expert recovery plan cost is a relative unit of measure to assist you in identifying the most efficient plan. The plan with the lowest estimated cost appears as the first plan on the list.

When you click on a recovery plan in the **Plans** pane, detailed cost information about the plan appears in the **Properties** pane. Plan properties include estimates of CPU time, tape mounts, and page I/Os. Compare the estimated cost for each plan to help you identify the most efficient plan using your preferred recovery method.

The following estimated cost information is generated for each recovery method.



- Estimated number of CPU milliseconds
- Estimated number of disk allocations
- Estimated number of disk page copies
- Estimated number of tape drive allocations
- Estimated number of tape page copies
- Estimated relative cost of the recovery plan
- Log point
- Plan name

## Viewing and editing relative cost parameters

Two parameters that are specified during customization affect the calculation of the cost estimates that are associated with generated recovery plans. The two parameters are:

### UPDATE ARY COST ECPU

A relative factor used to determine the elapsed CPU time for each recovery plan. The default value is 010.00.

### UPDATE ARY COST ETPM

A relative factor used to determine the elapsed time for tape mounts. The default value is 120.00.

These parameters are easily customized to give Db2 Recovery Expert users a more accurate cost estimate of recovery in their own shops.

When specifying relative cost parameters using Tools Customizer, the values supplied must conform to the following rules:

- The values must be numeric.
- The values must be in the form *nnn.nn*. (Use leading/trailing zeros where necessary.)
- The values must begin in column 27.

To see the current values of these parameters, run SAMPLIB job ARYSJ003. This job reports on the contents of the Product Control File.

## Generating and running recovery plans

From the **Recovery Plan** window of the **Recovery Advisor** you can generate possible recovery plans for the selected objects.

You can generate a list of all available recovery plans for an object and then choose to run the plan that is most advantageous. When the **Recovery Plan** window initially opens, the list of plans is empty.

### Note:

- If you are recovering a dropped object that is part of an implicit table space, Db2 Recovery Expert issues a warning during recovery plan generation to let you know the ZPARM parameter IMPDSEF must be set to YES before running the recovery job. This ZPARM parameter can be dynamically changed with the Db2 SET SYSPARM command.
- If you are recovering a set of objects to a prior version (existing objects must be dropped and then recreated) and one of the tables has the RESTRICT ON DROP clause active, you will have to alter that table to remove this restriction before running the recovery plan job. Upon completion of the recovery plan job you can reactivate the clause for the table.
  1. When the **Recovery Plan** window initially opens, the list of plans is empty. From the **Recovery Plan** window click the **Generate** button to generate a list of recovery plans.
  2. One plan for each possible recovery strategy is listed in the **Plans** pane. When you select a plan, properties that estimate the cost of the plan are displayed in the **Properties** pane. The cost of running a recovery plan is calculated based on the size of the data sets and the method of recovery. Viewing the properties of each plan will help you choose the most efficient plan. You can modify the default values used for these estimates when customizing Db2 Recovery Expert during installation.

3. You can expand each plan in the **Plans** pane to review its steps. When you select a step, descriptive properties for the step appear in the **Properties** pane.
4. You can expand each step in the plan to display the objects that are included in the list. The properties for each object are displayed in the **Properties** pane.
5. If you enabled parallel jobs, a folder named **Serial Job Group** is included in the **Plans** pane. This folder includes the initial job that will be run to check status, a **Parallel Job Group** folder that will contain the jobs to run in parallel, and a final job for utilities that cannot run in parallel. You enable parallel jobs using the **Parallel Jobs** page of the **Recovery Plan Generation Options**.
6. In addition to the recovery plans, the **Plans** pane includes a folder named **Recovered Objects**. This folder lists all the objects that will be recovered using the selected plan. If you set your preference to display recovery methods, each object within the **Recovered Objects** folder can be expanded and the possible recovery methods are listed.
7. If you select a plan and click the **Validate** button, you can verify whether the conditions that applied when a plan was generated still apply. For example, checking for the existence of expected image copy data sets. The existence of expected Db2 objects is also checked to verify that objects that were dropped at the time of generation are still dropped and objects that existed still exist. This validation is not a full simulation, that is, it is not a guarantee that the plan will run successfully. Some resources might appear to exist but actually do not, such as a cataloged tape that is not physically available, or you may not have authorization to access some resources. The message displayed upon successful validation makes it explicit that there is no guarantee of success.
8. After reviewing the recovery plans, select the one that you want to run and click **Next**. The JCL Parameters window opens.
9. From the JCL Parameters window specify one or more of the following fields and click **OK**:
  - Edit the Job card for to suit your environment.
  - Select the **Generate SYSAFF** check box to add SYSAFF to the job card. Including SYSAFF on the job card ensures that the job runs on the same system (LPAR) as the target Db2 system to which the objects will be recovered.
  - In the **In-stream data set delimiter (DLM)** field you can specify a greater than 80 character line delimiter.

**Note:**

- Depending on the type of plan chosen, various warnings might be displayed before proceeding with the recovery. For a plan including at least one step that uses undo or redo SQL generated by log analysis, a warning displays identifying possible issues with a successful recovery. This warning is displayed even when recovering to a current or a known point of consistency.
  - When you are selecting a recovery plan, remember that any recovery plan might include undo or redo SQL. You must ensure that there is a primary, or unique, key on the tables for which you are generating SQL; but the key cannot be a GENERATED ALWAYS column. Without a primary key, you might not get the desired results because of the inability to uniquely identify rows that were changed by the original SQL.
10. The JCL window opens displaying the JCL for the recovery job. From this window you can edit, export, or run the job.
  11. Click **Run** to run the JCL for the recovery plan. The results of the job are returned and listed in the **Result** window.
  12. To view the results of the job, select the job from the **Jobs** pane and click the **View** button. The **Job Results** window opens displaying the job results.
  13. To delete the job, select the job from the **Jobs** pane and click the **Delete** button.

## Viewing the recovery job JCL

From the **JCL** window of the **Recovery Advisor**, you can view, edit, export, and run the JCL that is generated for the recovery job.

1. The **JCL** window opens when you select a plan and click **Next** from the **Recovery Plan** window.

2. From **JCL** window you can review the JCL for the recovery plan job. You can also edit the JCL in the window. You can use the **Undo** button to reset the contents of the **Statements** pane to the JCL statements that were originally generated. The **Undo** button is disabled unless and until you modify the JCL.
3. To export the JCL to either a z/OS data set or a local file, click **Export**. The **Export** window opens where you specify data set or file information.
4. To run the recovery job click **Run**. The recovery job is run and the results are returned in the Result window.

## RECOVER Utility Warning window

The **RECOVER Utility Warning** window alerts you that at least one step in the recovery plan uses the RECOVER utility.

Using the RECOVER utility in a recovery plan can result in inconsistent data because the RECOVER utility recovers to a point in time regardless if the point in time is a point of consistency for the object. This can cause inconsistent data because of changes that do not get incorporated. Those changes could have occurred after the point in time or occurred before the point in time but were eventually rolled back after the point in time.

You should attempt to recover to a point of consistency, if possible.

## Reviewing the recovery process results

The **Job Results** window displays the details of a recovery job. You can display all the results or specify that only the results from selected steps and DD statements display.

While the recovery job is running, a message displays its ongoing status on the **Messages** pane of the advisor window. When the submitted job completes, the status changes in the **Messages** pane to "Successful" or "Warning" if an error occurred.

A return code of 2 is an acceptable return code while running certain recovery plans. If the **Generate General Report** step of a recovery plan does not have anything to report because there were no inserts, deletes, or updates, then the step results in an RC=2. A return code of 2 is acceptable for the recovery plan DSN1COPY and redo SQL.

A return code of 4 can also be an acceptable return code while running certain recovery plans. A RC=4 can be acceptable for the following reasons:

- A recover utility completes and leaves the indexes in rebuild pending
- A LOAD-type recovery where the table space to be loaded is empty and the load commands include the RESUME keyword
- Redo or undo SQL statements are applied to tables containing duplicate rows, and you bypass the resulting +100 SQLCODE

1. Select the job that you want to display from the **Job** drop-down menu.
2. Select the step name that you want to display from the **Step name** drop-down menu or select **ALL** to view all steps in the job **Job Results** window.
3. Select the DD name that you want to display from the **DD name** drop-down menu or select **ALL** to view all DD's from the selected step in the **Job Results** window.
4. Click **Export** if you want to export the JCL to a z/OS data set or a local file. The **Export** window opens. Specify the export information and click **OK**. Control returns to the **Job Results** window.
5. When you have finished reviewing the job, click **Close** to close the window and return to the **Results** window.

## Recovering Db2 objects specified by pattern

Instead of explicitly selecting all of the objects to be recovered, you can instead specify name patterns to select a set of objects.

The recovery process is the same as for any Db2 object up to when the **Objects** window opens.

1. From the **Objects** window you drill down to the type of object you want, and then select **Pattern**. Click the **Include** button.

An **Add Pattern** window specific to the type of object selected displays.

2. On the **Add Pattern** window, you enter the pattern that you want and click **OK**.

The specified pattern is added to the list of selected objects, in the same way as explicitly specified objects.

**Important:** If you save a recovery specification which includes one or more patterns, the patterns are expanded each time the specification is used, at the time it is used (that is, the pattern is saved with the specification, not the list of matching objects of the pattern at the time it was created).

You can expand a selected pattern to see what objects it matches. The exact set of matching objects that will be recovered cannot be determined yet (because you have not yet selected a point in time), so a message displays explaining that this list is not necessarily the exact matching list. When you click **OK**, the **Objects** window shows the expanded pattern. You cannot deselect any of the expanded items - the pattern as a whole is selected for recovery.

3. Click **Next** when you are done adding objects.

The recovery process then proceeds the same as for any Db2 object.

## Recovering Db2 objects specified by Db2 Automation Tool profile

If Db2 Automation Tool is installed and profiles have been created, you can use those profiles to quickly select groups of administratively related objects for recovery when using the client/server interface.

### Note:

- Db2 Recovery Expert automatically includes RI related objects. This occurs regardless of the new Automation Tool setting to automatically include RI related objects.
- Even though Db2 Automation Tool can create many types of profiles, Db2 Recovery Expert can only recognize and use profiles that contain table spaces and indexes. For more information on using Db2 Automation Tool profiles, see the *Db2 Automation Tool User's Guide*.

The recovery process is the same as for any Db2 object up to when the Objects window opens.

1. The Available objects tree select **Object Profiles**.

Expand **Object Profiles** to display the defined Automation Tool profiles (subject to filtering, as with the other high-level element types). Select a profile and click the right arrow to select its contents for recovery.

This specifies that all of the table spaces and indexes in the profile should be recovered. This evaluation is performed at the time that the recovery JCL is generated, so that the most current contents of the profile are used if the contents change over time.

Additionally, you can expand a displayed profile to display its contents. This allows you to select only a subset of the profile for recovery, or to use the profile as a starting point to find the objects of interest for recovery (for example, by drilling down through a listed profile to its contents).

2. You can select additional profiles to recover, as well as any other supported type of object by selecting elsewhere in the Available objects tree.
3. Click **Next** when you are done adding objects.

The recovery process then proceeds the same as for any Db2 object.

## Restarting a failed job

If a recovery job submitted by Db2 Recovery Expert encounters an error, you can review the JCL and the output, make corrections as required, and resubmit the job.

The first indication you have of a failed job is a message displayed in the Messages pane of the main window with a status of *Failed*.

1. Select the message in the Messages pane and click **Open** or double-click the message to display the **Results** window.

2. Select the job you want to review and click **View**.

The **Recovery Job Results** window opens.

3. Determine why the job failed.

To determine why the job failed, you will most likely use:

- The Recovery Job Results
- The submitted JCL (click **View JCL**)
- Other external resources

The **Recovery Job Results** and the **Recovery JCL** windows can be open at the same time, and you can freely switch between the two or arrange them to be visible simultaneously to aid in determining why the job failed.

**Important:** If the generated JCL consisted of more than one job, the **Recovery JCL** window displays with a hierarchical tree structure that identifies the jobs individually.

4. Click **Restart**.

- If the generated JCL consisted of one job, the **View JCL** and **Recovery Job Results** windows close, and the job is submitted.
- If the generated JCL consisted of more than one job, the **Restart Recovery** window displays. You then select which jobs to rerun, and click **Run**. The **Restart Recovery**, **View JCL**, and **Recovery Job Results** windows all close and the jobs are submitted.

## Recovering dropped objects using the Db2 log

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The **Log Based Recovery Advisor** simplifies the recovery process for dropped objects by reading Db2 log records when recreating the object's image eliminating the need to update the schema level repository.

### Using the Log Based Recovery Advisor

This section provides an overview of the process for recovering one or more Db2 objects using the **Log Based Recovery Advisor**. The **Log Based Recovery Advisor** helps you build a job to recover one or more objects using the Db2 log records for recovery information.

1. Access the Db2 Recovery Expert web interface.

2. Click the **Log Based Recovery** tab from the main window of the web interface.

The **Welcome** window opens. This window presents an overview of the log based object recovery process.

3. Click **Next**.

The **Location** window opens. From this window you select the Db2 subsystem where the objects that are to be recovered reside.

4. Click **Next**.

The **Range** window opens. From this window you specify the date and time range within which Db2 Recovery Expert will search for dropped objects.

5. Click **Next**.

The **Objects** window opens. From this window you select the objects that you want to recover.

6. Click **Next**. The **Point in Time** window opens. From this window you choose the recovery point for the object or objects. You can select a recovery point from an object definition level or a recovery history event.
7. Click **Next**. The **Recovery Plan** window opens. From this window you can generate a list of all available recovery plans for an object and then choose to run the plan that is most advantageous. You can also choose to generate a single plan that will produce a job (JCL) containing the Data Definition Language (DDL) for the selected objects and all of their dependent objects.
8. Click **Next**.  
The **JCL** window opens displaying the JCL that will be used for the recovery job. From this window you can edit the JCL.
9. Click **Next** to run the job. When the job completes, the **Result** window opens and displays the results job.

## Opening the Log Based Recovery Advisor

The **Log Based Recovery Advisor** opens with a **Welcome** window.

1. Click the **Log Based Recovery** tab from the main page of the web interface. The **Welcome** window of the **Log Based Recovery Advisor** opens. This window presents an overview of the log based dropped object recovery process using this advisor.
2. The **Skip this Welcome page in the future** check box (which by default is not selected) allows you to suppress the display of the **Log Based Recovery Advisor Welcome** window in the future. This applies for new log based dropped objects settings only; when a saved specification is reopened, the **Welcome** window is always omitted.
3. On each window of the **Log Based Recovery Advisor**, you can use one or more of the following controls to navigate through the process:

### **Back**

Move back one window in the log based object recovery process.

### **Next**

Move ahead one window in the log based object recovery process.

### **Save**

Save the log based object recovery process and selections up to this point in a specification. A new window opens where you name and save the specification.

### **Close**

End the log analysis process without saving it and close the Log Based Recovery Advisor. All work and selections up to this point are lost.

### **Help**

Connect to the IBM Db2 Recovery Expert online help system.

4. After you have reviewed the information on the **Welcome** window, click **Next**. The **Location** window opens.

## Selecting the Db2 subsystem

You use the **Location** window of the **Log Based Recovery Advisor** to select the Db2 subsystem where the dropped object or objects that you want to recover reside.

The locations displayed on this window are discovered automatically through communication between the Db2 Recovery Expert server and all running database agents. If there are several attached agents, the discovery process may take some time.

The Db2 subsystems available for your use are fetched when the agent starts. To refresh this list, right-click anywhere in the **Locations** pane. A **Refresh Location** option appears that you can select to refresh the list of subsystems. Additionally, an administrator can use SDSF (System Display and Search facility) to issue a `/MODIFY <agent-job-name>,REFRESH TOPOLOGY` command after having started or stopped a Db2 subsystem.

1. Drill down to the Db2 subsystem that contains the objects that you want to recover by expanding the elements in the **Locations** pane. The locations presented are organized in different ways. If you think of the locations by physical organization (that is, what system, and then what subsystem on that system), you can drill down through the folder z/OS Systems. If you think of the locations in the abstract (that is, a simple list of subsystems), you can drill down through the folders z/OS Subsystems or z/OS Data Sharing Groups.
2. Select the Db2 subsystem. If a connection to that location has not yet been established during the Db2 Recovery Expert session, a connection is established now.
3. If this is the first time during the Db2 Recovery Expert session that you have selected this location, and if login information has not been previously stored, the **Database Login** window opens. Enter the login information and click **OK**.
4. The properties of the Db2 subsystem that you selected display in the **Properties** pane of the **Location** window.

Depending on the location that you selected, you might see only a portion of the properties listed below:

- Version
  - Mode
  - Highest log RBA
  - Subsystem ID
  - Active?
  - System restore
  - System services address space
  - Database services address space
  - Distributed data facility address space
  - IP address
  - IP address V6
  - Host name
  - Port number
  - Resync port number
  - Data sharing group attachment name
  - Data sharing group name
  - Data sharing member name
5. The status of the Db2 subsystem displays in the **Status** pane of the **Location** window. Depending on the Db2 subsystem that you selected, the status information that might be listed is:
    - Db2 restart RBA
    - Db2 restart time
    - Last checkpoint
    - Log copy 1
    - Log copy 2
    - Log high offloaded RBA
    - Log high written RBA
    - Number of logs awaiting offload
  6. Click **Next**. The **Range** window opens.

## Selecting a time range to search for dropped objects

From the **Range** window of the **Log Based Recovery Advisor** you specify the range within the Db2 log that will be searched to locate dropped objects.

1. Select one of the following radio buttons:
  - Select the **Preceding** radio button to indicate that you want to scan for dropped objects starting with the current time and go backwards through the log for a specified number of hours or minutes. In the first drop down box, specify a number for the hours or minutes that you want to go back. In the second drop down box, specify whether you want to go back using hours or minutes. By default the time range is set to **Preceding** by 1 hour using the local time. You can choose to use database time by setting this option in the Preferences window.
  - Select the **Date/Time from** radio button to specify the actual start and stop date and time that will be used to scan the log for dropped objects. Select the start time from the first drop down menu and select the end time from the second drop down menu.
  - Select the **Previously scanned log range from** radio button to select a time range that has been previously used. You can select the browse button to see a list of available time ranges. The Scanned Log Ranges window opens. From this window you select a previously scanned range. Click **OK**. Control returns to the **Range** window.
2. Check the **Use SYSLGRNX** check box to specify whether SYSLGRNX is used when determining the log files to read. In most cases, the SYSLGRNX directory tables are used to optimize selecting which log files must be read. Using these tables may add overhead to the analysis job, which in some situations can outweigh the savings that is gained by using SYSLGRNX. If you do not want to use SYSLGRNX, clear the check box.
3. Click **Next**. The **Objects** window of the **Log Based Recovery Wizard** opens.

## Selecting or deleting a previously scanned log range

The **Scanned Log Ranges** window displays the previously scanned log ranges that you can use to look for dropped objects.

A new scanned log range is created automatically each time a scan is initiated and completed from the **Range** window. When a user specifies either a preceding time or a date/time range on the **Range** window and clicks **Next**, a confirmation dialog is displayed. If the user clicks **OK** in the confirmation page, the scan for objects proceeds and a new, previously scanned log range is created. From the **Scanned Log Ranges** window you can select a previously scanned log range or you can delete a previously scanned log range.

1. Select a previously scanned log range from the list of available entries.
2. Once a scanned log range is selected you can:
  - Click the **OK** button to select the scanned log range. Control returns to the Range page.
  - Click the **Delete** button to remove the scanned log range from the list. The **Scanned Log Ranges** page remains open until you click either the **OK** button to select an existing range or the **Cancel** button. In either case, control then returns to the **Range** window.

## Selecting dropped objects for recovery

You use the **Objects** window of the **Log Based Recovery Advisor** to select the dropped objects that you want to recover.

The first time you expand each high level element in the list of available objects (for example, Storage Groups, Databases, Table Spaces), the number of matching objects is determined. If this number exceeds the threshold specified in user preferences, a filter dialog is displayed.

1. The **Available objects** list displays each of the dropped objects that were found in the Db2 log within the specified time range. The dropped objects are organized by object type. You drill down to the desired object and select it.

The objects appear in different colors to identify their locations:



**Black**

In both the repository and the Db2 catalog

**Blue**

In the Db2 catalog only

**Red**

In the repository only

2. In the **Available Objects** pane, you can also right-click a table space, a database, or a table partition node to display a menu with commands that you can use to change the display status. This gives you a convenient way to reset or check object statuses from within Db2 Recovery Expert. The available commands are **Display**, **Start**, and **Stop**. Selecting any of the options displays another dialog that allows you to perform the selected operation on the selected object.
3. To specify that all the objects in the **Available Objects** list are included for recovery, click **Include all**. All the objects display in the **Selected objects** list.
4. To recover a single object, drill down and select the object from the **Available Objects** list. When you select an object, its properties display in the **Properties** pane. The **Repository Status** field in the **Properties** pane also identifies the location of the object. Each of the properties that are listed vary by object type.
5. With the object selected, click the **Include** button to add the object to the list of objects to recover. The object displays in the **Selected objects** list. You can continue to add objects to the **Selected objects** list until you have selected all of the objects that you want to recover.  
To remove an object from the **Selected objects** list, click **Remove**. To remove all the objects from the list, click **Remove All**.
6. You can use the **Exclude** button to exclude a dropped object from a larger set of objects that are to be recovered. For example, if you choose to include all objects that are found in a database with the exception of one dependent object, then you would select the database using the **Include** button and then select one of the dependent database objects and using the **Exclude** button move it to the list of **Selected objects**.
7. You can use the **Filter** button to vary the display of objects as they appear in the **Available objects** list. The **Available objects** list displays the dropped objects organized by object type. This organizational scheme is consistent throughout the tree. To vary the objects displayed beneath each object type on any level, select the object type and press the **Filter** button. You can also open the object type filter window by right clicking on the object type and selecting **Create Filter**. A filter window opens where you specify the filter criteria.  
In addition you can modify and remove filters by right clicking on an object type and selecting from the menu either **Modify filter** or **Remove filter**. The available object types are as follows:

- Storage Groups
- Databases
- Table Spaces
- Tables
- Indexes
- Views
- Synonyms
- Aliases
- Data types
- Triggers
- Functions
- Stored Procedures
- Sequences
- Roles

- Plans
- Packages
- Global Variables
- Automation Tool Object Profiles

**Note:** Db2 Recovery Expert will not automatically recover a dropped related Table when recovering a dropped Trigger or dropped Data type. You must manually select related Tables for dropped object recovery.

8. You can define a pattern that will match multiple objects that will be selected for recovery at the time the recovery job is run. To define a pattern, select the node labeled **Pattern** under the type of object you wish to select and click the **Include** button. A popup window opens that is specific to the type of object that you selected. Specify the pattern and click **OK**. The object type pattern displays in the **Selected objects** list.

When you expand a pattern in the **Selected objects** list, you can see all matching objects that are found in the repository or currently exist in the Db2 subsystem.

**Important:** When you are selecting objects for recovery, remember that any recovery plan might include undo or redo SQL. You must ensure that there is a primary, or unique, key on the tables for which you are generating SQL; but the key cannot be a GENERATED ALWAYS column. Without a primary key, you might not get the desired results because of the inability to uniquely identify rows that were changed by the original SQL.

9. Click **Next**. The **Point in Time** window opens.

## Specifying recovery plan options

From the **Specify recovery options** window you specify the type of recovery that will be performed and the options that will be used to generate the recovery plans. Several sets of options are presented to you depending on the type of recovery that you want to perform.

1. Select the type of recovery:
  - To perform an in-place recovery, clear the **Generate DDL only** and **Generate Redirected Recovery** check boxes. An in-place recovery recovers an object to a target Db2 subsystem that is the same as the object's original source Db2 subsystem.
  - To perform an in-place DDL only recovery, check the **Generate DDL only** check box. An in-place DDL only recovery recovers only the DDL for the object to a target Db2 subsystem that is the same as the object's original source Db2 subsystem.
  - To perform a Redirected Recovery, check the **Generate Redirected Recovery** check box. A Redirected Recovery recovers an object to a target Db2 subsystem that is different from the object's original source Db2 subsystem.
  - To perform a DDL only Redirected Recovery, check the **Generate DDL only** and the **Generate Redirected Recovery** check boxes. A DDL only Redirected Recovery recovers only the DDL for an object to a target Db2 subsystem that is different from the object's original source Db2 subsystem.
2. If you are performing an in-place or a Redirected Recovery (not DDL-only), click the **General** tab and specify the following options:
  - Objects that are in a restricted state might require manual intervention to successfully recover without causing unwanted results. Specify what you want Db2 Recovery Expert to do if it encounters objects in a restricted state (for example, read-only objects or table spaces with COPY pending) by selecting one of the following radio buttons:
    - **Stop the recovery if objects in a restricted state are encountered.** This is the recommended option as well as the default.
    - **Proceed with the recovery, if possible, even if objects are in a restricted state.**
  - The Check Data utility checks table spaces for violations of referential and table check constraints and it reports information about the violations that it detects. The **Generate Check Data utility** check box is selected by default. If you do not want to check data during the recovery process then

you should turn this utility off by clearing the **Generate Check Data utility** check box. Checking the table space data will consume resources. Your recovery performance is improved if the Check Data utility is not running.

- Objects that have been selected for recovery may be related to additional objects as a result of referential integrity. Under **Include additional objects that are related to the selected one(s) via referential integrity**: Choose the **Yes** radio button to include the additional objects in the recovery; the **Relations only** radio button to create the relations but not include the related objects themselves in the recovery; or the **No** radio button to ignore related objects and relations.
  - The **LOAD from full IC** recovery plan may be used to recover many types of objects. If you want to use this plan to recover recreated tables, you must select the **Allow LOAD from full IC for recreated tables** check box. It should be noted that in some cases using this plan for recreated tables may fail.
  - The **Use workfiles for Undo/Redo SQL** option specifies whether workfiles are used when running Undo/Redo SQL recovery plans. Select the **Use workfiles for Undo/Redo SQL** check box to use workfiles. Clear the **Use workfiles for Undo/Redo SQL** check box to use 64 bit storage. Using workfiles may impact performance and should only be selected when scanning more than 500 Db2 logs for activity.
  - The **Ignore ALTER statements** option will ignore ALTER statements during recovery plan generation. Please use with caution: enabling it may cause invalid plans if ignored ALTER affects data row format or other parameters important for recovery (for example, ALTER TABLE ALTER COLUMN). On the other hand, it allows you to generate additional plans for some scenarios with other ALTER statements (for example, ALTER TABLE APPEND YES/NO) and avoid some Unrecoverable object errors.
  - The **Allow copies created for other versions to be used for recovery** option allows users to select an image copy that is different from the current image copy version and use that image copy for the recovery. Select the **Allow copies from previous versions** check box to allow the use of previous image copy versions.
  - The **Ignore unrecoverable objects** option specifies whether unrecoverable objects in a profile are ignored when generating recovery plans. Select the check box to generate recovery plans for all objects in the profile that are recoverable and ignore all objects in the profile that are unrecoverable. Clear the check box to indicate that if any objects in the profile are unrecoverable, then no recovery plans are generated and an error message listing the unrecoverable objects is issued.
  - The **Notify if Data Capture Changes enabled** option specifies whether a warning message is issued if Data Capture Changes is enabled on the table that is being recovered. Select the check to issue the message. Clear the check box to prevent the message from being issued.
  - The **Action for missing recovery resources** option specifies what action to take when a unrecoverable resource, such as a Db2 log or image copy, is detected. Specify **I** (Ignore) to prevent Db2 Recovery Expert from checking data sets for unrecoverable resources. Specify **W** (Warning) to continue recovery plan generation and issue a warning message for unrecoverable resources. Specify **E** (Error) to issue an error message for unrecoverable resources and exclude those resources from plan generation.
  - **Statistics Options** lets you select a check box, **Copy statistics** if you want to use a set of temporary data sets when copying statistics from a source object to the corresponding target objects. The statistics options are used to set the RTS Copy Utility data set allocation options.
3. Click the **Index Rebuild Options** tab to specify the maximum number of tablespaces that can be processed in a single Rebuild Index step. If you have more objects to recover in a plan/job, several consecutive steps will be generated. Specify 0 to disable the limit. The default is 30.
  4. If you are performing an in-place recovery, click the **RECOVER; COPY; Parallel Jobs; DDL Options; and Log Apply and Log Read** tabs to specify the recovery options. For **RECOVER**, the **Limit of objects per step** field is used to specify the maximum number of objects that can be processed in a single Recover utility step. If you have more objects to recover in a plan/job, several consecutive steps will be generated. Specify 0 to disable the limit. The default is 30.

5. If you are performing a Redirected Recovery, click the **COPY; Parallel Jobs; DDL Options; Log Apply and Log Read; Statistics Options;** and **Redirected Recovery** tabs to specify the recovery options.
6. If you are specifying a DDL only Redirected Recovery, click the **DDL Options** and **Redirected Recovery** tabs to specify the recovery options.
7. If you are performing a DDL only in-place recovery, click the **DDL Options** tab to specify the recovery options.
8. Click **OK**. The recovery plans are generated and control returns to the Recovery Plan window.

## Specifying recovery plan options for the RECOVER utility

You use the **RECOVER** page of the **Specify recovery options** notebook to specify the parameters that are used with the RECOVER utility.

Specify values for the following fields:

### Number of tape drives to allocate for objects processed in parallel (TAPEUNITS)

Select this option and provide a numeric value to set the number of tape drives to allocate for objects processed in parallel. The default value is 4.

### The site from which RECOVER should use image copies

Select this option and provide a site from which RECOVER should use image copies. The default value is *Subsystem default* which means however the subsystem is configured.

### Recover unchanged objects

Select this check box to include all changed and unchanged objects in the recovery. Clear the check box to exclude unchanged objects from the recovery. Excluding unchanged objects will save processing time during the recovery. The default value is to include all changed and unchanged objects.

## Specifying recovery plan options for the COPY utility

You use the **Copy** page of the **Specify recovery options** notebook to specify the parameters that are used with the COPY utility.

### Specify the parameters to use with the COPY utility

Select one of the following radio buttons to control whether or not Db2 Recovery Expert generates an image copy at the end of the recovery:

- Select the **Do not create image copies after recovery** radio button to bypass creating any image copies after recovery. This is the default selection.
- Select the **Copy table spaces only** radio button to create an image copy of only the table spaces after the recovery.
- Select the **Copy table spaces and indexes** radio button to create image copies of COPY YES indexes as well as of table spaces after the recovery.

If you selected either **Copy table spaces only** or **Copy table spaces and indexes** you must also specify the type of copies that you want to create. You can select one or more of the following:

- **Create local site primary copy**
- **Create local site backup copy**
- **Create recovery site primary copy**
- **Create recovery site backup copy**

### Number of tape drives to allocate for objects processed in parallel (TAPEUNITS)

Specify in this text box the number of tape drives to allocate for objects processed in parallel. The default value for TAPEUNITS is 4.

### Check pages for validity (CHECKPAGE)

Select this check box to verify that all pages are valid when using COPY.

### Use DFSMdss concurrent copy (CONCURRENT)

Select this check box to use DFSMdss concurrent copy.

### Automatic Image Copies

Select this check box to specify or update the options that are used to create the automatic image copies.

The **Update DSN Specification** button lets you to change or update the copy data set name template, using the following options:

- **Unit Type:** Specify a valid unit where the data set will be written.
- **Data Class:** If your site uses SMS to manage data sets, specify the SMS Data Class that should be used.
- **Storage Class:** If your site uses SMS to manage data sets, specify the SMS Storage that should be used.
- **Management Class:** If your site uses SMS to manage data sets, specify the SMS Management Class that should be used.
- **Work Storage Class:** If the work volume(s) specified are SMS-managed, specify an SMS storage class.

For **Work Volumes**, specify the work volumes to use during the creation of the image copies. You must specify at least one, up to a maximum of six volumes.

**Note:** If Db2 has striping on, you must use SMS managed work volumes.

The Tape specific parameters options are as follows:

- **Stack Copies on Tape:** Specify whether you want to stack image copies on a single tape when possible.
- **Tape Stack Limit:** If stacking image copies, enter the number of image copies that you want to stack on one tape before dismounting the tape.
- **Expiration Date:** Enter either the tape expiration date in YYYYDDD format, or the tape retention period in number of days.
- **Retention Period:** Enter either the tape expiration date in YYYYDDD format, or the tape retention period in number of days.
- **Maximum Tapes:** Specify the maximum number of tapes for each image copy.

### Specifying recovery plan options for running parallel jobs

Use the **Parallel Jobs** page of the **Specify recovery options** notebook to specify the options for running parallel jobs.

These options specify the number of parallel processing jobs that are allowed and the maximum number of concurrent jobs that can be submitted at any given time. Examples of utilities that can be run in parallel are recoveries to independent table space groups and DSN1COPY and RECOVER utilities.

**Tip:** If you do not want to run parallel jobs, set the number of parallel jobs requested to 0, then the entire recovery will use a single JOB.

Based on the information that you enter, Db2 Recovery Expert evaluates the objects that have been selected for recovery to determine if their recovery can be spread across several jobs. This allows multiple recovery jobs to be submitted at once. During the recovery process, the generated JCL has an initial JOB for status checks to prepare for recovery and DDL to recreate objects. The maximum number of requested JOBs follow to process independent groups of objects. Utilities that cannot run parallel are included in the final job.

**Note:** Db2 Recovery Expert performs an analysis to determine which utilities run in parallel and which do not.

To set the parallel utilities, enter a number in the following boxes:

#### Number of parallel jobs for data recovery

In this text box specify the maximum number of jobs in a parallel job group.

### **Specify maximum number of concurrent jobs**

In this text box specify the maximum number of jobs that the agent processes in parallel. This represents the maximum number of jobs that can run at any given point.

### **Specifying recovery plan DDL options**

The **DDL Options** page of the **Specify recovery options** notebook specifies the options that are used when generating just DDL for an object or set of objects. These options include those that effect whether authorization statements are generated, whether DDL is generated for specific object types, and the options that will control binding the DDL jobs.

The following options apply to authorizations:

#### **Grants**

Check this check box to generate authorization statements when recovering objects.

Using the **DDL Options** you control whether DDL will be generated for an object and the object's dependent objects. When generating DDL for an object, Db2 Recovery Expert generates recovery DDL for the selected object and all its lower level dependent objects. By not selecting an object type, you can inhibit the generation of DDL for those dependent objects of a specific object type. To control the generation of DDL select one or more of the following check boxes:

#### **Storage Groups**

Check this check box to generate DDL for **Storage Group** object types.

#### **Databases**

Check this check box to generate DDL for **Database** object types.

#### **Indexes**

Check this check box to generate DDL for **Index** object types.

#### **Aliases**

Check this check box to generate DDL for **Alias** object types.

#### **Functions**

Check this check box to generate DDL for **Function** object types.

#### **Synonyms**

Check this check box to generate DDL for **Synonym** object types.

#### **Sequences**

Check this check box to generate DDL for **Sequence** object types.

#### **Roles**

Check this check box to generate DDL for **Role** object types.

#### **Table Spaces**

Check this check box to generate DDL for **Tablespace** object types.

#### **Tables**

Check this check box to generate DDL for **Table** object types.

#### **Views**

Check this check box to generate DDL for **View** object types.

#### **DataTypes**

Check this check box to generate DDL for **Data Type** object types.

#### **Stored Procedures**

Check this check box to generate DDL for **Procedure** object types.

#### **Triggers**

Check this check box to generate DDL for **Trigger** object types.

#### **Sequence Aliases**

Check this check box to generate DDL for **Sequence Alias** object types.

#### **Global Variables**

Check this check box to generate DDL for **Global Variable** object types.

The following options apply to binding packages and plans:

### **Binds**

Check this check box to generate package or plan bind statements. Once checked, the supporting bind option become available.

### **Packages**

Select this radio button to indicate that bind statements are to be generated only for packages. This option is only available when the **Binds** check box is selected.

### **Packages and Plans**

Select this radio button to indicate that bind statements are to be generated for packages and plans. This option is only available when the **Binds** check box is selected. This option is only available when the **Binds** check box is selected.

### **Add**

Select this radio button to indicate that the named package does not exist, and that a new package is to be created. If the package already exists, execution stops, and a diagnostic error message is returned. This option is only available when the **Binds** check box is selected.

### **Replace**

Select this radio button to indicate that the existing package is to be replaced by a new one with the same package name and creator. This option is only available when the **Binds** check box is selected.

### **DBRM Library 1 – 4**

Specify the DBRM libraries to be used for the bind jobs. You can specify up to 4 DBRM libraries. This option is only available when the **Binds** check box is selected.

### **SQLID for DDL**

By default, the generated DDL for a recreated object uses the SQLID that was specified when the object was originally created. To override the default you can specify a different SQLID in the **SQLID for DDL** field and it will be used when generating the DDL for the recreated objects.

## **Specifying Log Read and Log Apply recovery options**

The **Log Read and Log Apply** page of the **Specify recovery options** notebook specifies the options that are used when generating Advanced Recovery or Redirected Recovery plans.

### **Log Reader Copy Preference**

Includes the LOG\_COPY\_PREFERENCE keyword in the syntax. Specifies the order in which the archive and active log lists in the BSDS are to be scanned when searching for a log to satisfy a need for log records. Scans the archive logs first and uses archive logs when the same range exists in an archive and active log. You will use the drag and drop function to change the scan order. Click on the archive or active log type and drag it to the new position for scanning.

### **Number of PARALLEL log read**

Specifies the number of parallel log read tasks that can run at the same time. Valid values are integers, 0-16. A value of 0 specifies that a maximum of 1 task per data sharing group member can run at the same time. A non-zero value specifies the number that is the maximum number of parallel tasks that can run at the same time. If there are more logs to read than the number of parallel tasks specified, a task to read the remaining logs is launched as soon as a running task finishes. This will occur until all necessary logs have been read.

### **Number of PARALLEL log apply**

Specifies the number of parallel log apply tasks that can run at the same time. Valid values are integers, 1-10. If a single GROUP(...) set is present in the control cards, the value in the **Number of PARALLEL log apply** field is used to break up the job into multiple GROUP(...) sets and start a log apply task for each set. Valid values are

- **1:** A single group starts a single log apply task.
- **2-10:** If there is a single GROUP(...) , the code will internally break down the SPACE(...) sets into a maximum of Number of PARALLEL log apply GROUP(...) sets and will start one log apply task per GROUP(...).

For example, if you specify a value of 10 and there are only 5 SPACE(...) sets, Db2 Recovery Expert divides the syntax into 5 GROUP(...) sets and 5 log apply tasks.

If you specify a value of 5 for Number of PARALLEL log apply, the number of spaces between the groups are divided evenly and then, if there are leftovers after attempting to divide them evenly among the allotted number of GROUP(...) sets, those leftovers go in the last GROUP(...) set. One log apply task is then generated for each GROUP(...) set.

### **Bypass SYSIBM.SYSLGRNX Proc**

Indicates whether reading the reading of SYSIBM.SYSLGRNX is bypassed and only the Db2 logs are read. A value of Y skips reading SYSIBM.SYSLGRNX and only reads the Db2 logs. A value of N does not skip reading SYSIBM.SYSLGRNX.

### **Continue on Errors**

Causes most errors to be ignored and the processing to continue. If this option is specified and errors higher than RC=4 are encountered, they will be overridden, a RC=4 will be reported, and the job will not fail. I/O errors and other serious issues (out-of-memory, for instance) will not be ignored and will still cause aborts.

### **Reuse VSAM Data Set**

Indicates whether a VSAM data set can be reused on WRITE\_TO\_VSAM or WRITE\_TO\_BOTH jobs. If Reuse VSAM Data Set is set to N (No), a VSAM data set is newly allocated (with new extent structure). If Reuse VSAM Data Set is set to Y (Yes), an existing VSAM data set will be reused (thus preserving the data set's size and extent structure). **Note:** If some of the recovered objects are encrypted (created with nonempty **KEYLABEL** keyword), the Reuse VSAM Data Set field must be set to N. You must have at least READ access to the STGADMIN . SMS . ALLOW . DATASET . ENCRYPT security profile in the FACILITY class is required; otherwise, the recovered data set will be created non-encrypted.

**Note:** Log Apply cannot be disabled for LBDR profiles, because Redirected Recovery of dropped objects is allowed only with Log Apply enabled. Additionally, for source and target SSIDs on different LPARs, Log Apply must be enabled.

## **Specifying statistics options**

The **Statistics Options** page of the **Specify recovery options** notebook specifies the statistics options that become active when the **Copy statistics** check box on the **General** tab is enabled. When the box is not checked, the fields on the **Statistics Options** page are grayed out.

### **Device type**

Specifies the device type that is used for the RTS utility temporary data sets.

### **Space unit**

Specifies the unit type for the primary and secondary quantity allocation.

### **Primary quantity**

Specifies the primary quantity that is used for the allocation of temporary data sets.

### **Secondary quantity**

Specifies the secondary quantity that is used for the allocation of temporary data sets.

### **SMS data class**

Specifies the SMS data class that is used for the allocation of temporary data sets.

### **SMS storage class**

Specifies the SMS storage class that is used for the allocation of temporary data sets.

### **SMS management class**

Specifies the SMS management class that is used for the allocation of temporary data sets.



## Specifying redirected recovery options

The **Redirected Recovery Options** page of the **Specify recovery options** notebook specifies the options that are used when generating plans to recover an object to a target Db2 subsystem that is different from the original source Db2 subsystem.

### Object Translation

You use the **Object Translation** fields to specify the new name for each object that is part of the redirected recovery. Click the **Add** icon to insert a row in the table. From the **Object Type** field, select the type of object that you are recovering. In the **Source Name** field specify the original name of the object that is being recovered. In the **Target Name** field specify the new name for the object that will be used on the target Db2 subsystem.

**Note:** If you are performing redirected recovery of an object across LPARS, the object is recovered on the different LPAR using the latest image copy of the source object. Any recovery information that is included in the data log is not applied.

### Single character wildcards

Specifies a string of up to 8 characters that can include the question mark "?" or underscore "\_" wildcard characters. The string is used to search for a match to values specified in the **Source Name** or **Target Name** fields. The wildcard character "?" or "\_" will match any single character. For example, if you enter the string ?xyz, it will match axyz, bxyz or cxyz. If you enter the string xyz\_, it will match xyza, xyzb, or xyzc.

### Arbitrary string wildcards

Specifies a string of up to 8 characters, that includes the asterisk "\*" or percent sign "%" wildcard characters. The string is used to search for a match to the values specified in the **Source Name** or **Target Name** fields. The wildcard character "\*" or "%" will match one or more characters. For example, if you enter the string \*xyz, it will match firstxyz, secondxyz or thirdxyz. If you enter the string xyz%, it will match xyzfirst, xyzsecond, or xyzthird.

### Recovery Method

Specifies whether Redirected Recovery should use the IBM RECOVER utility, Change Accumulation, or Both. Specify **Recover** to use only the RECOVER utility. If an object cannot be recovered by RECOVER, it will be marked as unrecoverable. Specify **Change Accumulation** to use only the Change Accumulation process (Advanced Recovery). This method has fewer restrictions than RECOVER. Specify **Both** to use any utility appropriate for an object. The RECOVER utility is preferred; if an object can be recovered by RECOVER, this utility will be used. Otherwise, Change Accumulation will be used. An object is marked as unrecoverable if neither method is suitable for the object. The default setting is **Both**. The RECOVER utility is available only for the Redirected Recovery to the same subsystem, so if the target subsystem is different from the source, the only available value for this field is **Change Accumulation**. The **Change Accumulation Options** settings are related only to the Change Accumulation method, so if **Recover** is specified, these options should not be used. **Note:** the **Recover** utility option may be not honored, if **Allow to use RECOVER for Redirected Recovery** is disabled at the subsystem level, in the **Log Read and Log Apply Defaults** panel (see ["Registering Db2 subsystems"](#) on page 206, which describes this panel). The **Allow to use RECOVER for Redirected Recovery** option should only be enabled after applying the corresponding Db2 APAR, PH27043.

### Log Apply

The **Log Apply** field indicates whether Log Apply and incremental copies will be used. If **Log Apply** is enabled (**Y**), Log Apply is performed and incremental copies are used. If not, recovered data will be taken only from the specified full image copy, not from logs or incremental copies.

### Detailed JCL Comments

Specifies whether generated jobs include detailed JCL comments describing the function of each job step. Select the check box to include comments.

### Sort Data Pages

Specifies whether to sort data pages during redirected recovery. By default, this is enabled. Deselecting this option is not recommended unless directed by IBM customer support.

### **SYSCOPY Scan Operating Mode**

Specifies which SYSCOPY rows to consider when finding a starting point for processing. Valid values are:

- **Zparm** (Default) Detects the operating mode Db2 is running under and automatically inserts the corresponding control card. This option omits the LOCAL\_SITE, RECOVER\_SITE, and IMAGE\_COPY\_PREFERENCE control cards and uses the value found in the ZPARMs on the Db2.
- **Local** Refers to the Local Primary and Local Backup rows to find a starting point for processing. Includes the LOCAL\_SITE keyword in the syntax.
- **Recover** Uses the Recovery Primary and Recovery Backup rows to find a starting point for processing. Includes the RECOVERY\_SITE keyword in the syntax.
- **User** Uses the user-specified scan preference defined in the **SYSCOPY Selection Preference** field to find a starting point for processing. Includes the IMAGE\_COPY\_PREFERENCE keyword in the syntax.

### **SYSCOPY Selection Preference**

Specifies the order in which the image copy types will be scanned in SYSCOPY for a starting point. This selection preference is only applied if the **SYSCOPY Scan Operating Mode** is set to **User**. You will use the drag and drop function to change the scan order. Click on the image copy type and drag it to the new position for scanning. The image copy types are:

- **Local Primary** Scans for Local Primary type image copies in SYSCOPY.
- **Local Backup** Scans for Local Backup type image copies in SYSCOPY.
- **Recovery Primary** Scans for Recovery Primary type image copies in SYSCOPY.
- **Recovery Backup** Scans for Recovery Backup type image copies in SYSCOPY.
- **Flash Copy** Uses Db2 Recovery Expert managed flash copy data sets in addition to Db2 V11 and higher flash copy data sets as image copy starting points in the processing.

**Note:** The following applies with the default order:

- Scans first for Local Primary type image copies, then for Local Backup type image copies. Local Primary type image copies are used when identically time-stamped SYSCOPY rows are detected.
- Allows the SYSCOPY scan program to pick an Recovery Backup if it comes up first while scanning SYSCOPY backwards for a starting point.

### **XML Options**

The XML options are used when performing redirected recovery of a table object that includes XML and the target system is part of a data sharing environment.

#### **XML jobs data set**

Specifies the name of a data set where the JCL for the jobs that are required to complete the redirected recovery of table objects with XML are stored as members.

**Note:** XML objects require an automatically generated sequence number for each row. The jobs generated to this data set update the Db2 catalog for consistency with the translated XML data that includes the automatically generated sequence numbers. After recovery completes, you must manually run the jobs that are included in this data set. These jobs will use the prefix specified in the **XML jobs member prefix** field and the SSID of the LPAR member in the data sharing environment. You must update the jobs with a SYSAFF card and run on the LPAR that matches the SSID in the job name.

#### **XML jobs member prefix**

Specifies the prefix that is used in the automatically generated names of each member added to the XML jobs data set. Following the prefix, the generated name includes the SSID.

#### **XML template data set**

Specifies the name of a data set where the common job template is stored as a member during the plan generation for the redirected recovery of a table object that includes XML.

#### **XML template member**

Specifies the name of the member that is added to the XML template data set.

## Selecting a recovery point

From the **Point in Time** window of the **Log Based Recovery Advisor** you can specify the point to which a dropped object or objects will be recovered. You can choose a specific time, a log RBA for a non-data sharing system, a LRSN for a data sharing system, a specific time and a log RBA for a non-data sharing system, or a specific time and an LRSN for a data sharing system.

1. Select one of the following radio buttons:

- Select the **Timestamp** radio button to specify a time value as the point to which the dropped objects will be recovered. You would select this option when you want to recover previous versions of the selected objects, or when data has become logically inconsistent and you can identify a prior timestamp when the data was consistent. If you choose this option, you will select a specific time using the date and time icon. You can also browse for recovery point options using the browse button.
- Select the **Log RBA** radio button to specify that an RBA from the log will be used as the point to which the dropped objects will be recovered. Select this option when data has become logically inconsistent and you can identify a prior log RBA when the data was consistent. If you choose this option, you will specify a specific RBA in the adjacent text box. You can also browse for RBA point options using the browse button. The **Log RBA** radio button is only available for non-data sharing systems.
- Select the **LRSN** radio button to specify that a LRSN will be used as the point to which the objects will be recovered. Select this option when data has become logically inconsistent and you can identify a prior LRSN when the data was consistent. If you choose this option, you can specify a specific LRSN in the adjacent text box. You can also browse for LRSN point options using the browse button. This option is only available for data sharing environments.
- Select the **Timestamp and Log RBA** radio button to specify that both time and RBA information are used to determine the point to which the objects are recovered. This option is selected by default for non-data sharing systems. If selected, the Db2 log is examined to discover whether a timestamp or RBA point is the latest and most advantageous recovery point that is available.
- Select the **Timestamp and LRSN** radio button to specify that both time and LRSN information are used to determine the point to which the objects are recovered. This option is selected by default for data sharing systems. If selected, the Db2 log is examined to discover whether a timestamp or a LRSN point is the latest and most advantageous recovery point that is available.

2. If you choose to use the browse button for help in selecting a timestamp value or a log RBA value:

- Click the browse button next to the **Timestamp** radio button to open the **Select Point in Time** window. From this window you can select a time value to which the dropped objects will be restored. You can choose from a list of available object level definitions or recovery history events. When control returns to the **Point in Time** page, the selected recovery point is displayed in the **Timestamp** text box.
- Click the browse button next to the **Log RBA** radio button to open the **Select Point in Time** window. From this window you can select the RBA to which the dropped objects will be restored. You can choose from a list of available object level definitions or recovery history events. When control returns to the **Point in Time** page, the selected recovery point is displayed in the **Log RBA** text box.
- Click the browse button next to the **LRSN** radio button to open the **Select Point in Time** window. From this window you can select the LRSN to which the dropped objects will be restored. You can choose from a list of available object level definitions or recovery history events. When control returns to the **Point in Time** page, the selected recovery point is displayed in the **LRSN** text box.

3. Click **Next**. The **Recovery Plan** page opens.

## Selecting a definition level or history event recovery point

From the **Select Point in Time** window of the **Log Based Recovery Advisor** you can select a recovery point from a list of previously discovered points. The types of recovery points from which you can select are object definition levels and recovery history events.

1. From the **Point in Time** window of the **Log Based Recovery Advisor** select the browse button to the right of the **Timestamp** radio button, the **Log RBA** radio button, or the **LRSN** radio button. The **Select Point in Time** window opens.
2. Select one of the following radio buttons:
  - **Object Definition Levels** - Select this radio button to choose an object definition level for a recovery point. A given object can have many versions over time. The versions are referred to as object definition levels. The available definition levels that can be used as a recovery point are listed in the **Levels** text box. **Object Definition levels** are not available for selection when using a log RBA recovery point.
  - **Recovery History Events** - Select this radio button to choose a history event for a recovery point. History events for any of the selected objects are listed from the SYSIBM.SYSCOPY table, the schema repository's SYSCOPY table, and the DLC.SYSCOPY\_V11 table (if present). The history events available to use as a recovery point are listed in the **Events** text box. You can show events that are not points of consistency. You use the **Show events that are not points of consistency** check box to control whether or not events that are not suitable points of consistency for recovery are shown (for example, other than quiesce events or SHRLEVEL NONE or SHRLEVEL REFERENCE image copies). By default, the check box is not selected, so only points of consistency are shown.
  - **Copy with Specific Data Set Name** – Select this radio button to specify the data set name of an image copy that is used for the recovery point. Specify the data set name in the **Data Set Name** field or use the **Find** button to search for the data set.
3. The number of elements listed in the **Levels** and **Events** text boxes is limited by the **Filter trigger** value specified on the **Limits** page of the **Preferences** notebook. If the number of elements to be listed exceeds this value, the **Point in Time Filter** window opens. From this window you can specify a timestamp range that will filter the elements that will be displayed.

You can also filter the items that are listed in the **Levels** text box or the **Events** text box at any time using the **Filter** button.
4. At any time, you can click the **Refresh** button to refresh the list of elements.
5. Click **OK**. Control returns to the **Point in Time** window.

## Converting a timestamp to an LRSN in batch

You can convert a timestamp to the LRSN in batch. The conversion takes into account the time zone, LRSN delta, and leap seconds.

The following is sample JCL for SARYSAMP(ARYLRSN):

```
//JOB STATEMENT
//*
//*
//*****
//* This member provides sample JCL for running the conversion of
//* a timestamp to LRSN. Time zone, LRSN delta, and leap seconds
//* are taken into account.
//*
//* CAUTION: THIS IS NEITHER A JCL PROCEDURE NOR A COMPLETE JOB.
//*
//* Before running this job, you will have to make the following
//* modifications:
//*
//* 1. Change the job statement to meet your system requirements.
//*
//* 2. Change the #SARYLOAD to the Recovery Expert load library.
//*
//* 3. Change #DB2PARMS to the product VSAM control file.
//*
//* 4. Change #SSID to the Db2 subsystem Id.
//*
```

```

/* 5. Specify appropriate control statements in DD:ARYOPT.
/*   TS YYYY-MM-DD-hh.mm.ss.nnnnnn is a timestamp to convert.
/*   TZ LOCAL or TZ GMT defines a time zone of a timestamp.
/*
/*****
/RUN      EXEC PGM=ARYBLRSN
//STEPLIB DD DISP=SHR,DSN=#SARYLOAD
//SYSPRINT DD SYSOUT=*
//SYSOUT  DD SYSOUT=*
//DB2PARMS DD DISP=SHR,DSN=#DB2PARMS
//ARYOPT  DD *
          SSID #SSID
          TS 2000-12-31-23.59.59.000000
          TZ LOCAL
/*
//ARYLRSN DD SYSOUT=*

```

In the above example:

- DB2PARMS DD is the product VSAM control file.
- SSID is the Db2 SSID.
- TS is the timestamp value, which will be converted to LRSN.
- TZ is the timezone, it has two values - LOCAL/GMT. If LOCAL is specified, then the timestamp will be modified using system GMT offset before all other operations.

If GMT is specified, then the timestamp will be processed as is.

## Generating dropped object recovery plans

From the **Recovery Plan** window of the **Log Based Recovery Advisor** you can generate all the possible recovery plans for the selected object and then choose to run the plan that is most advantageous.

### Note:

- If you are recovering a dropped object that is part of an implicit table space, Db2 Recovery Expert issues a warning during recovery plan generation to let you know the ZPARM parameter IMPDSEDEF must be set to YES before running the recovery job. This ZPARM parameter can be dynamically changed with the Db2 SET SYSPARM command.
- If you are recovering a set of objects to a prior version (existing objects must be dropped and then recreated) and one of the tables has the RESTRICT ON DROP clause active, you will have to alter that table to remove this restriction before running the recovery plan job. Upon completion of the recovery plan job you can reactivate the clause for the table.
  1. When the **Recovery Plan** window initially opens, the list of plans is empty. From the **Recovery Plan** window click the **Generate** button to generate a list of recovery plans.
  2. The recovery plans that are available for the object are listed in the **Plans** pane. When you select a plan, properties that estimate the cost of the plan are displayed in the **Properties** pane. The cost of running a recovery plan is calculated based on the size of the data sets and the method of recovery. Viewing the properties of each plan will help you choose the most efficient plan. You can modify the default values used for these estimates when customizing Db2 Recovery Expert during installation.
  3. You can expand each plan in the **Plans** pane to review its steps. When you select a step, descriptive properties for the step appear in the **Properties** pane.
  4. You can expand each step in the plan to display the objects that are included in the list. The properties for each object are displayed in the **Properties** pane.
  5. In addition to the recovery plans, the **Plans** pane includes a folder named **Recovered Objects**. This folder lists all the objects that will be recovered using the selected plan. If you set your preference to display recovery methods, each object within the **Recovered Objects** folder can be expanded and the possible recovery methods are listed.
  6. If you select a plan and click the **Validate** button, you can verify whether the conditions that applied when a plan was generated still apply. For example, checking for the existence of expected image copy data sets. The existence of expected Db2 objects is also checked to verify that objects that were dropped at the time of generation are still dropped and objects that existed still exist. This validation

is not a full simulation, that is, it is not a guarantee that the plan will run successfully. Some resources might appear to exist but actually do not, such as a cataloged tape that is not physically available, or you may not have authorization to access some resources. The message displayed upon successful validation makes it explicit that there is no guarantee of success.

7. After reviewing the recovery plans, select the one that you want to run and click **Next**. The **JCL Parameters** window opens where you can make changes to your default Job card information and specify a greater than 80 character line delimiter. Edit the Job card and click **OK**.
8. The **JCL** window opens displaying the JCL for the recovery job. From this window you can edit, export, or run the job.
9. Click the **Run** to run the JCL for the recovery plan.  
The results job is returned and listed in the **Result** window.
10. To view the results of the job, select the job from the **Jobs** pane and click the **View** button. The **Job Results** window opens displaying the job results.
11. To delete the job, select the job from the **Jobs** pane and click the **Delete** button.

## Reviewing the dropped object recovery plan JCL

From the **JCL** window of the **Log Based Recovery Advisor** you can view, edit, export or run the JCL that is generated for the dropped object recovery job.

1. The **JCL** window opens when you select **Next** from the **Recovery Plan** window.
2. From this window you can review the JCL for the recovery plan job. You can also edit the JCL in the window. You can use the **Undo** button to reset the contents of the **Statements** pane to the JCL statements that were originally generated. The **Undo** button is disabled unless and until you modify the JCL.
3. To export the JCL to either a z/OS data set or a local file, click **Export**. The **Export** window opens where you will specify data set or file information.
4. After reviewing and editing the dropped object recovery job JCL, click **Run** to run the recovery plan JCL. The results of the job are returned in the Result window.

## Selecting the dropped object recovery job for review

The **Result** window of the **Log Based Recovery Advisor** displays a list of completed dropped object recovery jobs.

1. To review the result details of a log analysis job, select a job from the list and click **View**.  
The **Log Based Recovery Job Results** window displays. From this window you can review the details of the job results. After reviewing, you will return to the **Results** window.
2. After returning from the **Log Based Recovery Job Results** window, you can choose another job from the list and review the result details.
3. To delete a job from the **Results** window, select the job from the **Jobs** list and click **Delete**.
4. To save your log based dropped object recovery process and information, click the **Save** button.

## Reviewing a dropped object recovery job results

The **Job Results** window displays the details of a dropped object recovery job. You can display all the results or specify that only the results from selected steps and DD statements display.

1. Select the job that you want to display from the **Job** drop-down menu.
2. Select the step name that you want to display from the **Step name** drop-down menu or select **ALL** to view all steps in the job **Log Analysis Job Results** window.
3. Select the DD name that you want to display from the **DD name** drop-down menu or select **ALL** to view all DD's from the selected step in the **Log Analysis Job Results** window.
4. Click **Export** if you want to export the JCL to a z/OS data set or a local file. The **Export** window opens. Specify the export information and click **OK**. Control returns to the **Job Results** window.

5. When you have finished reviewing the job, click **Close** to close the window and return to the **Results** window.

## Using the Transaction Recovery Advisor

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The Transaction Recovery Advisor guides you through the steps necessary to set up a job that can be used to undo the operations of one or more transactions.

The Transaction Recovery Advisor searches the Db2 log for the transaction that needs to be backed out using an extensive set of user defined filter criteria. The final job JCL includes the undo SQL that can be used to back out the transaction and restore the objects to the point in time before the transaction was applied.

### Opening the Transaction Recovery Advisor

Each advisor in the web interface opens with a Welcome window.

1. Click the **Transaction Recovery Advisor** tab from the main page of the web interface. The **Welcome** window of the **Transaction Recovery Advisor** opens. This window presents an overview of the transaction recovery process using this advisor.
2. The **Skip this Welcome page in the future** check box (which by default is not selected) allows you to suppress the display of the **Transaction Recovery Advisor Welcome** window in the future. This applies only for new transaction recovery specifications; when a saved specification is opened, the **Welcome** window is always omitted.
3. On each window of the **Transaction Recovery Advisor**, you can use one or more of the following controls to navigate through the process:

**Back**

Move back one window in the transaction recovery process.

**Next**

Move ahead one window in the transaction recovery process.

**Save**

Save the recovery process and selections up to this point in a specification. (This opens a new window for naming and saving the specification.)

**Close**

End the recovery process without saving it and close the **Transaction Recovery Advisor**. All work and selections up to this point are lost.

**Help**

Connect to the IBM Db2 Recovery Expert online help system.

4. After you have reviewed the information on the **Welcome** window, click **Next**. The **Location** window opens.

### Selecting the Db2 subsystem location

You use the **Location** window of the **Transaction Recovery Advisor** to select the Db2 subsystem where the Db2 log will be examined looking for the transaction or transactions that you want to back out.

The locations displayed on this window are discovered automatically through communication between the Db2 Recovery Expert server and all running database agents. If there are several attached agents, the discovery process can take time.

The Db2 subsystems available are fetched when the agent starts. To refresh this list, right-click anywhere in the **Locations** pane. A **Refresh Location** option appears that you can select to refresh the list of subsystems. Additionally, an administrator can use SDSF (System Display and Search facility) to issue a `/MODIFY <agent-job-name>,REFRESH TOPOLOGY` command after having started or stopped a Db2 subsystem.

1. Drill down to the Db2 subsystem that contains the transactions that you want to recover by expanding the elements in the **Locations** pane. The locations presented are organized in different ways. If you

think of the locations by physical organization (that is, what system, and then what subsystem is on that system), you can drill down through z/OS Systems. If you think of the locations in the abstract (that is, a simple list of subsystems), you can drill down through z/OS Subsystems or z/OS Data Sharing Groups.

2. Select the Db2 subsystem. The properties of the Db2 subsystem display in the **Properties** pane. Depending on the location that you selected, you might see only a portion of the properties listed below:

- Version
- Mode
- Highest log RBA
- Subsystem ID
- Active?
- System restore
- System services address space
- Database services address space
- Distributed data facility address space
- IP address
- IP address V6
- Host name
- Port number
- Resync port number
- Data sharing group attachment name
- Data sharing group name
- Data sharing member name

3. When you select a Db2 subsystem, the status of the Db2 subsystem displays in the **Status** pane. The status information that might be listed is:

- Db2 restart RBA
- Db2 restart time
- Last checkpoint
- Log copy 1
- Log copy 2
- Log high offloaded RBA
- Log high written RBA
- Number of logs awaiting offload

4. Click **Next**. If a connection to that location has not yet been established during the Db2 Recovery Expert session, a connection is established now.
5. If this is the first time during the Db2 Recovery Expert session that you have selected this location, and if login information has not been previously stored, the **Database Login** window displays. Enter the login information and click **OK**.
6. The **Filters** page opens.

## Selecting the transaction recovery range

From the **Filters** window of the **Transaction Recovery Advisor** you specify the parameters that define the range of time in the log that will be analyzed looking for the transaction(s) that you want to recover.

1. Select one of the following Log Range fields:



- Select the **Preceding** radio button to specify that the log range parameters will be a range of hours or minutes preceding the current time. Select the number of hours or minutes from the drop down boxes. By default the time range is set to **Preceding** by 1 hour using the local time. You can choose to use database time by setting this option in the Preferences window.
- Select the **Date/Time from** radio button to specify a specific date and time as the log range parameters. Use the drop down calendar to select a date and time for the beginning and ending range parameters.
- Select either the **Start/End RBA (URID)** radio button or the **Start/End LRSN** radio button and specify the values as follows:
  - Select **Start/End RBA (URID)** to specify a set of starting and ending RBA values to define the search range. RBAs are relative byte addresses of log records. The RBA values can be specified in full hexadecimal display format with a length of 12, such as 0001ACCDEF02, or with a length of 20, such as 000000000001ACCDEF02.

You can also search for a specific Unit of Recovery Identifiers (URID). URIDs are commonly referred to as RBAs (which is the more generic term). If you wish to filter on a single URID, the start RBA can be set equal to the URID, and the end RBA left as spaces. Only that specific URID will be reported on. For example, assume you specify the first URID = 001E668838B4 on a subsystem named D91A. The JCL generated will have a section as such:

```
//DATAIN DD *
  SSID =D91A
  START RBA =001E668838B4
  END RBA =000000000000
/*
```

**Note:** You cannot use RBAs or URIDs to define a range if your Db2 subsystem is part of a data sharing group. RBAs have no uniqueness in a data sharing context, so if you wish to use them in such an environment, you can only do so going against a specific member of the group, not the group as a whole. The **Data Sharing Mode** field should be set to **Y** when using RBAs or a URID as input and the Db2 subsystem should reflect a specific member, otherwise results are unpredictable and unsupported.

- Select **Start/End LRSN** to specify a set of starting and ending RBA values LRSN values that will be used to define the search range. LRSNs are log recording timestamps associated with log records. These values must be entered in full hexadecimal display format with a length of 12, such as B877232DEDD0, or with a length of 20, such as 00B877232DEDD0000000.
2. Clear the **Use SYSLGRNX** check box to specify that the SYSLGRNX directory tables should not be used to optimize which log files are read. Db2 Recovery Expert typically uses the SYSLGRNX directory tables to optimize which log files must be read. You may choose not to use SYSLGRNX if errors occur when trying to use it, or if the overhead of using it will likely outweigh the savings it provides.
  3. Without additional filtering all transactions that are found within the specified time range are selected for recovery. You can apply additional filtering using the **Additional filters** options.
  4. Click **Next**. The **Transactions** window opens.

## Selecting one or more transactions for recovery

From the Transactions window you select one or more transactions that you want to recover.

1. The Transactions/Operations pane lists each of the transactions that were found within the search range. To further filter the list of transactions you can apply a post filter. Click the **Post filters** add icon. The Add post filter window opens. Specify additional filtering using the **Post filter type** drop down menu. Depending on your selection you are prompted for additional values. Click **OK**.
2. The post filter that you specified is applied and listed in the Post filters pane. The list of transactions is refreshed.
3. You can see additional information about a transaction by clicking the expand arrow for the transaction. The additional information includes the transaction timestamp, the objects impacted by the transaction, the transaction creator and the operation(s) performed by the transaction.

4. Click on a transaction to select it for recovery. You cannot select all transactions automatically, but you can select the first transaction in a range, then press **SHIFT+Click** on the last one, to select a range of transactions, or use **CTRL+Click** to select individual transactions. When you have selected the transactions you want, click **Next**. The undo SQL for each transaction is generated.

## Reviewing the Undo SQL

From the **Undo SQL** window you can view the Undo SQL that has been generated to recover one or more transactions.

1. **Note:** The **Undo SQL** window is not intended for extensive editing. You can make minor modifications, such as removing unnecessary SQL statements or updating values in the generated Undo SQL. We do not recommend adding SQL beyond that generated by Db2 Recovery Expert here – the **Undo SQL** window is intended for making small changes to the generated SQL.

To edit the SQL, place your cursor in the text box and type the changes.

2. To reload the original undo SQL click the **Reload** button.
3. To save the undo SQL, click the **Save** button.
4. To undo your most recent edits, click the **Undo** button.
5. Click **Next** to generate the JCL for the transaction recovery job.

## Submitting the transaction recovery job

From the JCL window you can review, edit, or export the JCL that will be used to recover one or more transactions. If the JCL looks correct you can submit and run the job.

1. From this window you can review the JCL for the recovery plan job. You can also edit the JCL in the window. To edit the JCL, type your changes directly in the JCL window. You can use the **Undo** button to reset the contents of the **Statements** pane to the JCL statements that were originally generated. The **Undo** button is disabled unless and until you modify the JCL.
2. To export the JCL to either a z/OS data set or a local file, click **Export**. The **Export** window opens where you will specify data set or file information.
3. After reviewing and making any edits, click **Run** to run the recovery job. Results are returned in the Results window.

## Reviewing the transaction recovery job results

The **Transaction Recovery Results** window displays a list of the transaction recovery jobs that have been run. After selecting a specific job you can display all the results or specify that only the results from selected steps and DD statements display.

1. Select the job that you want to display from the **Jobs** drop-down menu. Click the **View** button. The Job Results window opens.
2. Select the step name that you want to display from the **Step name** drop-down menu or select **ALL** to view all steps in the job window.
3. Select the DD name that you want to display from the **DD name** drop-down menu or select **ALL** to view all DD's from the selected step in the job window.
4. To select a different job to view, select the job name that you want to display from the **Job** drop-down menu. The job results are refreshed.
5. Click **Export** to export the information. The **Export** window opens. Specify the export information and click **OK**. Control returns to the **Results** window.
6. When you have finished reviewing the job, click **Close** to close the window and return to the **Results** window.

## Searching the Db2 log to find object inactivity

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Using the Db2 Recovery Expert **Log Analysis Advisor** you can perform an analysis of the Db2 log to determine periods of time during which there is no activity for an object or set of objects. These quiet times can then be used for a recovery point.

### Using the Log Analysis Advisor

This section provides an overview on using the **Log Analysis Advisor**. The **Log Analysis Advisor** helps you build a job that can be run to find an object's quiet times.

1. Access the Db2 Recovery Expert web interface.
2. Click the **Log Analysis** tab from the main page of the web interface.  
The **Welcome** window opens. This window presents an overview of the log analysis process.
3. Click **Next**.  
The **Location** window opens. From this window you will select the Db2 subsystem whose log will be used for analysis.
4. Click **Next**.  
The **Range** window opens. From this window you will specify the date and time range that will be used for the analysis.
5. Click **Next**.  
The **Objects** window opens. From this window you will select the object or objects for which you want to discover periods of inactivity or quiet times.
6. Click **Next**.  
The **JCL** window opens. On this window, you can review the generated log analysis JCL. You also edit or customize the JCL. Any changes that you make to the JCL appear in italics with a different color.
7. Click **Run** to run the job.  
The job is submitted and runs at the server. The **JCL** window displays while the job is running and you can continue to wait, or save and close the specification (as with all long running tasks). When the job completes, a **Results** window opens and displays the results job.
8. Select the job and click **View** to display the **Log Analysis Job Results** window.  
From this window, you can export the entire job or the portion of the job that appears in the **Log Analysis Job Results** window.

### Opening the Log Analysis Advisor

Each of the advisors in the web interface opens with a Welcome window.

1. Click the **Log Analysis** tab from the main page of the web interface. The **Welcome** window of the **Log Analysis Advisor** opens. This window presents an overview of the log analysis process using this advisor.
2. The **Skip this Welcome page in the future** check box (which by default is not selected) allows you to suppress the display of the **Log Analysis Advisor Welcome** window in the future. This applies for new log analysis only; when a saved specification is reopened, the **Welcome** window is always omitted.
3. On each window of the **Log Analysis Advisor**, you can use one or more of the following controls to navigate through the process:
  - Back**  
Move back one window in the log analysis process.
  - Next**  
Move ahead one window in the log analysis process.
  - Save**  
Save the log analysis process and selections up to this point in a specification. (This opens a new window for naming and saving the specification.)

### Close

End the log analysis process without saving it and close the Log Analysis Advisor. All work and selections up to this point are lost.

### Help

Connect to the IBM Db2 Recovery Expert online help system.

4. After you have reviewed the information on the **Welcome** window, click **Next**. The **Location** window opens.

## Selecting the Db2 subsystem location

You use the **Location** window of the **Log Analysis Advisor** to select the Db2 subsystem where the object or objects that will be analyzed for inactivity reside.

The locations displayed on this window are discovered automatically through communication between the Db2 Recovery Expert server and all running database agents. If there are several attached agents, the discovery process can take a long time.

The Db2 subsystems available for log analysis are fetched when the agent starts. To refresh this list, right-click anywhere in the **Locations** pane. A **Refresh Location** option appears that you can select to refresh the list of subsystems. Additionally, an administrator can use SDSF (System Display and Search facility) to issue a `/MODIFY <agent-job-name>,REFRESH TOPOLOGY` command after having started or stopped a Db2 subsystem.

1. Drill down to the Db2 subsystem that contains the objects that you want to analyze by expanding the elements in the **Locations** pane. The locations presented are organized in different ways. If you think of the locations by physical organization (that is, what system, and then what subsystem is on that system), you can drill down through z/OS Systems. If you think of the locations in the abstract (that is, a simple list of subsystems), you can drill down through z/OS Subsystems or z/OS Data Sharing Groups.
2. Select the Db2 subsystem. The properties of the Db2 subsystem display in the **Properties** pane. Depending on the location that you selected, you might see only a portion of the properties listed below:
  - Version
  - Mode
  - Highest log RBA
  - Subsystem ID
  - Active?
  - System restore
  - System services address space
  - Database services address space
  - Distributed data facility address space
  - IP address
  - IP address V6
  - Host name
  - Port number
  - Resync port number
  - Data sharing group attachment name
  - Data sharing group name
  - Data sharing member name
3. When you select a Db2 subsystem, the status of the Db2 subsystem displays in the **Status** pane. The status information that might be listed is:

- Db2 restart RBA
  - Db2 restart time
  - Last checkpoint
  - Log copy 1
  - Log copy 2
  - Log high offloaded RBA
  - Log high written RBA
  - Number of logs awaiting offload
4. Click **Next**. If a connection to that location has not yet been established during the Db2 Recovery Expert session, a connection is established now.
  5. If this is the first time during the Db2 Recovery Expert session that you have selected this location, and if login information has not been previously stored, the **Database Login** window displays. Enter the login information and click **OK**.
  6. The **Range of log data** page opens.

## Selecting the log analysis range

From the **Range** window of the **Log Analysis Advisor** you specify the parameters that define the range of time in the log that will be analyzed for object inactivity.

1. Specify the log range parameters in one of the following ways:
  - Select the **Preceding** radio button to specify that the log range parameters will be a range of hours or minutes preceding the current time. Select the number of hours or minutes from the drop down boxes. By default the time range is set to **Preceding** by 1 hour using the local time. You can choose to use database time by setting this option in the Preferences window.
  - Select the **Date/Time from** radio button to specify a specific date and time as the log range parameters. Use the calendar icons to select a date and time for the beginning and ending range parameters.
  - Select the **Previously scanned log range from** radio button to choose a time range that was previously defined. Click the browse button to the right to open the Scanned Log Ranges window. Select the log range that you want use. Click OK.
2. Clear the **Use SYSLGRNX** check box to specify that the SYSLGRNX directory tables should not be used to optimize which log files are read. Db2 Recovery Expert typically uses the SYSLGRNX directory tables to optimize which log files must be read. You may choose not to use SYSLGRNX if errors occur when trying to use it, or if the overhead of using it will likely outweigh the savings it provides.
3. Use the arrows in the **Minimum quiet time** box to specify the minimum duration of a quiet time for it to be included in the output. This may reduce the amount of quiet time information that is saved. By default, this is set to 00:02:00 (two minutes).
4. After you select a range of log data, click **Next**. The **Objects** window opens.

## Selecting objects for analysis

You use the **Objects** window of the **Log Analysis Advisor** to specify the objects for which you want to find quiet times in the database logs.

The first time you expand each high level element in the list of available objects (for example, Storage Groups, Databases, Table Spaces), the number of matching objects is determined. If this number exceeds the threshold specified in user preferences, a filter window is displayed.

1. The **Available objects** list displays the objects that reside on the selected Db2 database. The objects are organized by object type. You drill down to the desired object and select it.

The objects appear in different colors to identify their locations:

### **Black**

In both the repository and the Db2 catalog

## Blue

In the Db2 catalog only

## Red

In the repository only

2. In the **Available Objects** pane, you can also right-click a table space, a database, or a table partition node to display a menu with commands that you can use to change the display status. This gives you a convenient way to reset or check object statuses from within Db2 Recovery Expert. The available commands are **Display**, **Start**, and **Stop**. Selecting any of the options displays another window that allows you to perform the selected operation on the selected object.
3. When you select an object, its properties display in the **Properties** pane. The **Repository Status** field in the **Properties** pane also identifies an object's location. Each of the properties that are listed vary by object type.
4. Click the **Include** button to add the object to the list of objects to analyze. The object appears in the **Selected objects** list. You can continue to add objects to the **Selected objects** list until you have selected all of the objects that you want to be included in the log analysis.  
To remove an object from the **Selected objects** list, click the **Remove** button. To remove all the objects from the list, click the **Remove All** button.
5. You can use the **Exclude** button to exclude an object from a larger set of objects that are to be analyzed. For example, if you choose to include all objects that are found in a database with the exception of one dependent object, then you would select the database using the **Include** button and then select one of the dependent database objects and using the **Exclude** button move it to the **Selected objects** list.
6. You can use the **Filter** button to vary the display of objects as they appear in the **Available objects** list. The **Available objects** list displays the objects organized by object type. This organizational scheme is consistent throughout the tree. To vary the objects displayed beneath each object type on any level, select the object type and press the **Filter** button. You can also open the object type filter window by right clicking on the object type and selecting **Create Filter** from the menu. A filter window opens where you can specify the filter criteria.

In addition you modify and remove filters by right clicking on an object type and selecting from the menu either **Modify filter** or **Remove filter** . The available object types are as follows:

- Storage Groups
- Databases
- Table Spaces
- Tables
- Indexes
- Views
- Synonyms
- Aliases
- Data types
- Triggers
- Functions
- Stored Procedures
- Sequences
- Roles
- Plans
- Packages
- Global Variables
- Automation Tool Object Profiles

7. You can define a pattern that will match multiple objects that will be selected for recovery at the time the recovery job is run. To define a pattern, select the node labeled **Pattern** under the type of object you wish to select and click the **Include** button. A popup window opens, specific to the type of object that you selected. Specify the pattern and click **OK**. The object type pattern will appear in the **Selected objects** list.

When you expand a pattern in the **Selected objects** list, you will see all matching objects that are found in the repository or currently exist in the Db2 subsystem.

8. Click **Next**. The **JCL** window opens.

## Submitting JCL for a log analysis

From the **JCL** window of the **Log Analysis Advisor** you can view, edit, run, and export the JCL that is generated for the log analysis job.

**Important:** For you to access output data sets from the jobs that are submitted, those data sets must be defined as SYSOUT data sets using a SYSOUT class that specifies the output should be "held". Db2 Recovery Expert generates output data sets to //DDNAME DD SYSOUT=\*. This causes the SYSOUT class specified by the MSGCLASS parameter to be used on the job card. Db2 Recovery Expert includes MSGCLASS=H on the default job card that it generates (H is usually used for held output, though your site can be different). If you customize or modify the job cards for the generated jobs, you must specify a SYSOUT class which causes the output to be held.

1. The **JCL** window opens displaying the JCL that will be used to run the log analysis job.
2. You should review the JCL. If necessary you can edit the JCL in the window. You can use the **Find** button to locate a string of text in the JCL. You can use the **Undo** button to reset the contents of the **Statements** pane to the JCL statements that were originally generated. The **Undo** button is disabled unless and until you modify the JCL.
3. To export the JCL to either a z/OS data set or a local file, click **Export**. The **Export** window opens where you will specify data set or file information.
4. When you are ready to submit the job, click **Run** to run the job.

**Note:** If you make any changes to the JCL and click **Run** or **Export**, a popup window opens to ask if you want to save your changes. From here, you

- Click **Yes** to save your changes and continue with your request.
  - Click **No** to run the job or export your JCL without saving your changes.
  - Click **Cancel** to abort the request without saving your changes.
5. The JCL window displays while the log analysis job is running. During this time, you can continue to wait, cancel, or save and close the specification (as with all long running tasks) as follows:
    - Click **Save** to save the process and selections up to this point in a specification.
    - Click **Close** to end the process without saving. The advisor closes and all work and selections up to this point are lost.
    - Click **Cancel** to the JCL job that you submitted.
  6. After the log analysis job runs, the **Results** window opens displaying a list of the log analysis jobs that have completed.

## Selecting the log analysis job for review

The **Results** window of the **Log Analysis Advisor** displays a list of completed log analysis jobs.

1. To review the result details of a log analysis job, select a job from the list and click **View**.  
The **Log Analysis Job Results** window displays. From this window you may review the details of the job results. After reviewing you will return to the **Results** window.
2. After returning from the **Log Analysis Job Results** window, you may choose another job from the list and review the result details.
3. To delete a job from the **Results** window, select the job from the **Jobs** list and click **Delete**.

4. To save your log analysis process and information, click the **Save** button.

## Reviewing a log analysis job results

The **Log Analysis Job Results** window displays the details of a log analysis job. You can display all the results or specify that only the results from selected steps and DD statements display.

The quiet times that are discovered as a result of running the job are recorded in the quiet time tables and available to be used as recovery points.

1. Select the job that you want to display from the **Job** drop-down menu.
2. Select the step name that you want to display from the **Step name** drop-down menu or select **ALL** to view all steps in the job **Log Analysis Job Results** window.
3. Select the DD name that you want to display from the **DD name** drop-down menu or select **ALL** to view all DD's from the selected step in the **Log Analysis Job Results** window.
4. Click **Export** to export the information. The **Export** window opens. Specify the export information and click **OK**. Control returns to the **Log Analysis Job Results** window.
5. When you have finished reviewing the job, click **Close** to close the window and return to the **Results** window.

## Restoring a Db2 subsystem

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The **System Restore Advisor** helps you to restore a Db2 subsystem from a system-level backup created using the Db2 Recovery Expert ISPF interface.

### Preparing to restore a Db2 subsystem

Db2 Recovery Expert maintains a list of valid system level backups that you may choose from in the event you need to restore a Db2 subsystem. When you restore a subsystem through the System Restore Advisor, you may be restoring data and logs or data only. The type of restore depends on the type of system level backup that was created and whether Db2 Recovery Expert detected mixed data during the backup.

Mixed data occurs when Db2 Recovery Expert detects, while creating the system level backup, that your Db2 data and logs are located on the same volumes. If this happens, Db2 Recovery Expert still makes the backup, but if you choose this backup as a recovery point, you must restore both the data and the logs.

There are three types of system level backups that may be created by Db2 Recovery Expert and used to restore a Db2 subsystem:

- If the system level backup was a data only backup, you can restore the data only so long as Db2 Recovery Expert did not detect mixed data.
- If the system level backup was a data and log backup, you can restore both data and logs, or you can choose to restore data only as long as Db2 Recovery Expert did not detect mixed data during the backup.
- If the logs were not mixed in with the data, you can restore the data volumes to the backup point, and then apply logs to bring it up to current or any point after the backup time. This point can be an RBA for non-data sharing, or a timestamp or LRSN for data sharing.

Db2 Recovery Expert can keep track of timestamps and their associated RBAs with the RBA Capture utility. You can use this feature to easily select a recovery point related to a particular time of day. The RBA Capture utility is optionally installed and configured when you customize Db2 Recovery Expert. The utility must run as a started task in each LPAR where you want to capture data.



## Using the System Restore Advisor

This section provides an overview of the process for recovering a single Db2 subsystem using the System Restore Advisor.

As you progress through the System Restore Advisor, you can save your work and return to it later for any subsystem that is not currently being restored. Click **Save** at the bottom of any window in the advisor to save your work. This differs from the Recovery Advisor, the Log Based Recovery Advisor, and the Log Analysis Advisor where the work in progress is automatically saved at the target SSID.

1. Access the Db2 Recovery Expert web interface and click the **System Restore** tab from the main page of the web interface.  
The **Welcome** window of the **System Restore Advisor** opens. The **Welcome** window gives an overview of the advisor.
2. Click **Next**.  
The **Location** window opens. The **Location** window displays the available Db2 subsystems that you can restore. Select a subsystem from the list.
3. Click **Next**.  
The **Backups** window opens. The **Backups** window displays a list of the valid system level backups that can be used to recover the Db2 subsystem that you selected. On the **Backups** window, select a recovery point from the list of system level backups.
4. Click **Next**  
The **Options** window opens. From the **Options** window you select the type of restore that you will perform. You can choose to restore both data and logs; or only data.
5. Click **Next**.  
The **JCL** window opens. From the **JCL** window you can view, edit, export, or run the JCL for the restore job. You should review the JCL statements, make any necessary changes, then click **Run** to run the system restore job.
6. When the job completes, the system restore job is returned and listed in the **Results** window. Select the job and click the **View** button to view the details of the system restore job. Select the **Delete** button to delete the job results.
7. When you have finished reviewing the results, click **Close**. You return to the **Results** window, where you can choose to save or delete the results job.

## Opening the System Restore Advisor

The **System Restore Advisor** opens with a **Welcome** window.

1. Click the **System Restore** tab from the main page of the web interface. The **Welcome** window of the **System Restore Advisor** opens. This window presents an overview of the Db2 subsystem restore process using this advisor.
2. The **Skip this Welcome page in the future** check box (which by default is not selected) allows you to suppress the display of the **System Restore Advisor Welcome** window in the future. This applies for new system restore settings only; when a saved specification is reopened, the **Welcome** window is always omitted.
3. On each window of the **System Restore Advisor**, you can use one or more of the following controls to navigate through the process:

### **Back**

Move back one window in the system restore process.

### **Next**

Move ahead one window in the system restore process.

### **Save**

Save the system restore process and selections up to this point in a specification. (This opens a new window for naming and saving the specification.)

### Close

End the system restore process without saving it and close the **System Restore Advisor**. All work and selections up to this point are lost.

### Help

Connect to the IBM Db2 Recovery Expert online help system.

4. After you have reviewed the information on the **Welcome** window, click **Next**. The **Location** window opens.

## Selecting the Db2 subsystem

From the **Location** window of the **System Restore Advisor** you will select the Db2 subsystem on which you want to perform a system restore.

The locations displayed on this window are discovered automatically through communication between the Db2 Recovery Expert server and all running database agents. If there are several attached agents, the discovery process can take time.

The Db2 subsystems available for recovery are fetched when the agent starts. To refresh the list of subsystems, right-click anywhere in the **Locations** pane and select the **Refresh Location** button. Additionally, an administrator can use SDSF (System Display and Search facility) to issue a `/MODIFY <agent-job-name>,REFRESH TOPOLOGY` command after having started or stopped a Db2 subsystem.

1. Only those subsystems that have an associated backup are displayed in the **Locations** pane. Drill down to the Db2 subsystem that you want to recover by expanding the elements in the **Locations** pane. The locations presented are organized in different ways. If you think of the locations by physical organization (that is, what system, and then what subsystem on that system), you can drill down through z/OS Systems. If you think of the locations in the abstract (that is, a simple list of subsystems), you can drill down through z/OS Subsystems or z/OS Data Sharing Groups.
2. Select the Db2 subsystem. The properties of the Db2 subsystem display in the **Properties** pane. Depending on the location that you selected, you might see only a portion of the properties listed below:
  - Version
  - Mode
  - Highest log RBA
  - Subsystem ID
  - Active?
  - System restore
  - System services address space
  - Database services address space
  - Distributed data facility address space
  - IP address
  - IP address V6
  - Host name
  - Port number
  - Resync port number
  - Data sharing group attachment name
  - Data sharing group name
  - Data sharing member name
3. When you select a Db2 subsystem, the status of the Db2 subsystem displays in the **Status** pane. The status information that might be listed is:
  - Db2 restart RBA

- Db2 restart time
  - Last checkpoint
  - Log copy 1
  - Log copy 2
  - Log high offloaded RBA
  - Log high written RBA
  - Number of logs awaiting offload
4. Click **Next**. If a connection to that location has not yet been established during the Db2 Recovery Expert session, a connection is established now.
  5. If this is the first time during the Db2 Recovery Expert session that you have selected this location, and if login information has not been previously stored, the **Database Login** window displays. Enter the login information and click **OK**.
  6. The **Backups** page opens.

## Selecting a recovery point

The **Backups** window of the **System Restore Advisor** displays a list of the valid recovery points for the Db2 subsystem that you have selected for recovery.

Only valid system level backups are listed in the **Backups** pane. If a backup failed and cannot be used to restore the Db2 subsystem, it does not appear on this window. You can use the **Refresh** button at any time to see if a new system level backup has been created while you are using the **System Restore Advisor**. This regenerates the list of backups that are available to you for the system restore.

1. Select a backup recovery point from the list of available system level backups.

When you select a recovery point, the properties are retrieved and displayed in the **Properties** pane. The following is a list of possible properties:

### Date/Time

The date and the time the backup was taken in *yyyy-mm-dd-hh:mm:ss* format.

### Data Only

This field contains true if the backup profile specified a data only backup. In this case, only the volumes that contained Db2 table spaces or index spaces were backed up.

### Mixed Data

This field contains true if Db2 Recovery Expert detected log data sets on the same volume(s) as the data. If this value is true, Db2 Recovery Expert must restore both the logs and the data.

### On Disk

This field contains true if this backup is still on disk. If true, the restore will be accomplished using the backup on disk.

### On Offload

This field contains true if the backup has been offloaded using Db2 Recovery Expert's offload process (see "Creating backup profiles"). If the **On Disk** field contains false, the restore will be accomplished using the offloaded backup.

### Type

The type of backup: dss, snap, db2-backup, flash-copy, BCV.

### Number Volumes

The number of volumes that were backed up.

### Run by Userid

The TSO user ID of the executor of the backup job.

### Profile Name

The profile name used to create the backup.

### Profile Creator

The TSO user ID of the profile creator.

**Generation Number**

The generation number for this backup.

**Job Name**

The backup job name.

**Job Number**

The backup job number.

**RBA/LRSN**

The RBA or LRSN of the backup if restoring both logs and data. This is the point in time in which the subsystem was backed up.

2. (Optional) Click **View Details** to open the **Backup Details** window. This window contains the **Backup Summary Report** and the **Backup Volume Detail Report** for the selected recovery point.

**Note:** If the backup was offloaded, the **Backup Details** window also contains the **Volume Offload Report** and **Backup Details**.

3. (Optional) Click **Offload** to open the **Offload JCL** window. From this window, you can **Run** or **Export** the JCL statements.

**Note:** The offload process will copy the process from disk to tape. The backup profile that was used to create this system level backup must have offload options specified in order to create the offload JCL.

4. (Optional) Click **Delete** to delete the backup. A popup window opens to confirm that you want to delete the selected backup. Click **Yes** to delete the backup or **No** to cancel the task and return to the **Backups** window.

**Note:** If you delete a backup from the list, refresh the list before proceeding to the next screen.

5. After you select a recovery point, click **Next**.

The **Options** window opens.

## Selecting the type of restore to perform

From the **Options** window of the **System Restore Advisor**, you choose whether the system restore will include both data and logs; or only data.

Your choice in this window is dependent on the system level backup that you selected in the **Backups** window. If you selected a backup that was configured to backup both data and logs, then you can choose to restore only the data, or you can choose to restore the data and the logs. If the backup was configured for data only, you can only choose to restore the data. In either case, when you choose to restore data only, you must also select either a RBA recovery point if your Db2 subsystem is a non-data sharing environment or a LRSN recovery point if your Db2 subsystem is a data sharing environment.

1. Select one of the following **Options** radio buttons:
  - Click **Restore data and logs** radio button to restore both data and logs from the backup.
  - Click **Restore data only** radio button to restore only data from the backup. The **Recover to RBA/LRSN** text box becomes available. If you are restoring data only, you must also select an RBA or LRSN recovery point. Click the browse button next to the **Recover to RBA/LRSN** text box to select a RBA or LRSN recovery point. The **Select Time/RBA** window opens. From this window you select a RBA recovery point if your Db2 subsystem is a non-data sharing environment or an LRSN recovery point if your Db2 subsystem is a data sharing environment. Click **OK**. Control returns to the **Options** window.
2. Click **Next**.

The **JCL** window opens.

## Selecting a RBA or LRSN recovery point

From the **Select Time/RBA** window you will start the process of selecting a RBA or LRSN recovery point that can be used when performing a data only system restore.

If the Db2 subsystem that you are restoring is a non-data sharing environment than you will be able to select a RBA as the recovery point that can be used when restoring the Db2 system. The RBA recovery points available for selection are discovered by the Db2 Recovery Expert RBA Capture utility. RBA recovery points are only available if the RBA Capture utility was installed and configured during the customization of Db2 Recovery Expert. In addition, the RBA Capture utility must be running as a started task in each LPAR for which it will be collecting data.

If the Db2 subsystem that you are restoring is a data sharing environment than you will be able to select a LRSN as the recovery point that can be used when restoring the Db2 system. The LRSN recovery point is calculated based on a date and time value that you submit.

1. Select the **Recover to RBA/LRSN** browse button on the **Options** window. The **Select Time/ RBA information** window opens.
2. If the Db2 subsystem that you are restoring is a non-data sharing environment, the **RBA Capture utility** radio button is selected. You can check one or more of the following check boxes to control the content that is displayed in the next window that opens:
  - **Display timestamp / RBA captured data**
  - **Display archive logs times / RBAs**
  - **Display checkpoint times / RBAs**
3. If the Db2 subsystem that you are restoring is a data sharing environment, the **Timestamp to Db2 LRSN utility** radio button is selected.
4. Click **OK**. Depending on your selection, the **Subsystem Timestamp/RBA** window or the **Timestamp to LRSN Conversion Utility window** opens.
5. After you have selected the RBA or LRSN recovery point, your selection information is placed in the **Recover to RBA/LRSN** text box. Click **OK**. The **JCL** window opens.

## Selecting a RBA recovery point

The **Subsystem Timestamp/RBA** window displays the RBA values that can be used as a recovery point.

The RBA Capture utility tracks and stores timestamps and their associated RBAs in a VSAM repository. Based on the backup that you selected, this window displays all the RBAs captured from the date and time of the backup to either the current point in time or to the date and time of the next backup that was taken.

1. Open the **Subsystem Timestamp/RBA** window by selecting **Recover to RBA/LRSN** from the **Select Time/RBA information** window.
2. If you selected the **Display timestamp / RBA captured data** check box from the **Select Time/RBA information** window, the **Captured timestamp/RBA** pane displays the timestamps and associated RBAs captured at the specified intervals while the Db2 subsystem was active. It contains the following columns:

### Active

Yes indicates the subsystem was active at that timestamp.

### Log Timestamp

This is the store clock time at which Db2 Recovery Expert captured the RBA. The first timestamp captured probably will not be at an exact minute boundary, because the first RBA is captured at the time the task is started. However, successive timestamps should be on minute boundaries (such as 22:24:00.00).

### Log RBA

The log RBA captured at the store clock time.

### Log LRSN

The log LRSN captured at the store clock time.

### Log Bytes

The number of bytes that have been added to the log since the previous interval; blank if no changes have been made to the log.

**Tip:** If Log Bytes is blank, this represents a quiet time for the subsystem and therefore might be a good recovery point for that subsystem.

3. If you selected the **Display archive logs times / RBAs** check box from the **Select Time/RBA information** window, the **Archive log records** pane displays the timestamps and the RBAs and/or LRSNs at the start and end of the archive logs. It contains the following columns:

#### Start timestamp

The start timestamps for the RBAs at the start of the archive logs.

#### End timestamp

The end timestamp for the RBAs at the end of the archive logs.

#### Start RBA

The log RBA captured at the start of the store clock time.

#### End RBA

The log RBA captured at the end of the store clock time.

#### Start LRSN

The log LRSN captured at the start of the store clock time.

#### End LRSN

The log LRSN captured at the end of the store clock time.

4. If you selected the **Display checkpoint times / RBAs** check box from the **Select Time/RBA information** window, the **Check point records** pane displays the timestamps and associated log RBAs recorded as start and end checkpoints. It contains the following columns:

#### Start timestamp

The start timestamps for the RBAs at the start of the archive logs.

#### End timestamp

The end timestamp for the RBAs at the end of the archive logs.

#### Start RBA

The log RBA captured at the start of the store clock time.

#### End RBA

The log RBA captured at the end of the store clock time.

#### Start LRSN

The log LRSN captured at the start of the store clock time.

#### Checkpoint type

The type of checkpoint.

5. Select the RBA that you want to use as a recovery point.
6. Click **OK**. The log RBA of the selected row is copied into the **Recover to RBA/LRSN** text field on the **Select Time/RBA information** window.

## Converting a timestamp to a LRSN recovery point

On the **Timestamp to LRSN Conversion Utility** window, you specify the time zone, date, and time that Db2 Recovery Expert will use to generate a LRSN recovery point.

This feature may be used for data sharing subsystems when you are restoring data only, it is not available for non-data sharing locations.

1. From the **Timestamp is in** drop down menu select the time zone.
2. Enter a date in the format *year-month-day* in the **Date** text box.
3. Enter the time in the format *hh:mm:ss* in the **Time** text box. Example: 18.37.29
4. Click **Convert**. Db2 Recovery Expert determines the appropriate restore LRSN based on the timestamp and places the result value in the **Generated LRSN** field.

5. Click **OK** to return to the **Options** window. The generated LRSN is copied into the **Recover RBA/LRSN** text field on the **Options** window.

## Submitting JCL for a data only system restore

This section describes the JCL window of the **System Restore Advisor** when you are performing a data only restore of the Db2 subsystem.

The JCL used for a data only restore is different than the JCL that is generated for a data and log system restore. For a data only restore Db2 Recovery Expert generates three serial jobs that will be run to restore the Db2 subsystem. The three jobs include a conditional restart job, a restore system job, and a log restore job. The job called **Conditional Restart** contains the SYSPITR keyword to specify the restoration point. The job called **Restore System** restores all of the data volumes to the recovery point. The job called **Log Apply** restores the logs to the specified RBA/LRSN using the RESTORE SYSTEM LOGONLY utility.

You can edit the JCL of each job before running the job group. The JCL can then be submitted for execution or exported to either a z/OS data set or a local file.

**Note:** You must have installation SYSADM authority to perform these steps, because Db2 restarts in ACCESS (MAINT) mode during this procedure.

1. The **Statements** pane in the JCL window displays a folder named **Serial Job Group** that contains the three jobs that will be used for the system restore. Click on each job listed in the serial job group folder and the JCL for that job displays. For each job, review the JCL, and make any changes. You can use the **Find** button to find strings of text in the JCL statements. You can use the **Undo** button to reset the contents of the **Statements** window to the JCL statements that were originally generated by Db2 Recovery Expert. Undo is not available unless you modify the JCL.
2. At any time you can click the **Export** button to export the JCL to a z/OS data set or a local file. The **Export** window opens. Specify the data set or file name. Click **OK**. Control returns to the **JCL** window.
3. After you have reviewed each job in the job group, click **Run** to run the job group.  
If you make any changes to the JCL and click **Run** or **Export**, a popup window opens to ask if you want to save your changes. Select one of the following responses:
  - Click **Yes** to save your changes and continue with your request.
  - Click **No** to run the job or export your JCL without saving your changes.
  - Click **Cancel** to abort the request without saving your changes.
4. The first two serial jobs, *ARYJOB1* and *ARYJOB2*, run. These jobs stop the Db2 subsystem that you selected to restore and then invoke the Db2 Recovery Expert system restore job.  
**Note:** For a data sharing subsystem, each member of the group must be manually stopped and started.
5. Before the final job runs, Db2 Recovery Expert generates a Reply Y for a WTOR message. A response of Y is required to complete the final job and is automatically generated by the agent. The related WTOR appears in the **Messages** pane of the web interface window. The final serial job *ARYJOB3* runs.
6. After the restore job runs, the **Review System Restore Job Results** window displays.
7. Stop Db2 and restart it normally.

## Submitting JCL for a data and logs system restore

This section describes the **JCL** window of the **System Restore Advisor** when you are performing a data and logs restore of the Db2 subsystem.

The JCL used for a data and logs restore is different than the JCL that is generated for a data only system restore. For a data and logs restore Db2 Recovery Expert generates a single job. The JCL for this job displays when the window opens. You can edit, run, or export the JCL to a z/OS data set or a local file.

To edit, run or export the JCL:

1. Review the JCL and make any changes by editing the text in the **Statements** pane. You can use the **Find** button to locate a string of text within the JCL. You can use the **Undo** button to reset the JCL

to the JCL statements that were originally generated by Db2 Recovery Expert. **Undo** is not available unless you modify the JCL.

2. At any time you can click the **Export** button to export the JCL to a z/OS data set or a local file. The **Export** window opens. Specify the data set or file name. Click **OK**. Control returns to the **JCL** window.
3. After reviewing the JCL statements, click **Run** to run the job.  
If you make any changes to the JCL and click **Run** or **Export**, a popup window opens to ask if you want to save your changes. Select one of the following responses:
  - Click **Yes** to save your changes and continue with your request.
  - Click **No** to run the job or export your JCL without saving your changes.
  - Click **Cancel** to abort the request without saving your changes.
4. When the job completes, the **Results** window opens.

## Selecting the system restore job for review

The **Results** window of the **System Restore Advisor** displays a list of completed system restore jobs.

To select a system restore job for review:

1. To review the result details of a system restore job, select a job from the list and click **View**.  
The **System Restore Job Results** window displays. From this window you may review the details of the job results. After reviewing, you will return to the **Results** window.
2. After returning from the **System Restore Job Results** window, you can choose another job from the list and review the result details.
3. To delete a job from the **Results** windows, select the job from the **Jobs** list and click **Delete**.
4. To save your system restore process and information, click the **Save** button.

## Reviewing a system restore job results

The **System Restore Job Results** window displays the details of a system restore job. You can display all the results or specify that only the results from selected steps and DD statements display.

To view the details of the job:

1. Select the job that you want to display from the **Job** drop-down menu.
2. Select the step name that you want to display from the **Step name** drop-down menu or select **ALL** to view all steps in the job **System Restore Job Results** window.
3. Select the DD name that you want to display from the **DD name** drop-down menu or select **ALL** to view all DD's from the selected step in the **System restore Job Results** window.
4. Click **Export** if you want to export the JCL to a z/OS data set or a local file. The **Export** window opens. specify the export information and click **OK**. Control returns to the **System Restore Job Results** window.
5. When you have finished reviewing the job, click **Close** to close the window and return to the **Results** window.

## Restarting a failed restore job

If a restore job submitted by Db2 Recovery Expert encounters an error, you can review the JCL and the output, make corrections as required, and resubmit the job.

The first indication you have of a failed job is a message displayed in the Messages pane of the main window with a status of *Failed*.

1. Select the message in the Messages pane and click **Open** or double-click the message to display the **Results** window.
2. Select the job you want to review and click **View**.  
The **System Restore Job Results** window opens.



### 3. Determine why the job failed.

To determine why the job failed, you will most likely use:

- The System Restore Job Results
- The submitted JCL (click **View JCL**)
- Other external resources

The **System Restore Job Results** and the **System Restore JCL** windows can be open at the same time, and you can freely switch between the two or arrange them to be visible simultaneously to aid in determining why the job failed.

**Important:** If the generated JCL consisted of more than one job, the **System Restore JCL** window displays with a hierarchical tree structure that identifies the jobs individually.

### 4. Click **Restart**.

- If the generated JCL consisted of one job, the **System Restore JCL** and **System Restore Job Results** windows close, and the job is submitted.
- If the generated JCL consisted of more than one job, the **Restart Restore** window displays. You then select which jobs to rerun, and click **Run**. The **Restart Restore**, **System Restore JCL**, and **System Restore Job Results** windows all close and the jobs are submitted.

The **Submit JCL** window of the specification displays, just as when you initially ran the System Restore.

## System restore JCL (review results) window

If any of the jobs in the job group have failed, or were not run, the View JCL dialog includes a **Restart** button to restart selected jobs after optionally changing the JCL. Clicking the **Restart** button brings up a dialog that displays all of the jobs in the job group with the failed/not run jobs automatically selected.

The following fields and controls are available:

### Jobs panel

The jobs panel shows the jobs that ran for the system restore. In the case of a data only restore, you see three serial jobs generated: conditional restart, restore system, and log apply. If you ran a data and logs restore, the job panel does not appear, and you only see the job in the Statements window.

### Statements

In this panel, you can review and edit the JCL. If you ran a data and logs restore, there is only one job and the JCL appears in this window. If you ran a data only restore, there are three different sets of JCL. Select a job from the Jobs panel to review and edit the JCL.

### Restart

Restarts the failed job (or jobs). This button only appears when the system restore resulted in one or more failed/not run jobs.

### Run

Runs the job again. This button only appears if the job ran successfully.

### Export

Exports the results to a data set or local file.

### Close

Closes the window.

### Find

Locate a string of text.

### Undo

Reset the contents of the window to the JCL statements that were originally run by Db2 Recovery Expert. Undo is not available unless you modify the JCL.

## Restart System Restore window

The **Restart System Restore** window displays all of the jobs in the job group with the failed/not run jobs automatically selected. When you click **Run**, only the selected jobs run.

The following fields and controls are available:

### Jobs

This panel shows all of the job for the system restore. Failed/not run jobs are automatically selected. Click the check boxes to the left of the jobs to select or deselect the jobs to be run.

### Run

Runs the selected Jobs.

### Cancel

Cancels the action and closes the Restart System Restore window.

## Recovering Db2 objects using LDRM

---

You can recover the Db2 objects from Dell snapshots using the LDRM utility. LDRM is a customized tool used to recover data sets on a granular level for IBM z/OS operating systems.

## Configuring LDRM

To recover a Db2 object, you must first configure and enable the LDRM utility by specifying values for the following LDRM variables:

- **Use snapshots for recovery:** Enter Y to enable the LDRM usage. Default value is N.
- **Load library 1, 2 :** Enter the load library name that contains the LDRM modules.
- **Parmlib data set:** Specify the data set with LDRM parameters. Parmlib is the library of parameters.
- **Parmlib members suffix:** Specify the suffix of the parameter member names.
- **VDG name:** Enter the Versioned Data Group (VDG) name.
- **New HLQ:** Specify the HLQ that is used for the temporary data sets restored by LDRM.
- **EMC load library:** Enter the load library names for the Dell modules.

**Note:** This variable is displayed only on the Subsystem parameters panel when you choose to configure LDRM using ISPF.

You can configure the LDRM variables with one of the following options:

### Tools customizer (TCz):

1. Launch the Tools customizer.
2. Enter E on the main menu to open the Db2 Parameters panel.
3. Enter the values for the LDRM variables in the Db2 Parameters panel.

```

TCUSTMZR          DB2 Parameters: DB2 Recovery Expert          10:34:20
Command ==>>>                                         Scroll ==>> HALF

Ensure that values are specified for the required DB2 parameters. Press End
to save and exit.

Commands: SAVE  VERIFYOFF

More:  -

Work file SMS data class . . . . .
SYSPRINT SMS data class . . . . .
Minilog SMS data class . . . . .
Work file SMS storage class . . . . .
SYSPRINT SMS storage class . . . . .
Minilog SMS storage class . . . . .
Work file SMS management class . . . . .
SYSPRINT SMS management class . . . . .
Minilog SMS management class . . . . .
*Sort work unit device . . . . . SYSALLDA
Sort work number of DDs . . . . . 3
Sort work primary space . . . . . 20
Sort work secondary space . . . . . 1
Utility REGION size . . . . . 0
XML Template Dataset Name
DB2TOOL.ARY320.XMLTEMP
XML Template Member Name . . . . . TEMPXML
XML Jobs Dataset Name . DB2TOOL.ARY320.XMLJOBS
XML Jobs Prefix Name . . . . . ARYX

Recovery Expert LDRM variables
*Use snapsets for recovery . . . . . N (Y, N)
Load library 1 . . . . .
Load library 2 . . . . .
Parmlib data set . . . . .
Parmlib members suffix . . . . .
VDG name . . . . .
New HLQ . . . . .

```

4. Press End to save the changes and exit.

**ISPF:**

1. On the Db2 Recovery Expert main menu, enter 0 in the command line to select Administration. The Administration menu is displayed.
2. Enter 2 to select Register Db2 Subsystems.
3. Enter 4 to open the Subsystem parameters panel.
4. Enter the values for the LDRM variables in the Subsystem parameters panel.

```

RCVYXPRT V3R2 ----- Subsystem parameters ----- 2023/05/08
Command ==>>>

General options:
Use DB2 System Catalog Only ==> N (Yes/No)
Case Sensitive Object Translation ==> Y (Yes/No)
Allow restart of recoveries ==> N (Yes/No)

Template options:
Template Data Set Name ==>
Template Member Name ==>

Template names:
Local Primary IC ==> COPYLP
Local Backup IC ==> COPYLB
Remote Primary IC ==> COPYRP
Remote Backup IC ==> COPYRB

LDRM options:
Use Snapsets For Recovery ==> Y (Yes/No)

Load Library 1 ==> RSQA.LDRM.DB2.LOAD
Load Library 2 ==>
EMC Load Library ==> RSRTE.EMC.MFE.LINKLIB
Parmlib Data Set ==> RSQA.LDRM.DB2.PARMLIB
Parmlib Member Suffix ==> 301
VDG Name ==> DB2_VDG
New HLQ ==> ARY1

```

5. Press End to save the changes and exit.

## **Using a snapshot for recovery**

After the LDRM configuration, the snapshots are displayed as recovery points in the Recovery History Events Selection panel. By default, the snapshot which is closest to the current time is used for the object recovery.

1. On the Recovery History Events Selection panel, select a timestamp.

```

RCVYXPRT V3R2 ----- Recovery History Events Selection -----
2023/05/08 06:23:19
Command
===>
Scroll ==> HALF

Line Commands: S - Select
-----
Creator: TS6077 Name: DEMO SSID: NB1A
Allow TOCOPY recovery for SHRLEVEL CHANGE copies: Y (Yes/No)
Show non-consistent points: N (Yes/No)
Start Timestamp 2023-03-15-09.56.19 End Timestamp *
-----
----- Row 1 of 29 >
Timestamp Start Database Space Space Type Sec Share DSNUM File Dev
Data Set Name RBA Type Type Seq
Type or SLB profile
2023-05-08-06.21.10 0
DB2_VDG.....231280621U001
2023-05-08-06.20.43 0
DB2_VDG.....231280621C001
2023-05-08-06.10.42 0
DB2_VDG.....231280611C001
2023-05-08-06.00.42 0
DB2_VDG.....231280601C001
2023-05-08-05.50.42 0
DB2_VDG.....231280551C001
2023-05-08-05.40.41 0
DB2_VDG.....231280541C001
2023-05-08-05.30.42 0
DB2_VDG.....231280531C001
2023-05-08-05.20.42 0
DB2_VDG.....231280521C001
2023-05-08-05.10.43 0
DB2_VDG.....231280511C001
2023-05-08-05.00.41 0
DB2_VDG.....231280501C001
2023-05-08-04.50.43 0
DB2_VDG.....231280451C001
2023-05-08-04.40.43 0
DB2_VDG.....231280441C001
2023-05-08-04.30.43 0
DB2_VDG.....231280431C001
2023-05-08-04.20.43 0
DB2_VDG.....231280421C001
2023-05-08-04.10.43 0
DB2_VDG.....231280411C001
2023-05-08-04.00.43 0
DB2_VDG.....231280401C001
2023-05-08-03.50.44 0
DB2_VDG.....231280351C001
2023-05-08-03.40.45 0
DB2_VDG.....231280341C001
2023-05-08-03.30.43 0
DB2_VDG.....231280331C001
2023-05-08-03.20.44 0
DB2_VDG.....231280321C001
2023-05-08-03.10.45 0
DB2_VDG.....231280311C001
2023-05-08-03.00.45 0
DB2_VDG.....231280301C001
2023-05-08-02.50.44 0
DB2_VDG.....231280251C001
2023-05-08-02.40.44 0
DB2_VDG.....231280241C001
2023-05-08-02.30.43 0
DB2_VDG.....231280231C001
2023-04-06-10.42.14 00000000002750B5736 D6DEMOM D6DEMOX I Q W 0
0 D6DEMOM.D6DEMOX
2023-04-06-10.42.14 00000000002750B5736 D6DEMOM D6DEMOS T Q W 0
0 D6DEMOM.D6DEMOS
2023-04-06-10.41.38 00000000002750AA05E D6DEMOM D6DEMOX I Q W 0
0 D6DEMOM.D6DEMOX
2023-04-06-10.41.38 00000000002750AA05E D6DEMOM D6DEMOS T Q W 0
0 D6DEMOM.D6DEMOS
*****

```

The Generate Recovery Plans panel is displayed.

```
RCVYXPRT V3R2 ----- Generate Recovery Plans
----- 2023/05/09 09:27:42
Command
==>
```

```
-----
Creator: TS6077 Name: DEMO SSID: NB1A
-----
```

```
Update Recovery Options ==> N
(Yes/No)
```

```
Redirected Recovery ==> Y (Yes/No/
Update)
Generation Method ==> 0 (Online/
Batch)
```

```
Choose the desired recovery point. You can enter a timestamp or RBA/
LRSN
here or enter "Y" for 'Select Recovery point' to display a selection
list
of possible recovery
points.
```

```
Recovery Point ==> 3 (1-Last IC, 2-RBA/LRSN, 3-
Timestamp)
Recovery RBA/LRSN
==>
```

```
Recovery Timestamp ==> 2023 - 05 - 08 - 06 : 21 : 10 :
000000
```

```
Select Recovery Point ==> N (Yes/No)
```

2. Press Enter. The Recovery Plans panel is displayed.

```
RCVYXPRT V3R2 ----- Recovery Plans ----- 2023/05/08 06:29:16
Command ==> Scroll ==>
HALF

Line Commands: V - Validate P - Properties D - Details B - Build JCL
-----
Creator: TS6077 Name: DEMO SSID: NB1A
----- Row 1
of 5
Plan Name Cost
Using RECOVER with BACKOUT 0.59
Using RECOVER 0.73
Using DSN1COPY and RECOVER LOGONLY 4.60
Using undo SQL 50.70
Recovered Objects n/a
```

3. Select the recovery plan: **Using DSN1COPY and RECOVER LOGONLY**.

To view the recovery plan details, press D for the plan name. The details such as Tablespace Partition and Index Partition of the snapshot are displayed.

```

RCVYXPRT V3R2 ----- Recovery Plan Details ----- 2023/05/08
06:30:03
Command ==>
Scroll ==> HALF

Line Commands: P - Properties

Plan Name: Using DSN1COPY and RECOVER LOGONLY
-----
Creator: TS6077   Name: DEMO                               SSID: NB1A
-----
85  -+
-----
Tablespace D6DEMOD.D6DEMOS
Tablespace partition D6DEMOD.D6DEMOS.1
Snapset DB2_VDG.....231280625U00168
Tablespace partition D6DEMOD.D6DEMOS.2
Snapset DB2_VDG.....231280625U00168
Tablespace partition D6DEMOD.D6DEMOS.3
Snapset DB2_VDG.....231280625U00168
Index TS6077.D6DEMOX
Index Partition TS6077.D6DEMOX.1
Snapset DB2_VDG.....231280625U00168
Index Partition TS6077.D6DEMOX.2
Snapset DB2_VDG.....231280625U00168
Index Partition TS6077.D6DEMOX.3
Snapset DB2_VDG.....231280625U00168

```

4. To build the JCL, press B against the plan name. This JCL recovers the Db2 objects using temporary data sets created by the LDRM utility.

## LDRM data set recovery

When you run a JCL, it creates a temporary data set using the snapsets.

### Example: Creating a temporary dataset using the snapset

```

//*****
//* LDRM Data set Recovery Request *
//*****
//LREC0005 EXEC PGM=LDRMREQ,COND=(4,LT),PARM=(E,
// 'NB1A.DSNDBC.S6000D00.S6000X00.I0001.A001',
// 'DB2_VDG.....230961000U00824',
// ARY1,301)
//STEPLIB DD DISP=SHR,DSN=RSQA.LDRM.DB2.LOAD
// DD DISP=SHR,DSN=RSRTE.EMC.MFE.LINKLIB
//LDRMPARM DD DISP=SHR,DSN=RSQA.LDRM.DB2.PARMLIB
//SYSOUT DD SYSOUT=*
//LDRPRINT DD SYSOUT=*

```

## The DSN1COPY utility

The DSN1COPY utility uses the temporary data set for recovery.

```

//*****
//* DSN1COPY Utility *
//*****
//DCPY0005 EXEC PGM=DSN1COPY,PARM=(PAGESIZE(4K)),
// COND=(4,LT)
//STEPLIB DD DISP=SHR,DSN=NB1A.SDSNEXIT
// DD DISP=SHR,DSN=DSN.VC10.SDSNLOAD
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD DISP=SHR,DSN=ARY1.DSNDBC.S6000D00.S6000X00.I0001.A001
//SYSUT2 DD DISP=SHR,DSN=NB1A.DSNDBC.S6000D00.S6000X00.I0001.A001

```

## Releasing the temporary data set

```
//*****  
//* LDRM Destage Request *  
//*****  
//LDST0005 EXEC PGM=LDRMDEQ,COND=(4,LT),  
// PARM=(E,'ARY1.DSNDBC.S6000D00.S6000X00.I0001.A001',301)  
//STEPLIB DD DISP=SHR,DSN=RSQA.LDRM.DB2.LOAD  
// DD DISP=SHR,DSN=RSRTE.EMC.MFE.LINKLIB  
//LDRMPARM DD DISP=SHR,DSN=RSQA.LDRM.DB2.PARMLIB  
//SYSOUT DD SYSOUT=*  
//LDRPRINT DD SYSOUT=*
```

## Limitations

- You cannot recover the dropped objects, XML, and LOB objects using the LDRM utility.
- LDRM does not support redirected recovery, and parallel recovery.



## Chapter 10. Recovery utilities

Recovery Expert uses a number of utilities in the recovery JCL.

### Removing entries from the schema level repository (SLR)

Periodically you should remove, or clean, entries from the schema level repository (SLR). In general, SLR entries should be kept as long as a recovery resource (archive log, image copy) is available.

You must run a batch job to clean and remove entries from the SLR. This job may be generated by the ISPF UI, as follows:

#### 0. Administration

#### 9. SLR Cleanup

```
RCVYXPRT V3R2 ----- Build SLR Cleanup Job ----- 2020/10/05 14:32:59
Command ==>
-----
DB2 Subsystem ID ?      (? for subsystem list)
-----
More:      +
Select whether all records that are older than the specified time are to be
deleted or all records that fall within a period prior to the current time are
to be deleted.
Press enter to generate the JCL that can be used to delete the SLR records.

Time is in GMT or Local Time ==> L   (GMT/Local)

Time Range Type           ==> P   (Period/Timestamp)

Period Options:
  Period Type             ==> D   (Years/Months/Weeks/Days/Hours)
  Period Value            ==> 60  (001-999)

Timestamp Options:
  Timestamp                ==> 2020 - 10 - 05 - 00 : 00 : 00

Enforce Delete            ==> N   (Yes/No)

  F1=Help      F2=Split    F3=Exit      F7=Backward  F8=Forward  F9=Swap
  F12=Cancel
```

To change the time range, replace the default Period Value of 60 with a specified number of days. The smallest range specification is 1 day. The largest range could encompass multiple years; for example, 730 days would encompass two years.

The generated JCL will delete only unnecessary records for dropped or altered objects older than the specified age (range type = period) or date (range type = timestamp). Any records representing currently existing objects or objects dropped/altered after the specified timestamp will stay unchanged.

### Removing entries from the schema level repository (SLR) after a system clone

After performing a Db2 system clone you should clear the schema level repository (SLR) tables. You must run a batch job to clean and remove the SLR tables. A sample of the batch job is included as a SARYSAMP member named ARYCLONE. This job removes all entries that were in the SLR tables.

The following is a sample of the DELETE commands found under the SYSIN DD statement:

```
//SYSIN DD *
DELETE
FROM #CREATOR.ARYROUTINES
--
//SYSIN DD *
DELETE
```

```
FROM #CREATOR.ARYVIEWS
--
//SYSIN DD *
DELETE
FROM #CREATOR.ARYVIEWDEP
```

You do not need to make any changes to the SYSIN DD DELETE statements. Before running this job you do need to make edits to the JCL stream to reflect values that are specific to your environment. Details regarding these edits are documented in the beginning of the JCL stream.

## Limiting logs scanned during Log Based Data Recovery

---

Performing image copies on a Db2 system catalog and user directory can improve the Log Based Data Recovery (LBDR) process. Having a recent image copy of the system catalog and user directory spaces limits the number of logs scanned by the LBDR process. This can prevent failures due to archive logs no longer being available while the LBDR scan is performed.

Sample JCL jobs that can be used to create the image copies are included in SARYSAMP. The SARYSAMP member ARYICSYB should be used if you are running on Db2 V11.

There are no edits that need to be made to the SYSIN DD statements. Before running this job you do need to make edits to the JCL stream to reflect values that are specific to your environment. Details regarding these edits are documented in the beginning of the JCL stream.

## DSN1COPY SYSXLAT generate utility

---

The function UTGENA in the ARY#UTIL utility is used to generate DSN1COPY SYSXLAT control statements.

The input (SYSIN) consists of simple control statements that are used to generate the utility control statements (SYSXLAT).

### **SYSIN inputs**

The SYSIN input consists of control statements that are used to generate the utility control statements (SYSXLAT).

- SYSIN records are lrecl=80.
- All controls start in column one.
- Blank lines are not accepted.

The first SYSIN control statement indicates the type of SYSXLAT controls to be generated. The control statements are INDEX and TABLE. INDEX will indicate the SYSXLAT controls are for an index and TABLE indicates the controls are for one or more tables.

Long index and table names are continued by filling the first statement through column 72 and then continuing on the next statement starting in column 6. Columns 1-4 of the continued record must contain the OBID value of the preceding continued statement. Column 5 must contain a comma. The continued text is coded in columns 6 - 72. Multiple continued statements can be coded to complete the full object name.

### **TABLE controls**

The SYSIN statement immediately following the TABLE statement is the database OBID translate statement. The format is old\_obid,database\_name. Example: 0006,DSNDB06.

The SYSIN statement immediately following the database statement is the table space PSID translate statement. The format is old\_psid,tablespace\_name. Example: 0009,SYSDBASE.

The SYSIN statements following the table space statement are table OBID translate statements. The format is old\_obid,creator.name. Example: 0019,SYSIBM.SYSTABLES.

## INDEX controls

The SYSIN statement immediately following the INDEX statement is the old index object id values. The format is old\_dbbid,old\_isobid,old\_obid. Example: 0006,0008,0052.

The SYSIN statement immediately following the old index object id statement is the index name.

## SYSXLAT output

The SYSXLAT output control statements follow the formatting rules required by the DSN1COPY utility.

## Sample JCL

The following is sample JCL used to execute the utility:

```
//UTGENA EXEC PGM=ARY#UTIL, PARM='UTGENA,SS1A'  
//STEPLIB DD DISP=SHR,DSN=ARY.IBMTAPE.LOADLIB  
// DD DISP=SHR,DSN=DSN.Vxxx.SDSNLOAD  
//SYSOUT DD SYSOUT=*  
//SYSPRINT DD SYSOUT=*  
//SYSUDUMP DD SYSOUT=*  
//Db2PARMS DD DISP=SHR,DSN=ARY.V0110.CONTROL  
//*  
//SYSXLAT DD SYSOUT=*,LRECL=80,RECFM=FB  
//*  
//SYSIN DD *  
TABLE  
0006,DSNDB06  
0009,SYSDBASE  
0019,SYIBM.SYSTABLES  
/*  
//
```

## Using the Db2 Recovery Expert Cloning Tool interface module

The Db2 Recovery Expert Cloning Tool interface module (ARY#VOLS) writes to a file the mapping and catalog information for a system level backup (SLB) so that it can be used by the Db2 Cloning Tool. The ARY#VOLS program can gather and report information about an SLB that was stored on disk or has been offloaded to tape.

## Sample JCL for ARY#VOLS

The program ARY#VOLS is a member of SAMPLIB. The following is an example of the JCL:

```
//ARY#VOLS EXEC PGM=ARY#VOLS, PARM=(EA1A,000000000370A8A0A76,OFFLOAD)  
//STEPLIB DD DISP=SHR,DSN=TSINB.ARY.LOADLIB  
// DD DISP=SHR,DSN=RSQA.ARY310.IBMTAPE.SARYLOAD  
//ARYBPROF DD DISP=SHR,DSN=RSQA.ARY310.IBMTAPE.PROFILES  
//ARYBOFFL DD DISP=SHR,DSN=RSQA.ARY310.IBMTAPE.OFFOPTS  
//ARYBPMAP DD DISP=SHR,DSN=RSQA.ARY310.IBMTAPE.PROFILES.MAPS  
//ARYBPCAT DD DISP=SHR,DSN=RSQA.ARY310.IBMTAPE.PROFILES.CATS  
//ARYSBACK DD DISP=SHR,DSN=RSQA.ARY310.IBMTAPE.SYSBACK  
//ARYSBOBJ DD DISP=SHR,DSN=RSQA.ARY310.IBMTAPE.SYSBACK.OBJS  
//ARYSBVOL DD DISP=SHR,DSN=RSQA.ARY310.IBMTAPE.SYSBACK.VOLS  
//ARYSBSSD DD DISP=SHR,DSN=RSQA.ARY310.IBMTAPE.SYSBACK.SSIDS  
//ARYBREPT DD DISP=SHR,DSN=RSQA.ARY310.IBMTAPE.BREPT  
//BACKINFO DD DSN=TSINB.ARY.VOLS.OUTPUT,  
// DISP=(NEW,CATLG,DELETE),  
// UNIT=3390,SPACE=(CYL,(1,5)),  
// DCB=(RECFM=FB,LRECL=80,BLKSIZE=8000)  
//SYSOUT
```

## Removing entries from the Quiet Time Analysis tables

Periodically you should remove, or clean, entries from the Quiet Time analysis tables ARYQTG and ARYQT. In general, Quiet Time analysis table entries should be kept as long as a recovery resource (archive log,

image copy) is available. You can run a batch job to clean and remove entries from the Quiet Time Analysis tables.

## Sample batch job to clean Quiet Time Analysis tables

The following is a sample of the batch job JCL that is included as a SARYSAMP member named ARY#QTCL that can be used to clean and remove entries from the Quiet Time Analysis tables:

```
//ARY#QTCL JOB Parameters
//*****
//*
//* 5655-W78
//* (c) Copyright Rocket Software, Inc. 2015 All Rights Reserved.
//*
//* JOB NAME = ARY#QTCL
//*
//* DESCRIPTION: THIS JCL WILL EITHER REPORT OR DELETE ROWS FROM
//* THE QUIET TIME ANALYSIS TABLES ARYQTG AND ARYQT
//* THAT ARE OLDER THAN THE SPECIFIED RETENTION
//* PERIOD NUMBER OF DAYS.
//*
//* NOTES:
//* 1) ADD A VALID JOB CARD FOR YOUR INSTALLATION
//* 2) CHANGE SSID TO THE SSID OF THE SUBSYSTEM YOU ARE PROCESSING.
//* 3) CHANGE 9999 TO THE NUMBER OF DAYS FOR THE RETENTION PERIOD.
//* 4) CHANGE REPORT TO DELETE IF YOU WISH TO DELETE FROM THE
//* QUIET TIME TABLES ALL ROWS OLDER THAN THE RETENTION PERIOD
//* SPECIFIED. KEEP REPORT IF YOU WISH TO INCLUDE IN A REPORT
//* ALL THE ROWS OF THE QUIET TIME TABLES OLDER THAN THE
//* THE RETENTION PERIOD.
//* 5) CHANGE #SARYLOAD TO THE NAME OF THE PRODUCT LOAD LIBRARY
//* USED FOR IBM Db2 RECOVERY EXPERT FOR Z/OS.
//* 6) CHANGE #DSNEXIT TO THE NAME OF THE Db2 USER EXIT LIBRARY
//* 7) CHANGE #DSNLOAD TO THE NAME OF THE Db2 LOAD LIBRARY
//* 8) CHANGE #SARYCNTL TO THE NAME OF THE PRODUCT CONTROL FILE
//* USED FOR IBM Db2 RECOVERY EXPERT FOR Z/OS.
//* 9) CHANGE #REPORT TO THE DATA SET NAME YOU WISH TO USE
//* FOR THE REPORT OUTPUT AND VERIFY UNIT=SYSDA IS VALID.
//* YOU COULD ALSO USE A SYSOUT=* DEFINITION ON THIS DD CARD.
//*
//*****
//*
//ARY#QTCL EXEC PGM=ARY#QTCL, PARM=(SSID, 9999, REPORT)
//STEPLIB DD DISP=SHR, DSN=#SARYLOAD
// DD DISP=SHR, DSN=#DSNEXIT
// DD DISP=SHR, DSN=#DSNLOAD
//Db2PARMS DD DISP=SHR, DSN=#SARYCNTL
//*SYSPRINT DD SYSOUT=*
//SYSPRINT DD DSN=#REPORT,
// DISP=(NEW, CATLG, DELETE),
// UNIT=SYSDA, SPACE=(TRK, (5, 5)),
// DCB=(RECFM=VBA, LRECL=133, BLKSIZE=0)
//*****
```

Before running the job you must edit the JCL stream to reflect values that are specific to your environment as follows:

- Specify a valid and active Db2 subsystem identifier as the first positional parameter on the job JCL “EXEC PARM=” card.
- Specify the number of retention days as the second positional parameter on the job JCL “EXEC PARM=” card. The retention period is calculated based on the current date (date the utility is run) minus the number of retention days. Any quiet table rows that were created outside of that retention period will be reported or deleted. To change the time range, replace the number 9999 with a value from 0 to 9999.
- Specify whether you will report on or delete the quiet time table rows as the third positional parameter on the job JCL “EXEC PARM=” card. Specify REPORT to produce a list of qualifying rows to be removed from both the ARYQTG and ARYQT tables. Report is the default value. No table rows are deleted if Report is specified. It is recommended that you run the utility in Report mode, inspect the report and then decide if your retention period will yield the expected results. Run the utility and specify DELETE to actually delete the qualifying rows from both the ARYQTG and ARYQT tables.
- Change #SARYLOAD to the name of the product load library.

- Change #DSNEXIT to the name of the Db2 User Exit library.
- Change #DSNLOAD to the name of the Db2 Load Library.
- Change #SARYCNTL to the name of the Product Control file.
- Change #REPORT on the SYSPRINT DD statement to the data set name that will be used for the report output and verify that UNIT=SYSDA is valid. You can also use a SYSOUT=\* on this DD statement. You must include a valid SYSPRINT DD statement or the program will terminate with a RC=12.

## Sample output in Report mode

The following is a sample of the output when the utility is run in REPORT mode:

```

ARYQ027I - The following rows were selected from table: ARYQGT

ARYQ043I - -GRPID--+GRPNUM--+T+-FILTER NAME----->
ARYQ040I - 00000001 00000001 S A.T
ARYQ040I - 00000002 00000001 S TESTDB07.TESTTS07
ARYQ040I - 00000003 00000001 S DIBMPMR.SMULTI

ARYQ030I - The following rows were selected from table: ARYQT

ARYQ044I - -GRPID--+START TIMESTAMP-----+END TIMESTAMP-----+
ARYQ041I - 00000001 2014-12-09-00.41.23.000000 2014-12-09-01.41.23.0000
ARYQ041I - 00000002 2014-12-09-01.55.52.000000 2014-12-09-02.55.52.0000
ARYQ041I - 00000001 2014-12-09-03.08.23.000000 2014-12-09-04.08.23.0000
ARYQ041I - 00000003 2014-12-23-02.46.34.000000 2014-12-23-03.01.34.0000
ARYQ041I - 00000003 2014-12-23-02.46.34.000000 2014-12-23-03.01.34.0000
ARYQ041I - 00000003 2014-12-23-02.46.34.000000 2014-12-23-03.01.34.0000

```

## Sample output in Delete mode

The following is a sample of the output when the utility is run in DELETE mode:

```

ARYQ026I - The following rows were deleted from table: ARYQT

ARYQ043I - -GRPID--+GRPNUM--+T+-FILTER NAME----->
ARYQ040I - 00000001 00000001 S A.T
ARYQ040I - 00000002 00000001 S TESTDB07.TESTTS07
ARYQ040I - 00000003 00000001 S DIBMPMR.SMULTI

ARYQ029I - The following rows will be deleted from table: ARYQT

ARYQ044I - -GRPID--+START TIMESTAMP-----+END TIMESTAMP-----+
ARYQ041I - 00000001 2014-12-09-00.41.23.000000 2014-12-09-01.41.23.0000
ARYQ041I - 00000002 2014-12-09-01.55.52.000000 2014-12-09-02.55.52.0000
ARYQ041I - 00000001 2014-12-09-03.08.23.000000 2014-12-09-04.08.23.0000
ARYQ041I - 00000003 2014-12-23-02.46.34.000000 2014-12-23-03.01.34.0000
ARYQ041I - 00000003 2014-12-23-02.46.34.000000 2014-12-23-03.01.34.0000
ARYQ041I - 00000003 2014-12-23-02.46.34.000000 2014-12-23-03.01.34.0000

```

## Reorganizing system backup VSAM repository files

It is recommended that you periodically reorganize the VSAM repository files for system backups volumes and system backup objects.

In the event of space issues with the VSAM repositories containing information about system backup volumes (Db2TOOL.ARY320.SYSBACKJ.VOLS) or information about objects that were backed up (Db2TOOL.ARY320.SYSBACK.OBJS), it is recommended that you reorganize the VSAM repositories file. VSAM repository files can be reorganized using the ARYRORG1 and ARYRORG2 SAMPLIB members.

**Note:** This is also recommended proactively and on a regular basis if System Level Backups are frequently used and such issues are to be expected. The regularity with which VSAM repository files should be reorganized depends upon the environment in use.

## ARYRORG1

Use the following ARYRORG1 SAMPLIB member to reorganize the system backup objects VSAM repository file (Db2TOOL.ARY320.SYSBACK.OBJS):

```
//* *
//* JOB NAME = RBRROG1 *
//* *
//* DESCRIPTION: THIS JCL WILL REORG THE SYSTEM BACKUPS OBJECTS *
//* VSAM REPOSITORY FILE. *
//* *
//* NOTES: *
//* 1) ADD A VALID JOB CARD FOR YOUR INSTALLATION *
//* 2) CHANGE 'DATALVL' TO THE HIGH LEVEL QUALIFIER *
//* YOU USED FOR THE REPOSITORY FILES. *
//* 3) CHANGE '#VOLSER' TO THE VOLUME SERIAL YOU WANT THESE DATASETS *
//* ALLOCATED ON OR REMOVE IT FOR SMS PLACEMENT. *
//* *
/******
/* REPRO SYSBACK.OBJS VSAM REPO DATASET TO A FLAT FILE *
/******
//REPRO1 EXEC PGM=IDCAMS,COND=(4,LT)
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//KSDS DD DISP=SHR,DSN=DATALVL.SYSBACK.OBJS
//FLAT DD DISP=(NEW,CATLG,DELETE),
// DCB=(RECFM=VB,LRECL=2630,BLKSIZE=26300),
// UNIT=SYSALLDA,SPACE=(CYL,(3,3),RLSE),
// DSN=DATALVL.SYSBACK.OBJS.FLAT
//SYSIN DD *
SET MAXCC = 0

REPRO INFILE(KSDS) OUTFILE(FLAT)
/*
/*
/******
/* REPRO FLAT FILE INTO SYSBACK.OBJS VSAM REPO FILE *
/******
//REPRO2 EXEC PGM=IDCAMS,COND=(4,LT)
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//FLAT DD DISP=SHR,DSN=DATALVL.SYSBACK.OBJS.FLAT
//SYSIN DD *

DELETE 'DATALVL.SYSBACK.OBJS'

SET MAXCC = 0

DEFINE CLUSTER -
( NAME ('DATALVL.SYSBACK.OBJS') -
VOLUMES (#VOLSER) -
CYLINDERS (15 75) -
SHAREOPTIONS (3 3) -
INDEXED -
RECORDSIZE (2620 2620) -
KEYS (30 0) -
REUSE ) -
DATA ( NAME ('DATALVL.SYSBACK.OBJS.DATA')) -
INDEX ( NAME ('DATALVL.SYSBACK.OBJS.INDEX'))

REPRO INFILE(FLAT) -
OUTDATASET('DATALVL.SYSBACK.OBJS') REUSE
/*
/*
```

## ARYRORG2

Use the following ARYRORG2 SAMPLIB member to reorganize the system backup volumes VSAM repository file:

```
//* *
//* JOB NAME = RBRROG2 *
//* *
//* DESCRIPTION: THIS JCL WILL REORG THE SYSTEM BACKUPS VOLUMES *
//* VSAM REPOSITORY FILE. *
//* *
//* NOTES: *
```

```

//* 1) ADD A VALID JOB CARD FOR YOUR INSTALLATION *
//* 2) CHANGE 'DATALVL' TO THE HIGH LEVEL QUALIFIER *
//* YOU USED FOR THE REPOSITORY FILES. *
//* 3) CHANGE '#VOLSER' TO THE VOLUME SERIAL YOU WANT THESE DATASETS *
//* ALLOCATED ON OR REMOVE IT FOR SMS PLACEMENT. *
//* *
/*****
/* REPRO SYSBACK.VOLS VSAM REPO DATASET TO A FLAT FILE *
/*****
//REPRO3 EXEC PGM=IDCAMS,COND=(4,LT)
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//KSDS DD DISP=SHR,DSN=DATALVL.SYSBACK.VOLS
//FLAT DD DISP=(NEW,CATLG,DELETE),
// DCB=(RECFM=VB,LRECL=1028,BLKSIZE=10280),
// UNIT=&UNITDEV,SPACE=(CYL,(3,3),RLSE),
// UNIT=SYSALLDA,SPACE=(CYL,(3,3),RLSE),
// DSN=DATALVL.SYSBACK.VOLS.FLAT
//SYSIN DD *
SET MAXCC = 0

REPRO INFILE(KSDS) OUTFILE(FLAT)
/*
//*
/*****
/* REPRO FLAT FILE INTO SYSBACK.VOLS VSAM REPO FILE *
/*****
//REPRO4 EXEC PGM=IDCAMS,COND=(4,LT)
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//FLAT DD DISP=SHR,DSN=DATALVL.SYSBACK.VOLS.FLAT
//SYSIN DD *

DELETE 'DATALVL.SYSBACK.VOLS'

SET MAXCC = 0

DEFINE CLUSTER -
( NAME ('DATALVL.SYSBACK.VOLS')
VOLUMES (#VOLSER)
CYLINDERS (10 15)
SHAREOPTIONS (3 3)
INDEXED
RECORDSIZE (1024 1024)
KEYS (52 0)
REUSE )
DATA ( NAME ('DATALVL.SYSBACK.VOLS.DATA'))
INDEX ( NAME ('DATALVL.SYSBACK.VOLS.INDEX'))

REPRO INFILE(FLAT) -
OUTDATASET('DATALVL.SYSBACK.VOLS') REUSE
/*

```

## Reporting available SLB backups at the disaster recovery site

You can use Db2 Recovery Expert to list the available SLB backups for all systems at the disaster recovery site.

Use the JCL found in the ARY#RPTD SAMPLIB member to generate a report listing the available SLB backups at the disaster recovery site.

The following is a sample of the JCL included as a SAMPLIB member named ARY#RPTD that can be used to generate the report:

```

//ARY#RPTD JOB <JOB PARAMETERS>
/*****
/* *
/* 5655-W78 *
/* (c) Copyright Rocket Software, Inc. 2018 All Rights Reserved. *
/* *
/* JOB NAME = ARY#RPTD *
/* *
/* DESCRIPTION: THIS JCL WILL PROVIDE A REPORT AT THE DISASTER *
/* RECOVERY SITE LISTING ALL SLB BACKUPS FOR ALL SYSTEMS *
/* *
/* NOTES: *
/* 1) ADD A VALID JOB CARD FOR YOUR INSTALLATION *

```

```

//* 2) CHANGE ALL OCCURANCES OF 'HIGHVLV' TO THE HIGH LEVEL QUALIFIER *
//* YOU WISH TO USE. *
//* 3) CHANGE 'DATALVL' TO THE HIGH LEVEL QUALIFIER *
//* YOU WISH TO USE FOR THE REPOSITORY FILE. *
//* *
//*****
//*
//ARY#RPTD EXEC PGM=ARY#RPTD,REGION=000M
//STEPLIB DD DISP=SHR,DSN=#SARYLOAD
//ARYSBACK DD DISP=SHR,DSN=DATALVL.SYSBACK
//ARYSBOBJ DD DISP=SHR,DSN=DATALVL.SYSBACK.OBJS
//ARYSBVOL DD DISP=SHR,DSN=DATALVL.SYSBACK.VOLS
//ARYSBSSD DD DISP=SHR,DSN=DATALVL.SYSBACK.SSIDS
//SYSOUT DD SYSOUT=*
//ARYOUT DD SYSOUT=*
//*

```

Running the JCL found in ARY#RPTD will produce the following report:

| Date       | Time       | On Offload                    | Nbr Vols | Profile Name     | Profile Creator |
|------------|------------|-------------------------------|----------|------------------|-----------------|
| 08/22/2018 | 02:40:37   | No                            | 0007     | EB1A_DB2         | ARYTST1         |
| GRP: ****  | SSID: EB1A | RBA/LRSN:000000000078ECB50447 |          |                  |                 |
| 08/22/2018 | 02:32:27   | No                            | 0007     | EB1A_DB2         | ARYTST1         |
| GRP: ****  | SSID: EB1A | RBA/LRSN:000000000078EC74C7C0 |          |                  |                 |
| 08/30/2018 | 04:07:47   | No                            | 0006     | EB1B_DB2_SLB     | ARYTST1         |
| GRP: ****  | SSID: EB1B | RBA/LRSN:0000000000D6B99341A4 |          |                  |                 |
| 08/30/2018 | 04:02:33   | No                            | 0006     | EB1B_DB2_SLB     | ARYTST1         |
| GRP: ****  | SSID: EB1B | RBA/LRSN:0000000000D6B954CB70 |          |                  |                 |
| 08/23/2018 | 07:20:16   | No                            | 0006     | EB1B_DB2_SLB     | ARYTST1         |
| GRP: ****  | SSID: EB1B | RBA/LRSN:0000000000D2998777A8 |          |                  |                 |
| 08/23/2018 | 06:37:13   | No                            | 0006     | EB1B_DB2_SLB     | ARYTST1         |
| GRP: ****  | SSID: EB1B | RBA/LRSN:0000000000D297608C76 |          |                  |                 |
| 08/22/2018 | 04:14:42   | Yes                           | 0006     | EB1B_DB2_SLB_HSM | TSTUSER         |
| GRP: ****  | SSID: EB1B | RBA/LRSN:0000000000D27E304A21 |          |                  |                 |
| 08/22/2018 | 03:49:48   | No                            | 0006     | ARY-7423-EB1B    | TSTUSER         |
| GRP: ****  | SSID: EB1B | RBA/LRSN:0000000000D27DDF5B54 |          |                  |                 |

## Reporting the incremental status of a list of SLB profiles

You can use Db2 Recovery Expert to list the incremental status for a list of SLB profiles. This is easier than browsing profiles individually. You can invoke the utility by creating a JCL job.

Use the JCL found in the ARY#VPRO SAMPLIB member to generate a report listing the incremental status for a list of SLB profiles.

The following is a sample of the JCL included as a SAMPLIB member named ARY#VPRO that can be used to generate the report:

```

//ARY#VPRO EXEC PGM=ARY#VPRO,REGION=000M
//STEPLIB DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.SARYLOAD
//ARYBPROF DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.PROFILES
//ARYBOFFL DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.OFFOPTS
//ARYBPMAP DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.PROFILE.MAPS
//ARYBPCAT DD DISP=SHR,DSN=RSQA.ARY320.IBMTAPE.PROFILE.CATS
//SYSOUT DD SYSOUT=*
//ARYOUT DD SYSOUT=*

```

After the job is completed, the end of the job log will show a list of SLB profiles, with the following fields:

- Profile name
- Creator
- Incremental status (Y/N)

For example:



| Profile Name | Creator | Incremental Status |
|--------------|---------|--------------------|
| EA1A_FLASH   | ARYTST1 | N                  |
| EA1B_DB2     | ARYTST1 | Y                  |

## Invoking the utility

To run the utility, follow these steps:

1. Create a JCL job based on the sample code. Add a valid job card.
2. Change the *HIGHLVL* parameter to your existing SARYLOAD.
3. Change the *DATALVL* parameter to your existing Repository File.
4. Run the JCL job.

## Using the RBA Capture utility

The Db2 Recovery Expert RBA Capture utility records the current RBA of a Db2 subsystem at regular intervals based on the store clock time. You can set the utility to capture the RBAs at intervals anywhere from 1 to 60 minutes. The RBA and its corresponding time is written to a VSAM file. This information is then readily available for use in determining which RBA you need to restore the subsystem to in order to get the SSID restored to a particular time.

This utility is optional. It uses a started task to capture the RBAs and clock times, and stores the data in its own repository that is separate from the backup and restore system repository. You can have an unlimited number of subsystems monitored by the started task, as long as they are on the same LPAR.

The RBA Capture utility is optionally installed and configured when you customize Db2 Recovery Expert. At that time, you will specify a PDS library that will contain a member for each LPAR where the RBA Capture utility will run. The member for each LPAR will contain Db2 SSIDs that will be monitored by the utility. In order to capture timestamps and RBAs, the utility ARYRBASP must run as a started task in each LPAR. The Db2 administrator is responsible for starting the ARYRBASP task.

## Viewing the utility output

The output from the RBA Capture utility is viewable in two ways:

- When you select a backup to restore - if the RBA Capture utility was active while the backup was being taken, you can access a list of RBAs and timestamps that are relevant to the backup and may be used as restore points.
- You can view RBAs and timestamps captured in individual DDs in the started task output data sets. One DD is created per subsystem. The following information is a partial DD for a subsystem:

\*\*\*\*\* TOP OF DATA \*\*\*\*\*

Subsystem ID B81B log RBA'S are being captured  
and stored in the RBA Repository

| <---RBA Timestamp--->  | Active | <-High RBA-> | <-High LRSN-> | Log Bytes |
|------------------------|--------|--------------|---------------|-----------|
| 03/14/2011-11:32:43.87 | Yes    | 0000344ED4E6 | BE8074AEEEE21 |           |
| 03/14/2011-11:33:00.01 | Yes    | 0000344ED57E | BE8074BE3384  | 00000098  |
| 03/14/2011-11:34:00.01 | Yes    | 0000344ED7B8 | BE8074F77BBE  | 0000023A  |
| 03/14/2011-11:35:00.00 | Yes    | 0000344ED9F2 | BE807530C6B7  | 0000023A  |
| 03/14/2011-11:36:00.01 | Yes    | 0000344EDC2C | BE80756A0CEC  | 0000023A  |
| 03/14/2011-11:37:00.01 | Yes    | 0000344EDE66 | BE8075A35135  | 0000023A  |
| 03/14/2011-11:38:00.01 | Yes    | 0000344EE0BE | BE8075DCA176  | 00000258  |
| 03/14/2011-11:39:00.00 | Yes    | 0000344EE2F8 | BE807615E77E  | 0000023A  |
| 03/14/2011-11:40:00.14 | Yes    | 0000344EE532 | BE80764F2EF9  | 0000023A  |
| 03/14/2011-11:41:00.00 | Yes    | 0000344EE76C | BE80768875F2  | 0000023A  |
| 03/14/2011-11:42:00.01 | Yes    | 0000344EE9A6 | BE8076C1BCDC  | 0000023A  |
| 03/14/2011-11:43:00.01 | Yes    | 0000344EEBBA | BE8076F73380  | 00000214  |
| 03/14/2011-11:44:00.01 | Yes    | 0000344EEDF4 | BE8077307A3E  | 0000023A  |
| 03/14/2011-11:45:00.15 | Yes    | 0000344EF04C | BE807769C30A  | 00000258  |
| 03/14/2011-11:46:00.01 | Yes    | 0000344EF286 | BE8077A30DE0  | 0000023A  |
| 03/14/2011-11:47:00.01 | Yes    | 0000344EF4C0 | BE8077DC5E59  | 0000023A  |
| 03/14/2011-11:48:00.00 | Yes    | 0000344EF6FA | BE807815A604  | 0000023A  |
| 03/14/2011-11:49:00.00 | Yes    | 0000344EF934 | BE80784EE9DC  | 0000023A  |
| 03/14/2011-11:50:00.01 | Yes    | 0000344EFB6E | BE8078882FC9  | 0000023A  |
| 03/14/2011-11:51:00.00 | Yes    | 0000344EFDA8 | BE8078C17450  | 0000023A  |
| 03/14/2011-11:52:00.00 | Yes    | 0000344F0000 | BE8078FABDEA  | 00000258  |
| 03/14/2011-11:53:00.00 | Yes    | 0000344F023A | BE8079340208  | 0000023A  |
| 03/14/2011-11:54:00.00 | Yes    | 0000344F0474 | BE80796D4525  | 0000023A  |
| 03/14/2011-11:55:00.00 | Yes    | 0000344F06AE | BE8079A68ACB  | 0000023A  |
| 03/14/2011-11:56:00.10 | Yes    | 0000344F08E8 | BE8079DFD0BC  | 0000023A  |
| 03/14/2011-11:57:00.01 | Yes    | 0000344F0B22 | BE807A1917A1  | 0000023A  |
| 03/14/2011-11:58:00.00 | Yes    | 0000344F0D5C | BE807A526213  | 0000023A  |
| 03/14/2011-11:59:00.00 | Yes    | 0000344F0F96 | BE807A8BA80C  | 0000023A  |
| 03/14/2011-12:00:00.00 | Yes    | 0000344F11EE | BE807AC4EBC4  | 00000258  |
| 03/14/2011-12:01:00.01 | Yes    | 0000344F1428 | BE807AFE2FE7  | 0000023A  |
| 03/14/2011-12:02:00.00 | Yes    | 0000344F1662 | BE807B37758A  | 0000023A  |
| 03/14/2011-12:03:00.00 | Yes    | 0000344F189C | BE807B70B9E5  | 0000023A  |
| 03/14/2011-12:04:00.00 | Yes    | 0000344F1AD6 | BE807BA9FDCF  | 0000023A  |
| 03/14/2011-12:05:00.00 | Yes    | 0000344F1D10 | BE807BE341F6  | 0000023A  |
| 03/14/2011-12:06:00.01 | Yes    | 0000344F1F4A | BE807C1C85F8  | 0000023A  |

The DD for each subsystem contains the following information:

#### RBA Timestamp

This is the store clock time at which Db2 Recovery Expert captured the RBA. The first timestamp captured probably will not be at an exact minute boundary, because the first RBA is captured at the time the task is started. However, successive timestamps should be on minute boundaries (such as 22:24:00.00).

#### Active

Contains Yes if the subsystem was active and No if the subsystem was not active.

#### High RBA

The log RBA captured at the store clock time.

#### High LRSN

If the subsystem is a data sharing subsystem, this column contains the log LRSN captured at the store clock time.

#### Log Bytes

The number of bytes that have been added to the log since the previous interval. Blank if no changes have been made to the log.

**Tip:** If Log Bytes is blank, this represents a quiet time for the subsystem and therefore might be a good recovery point for that subsystem.

## Modify commands

You can use the following modify commands to manage the RBA Capture utility started task.

| Command                          | Action                                                                                                                                                                      |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>/s taskname</code>         | Starts the ARYRBASP task.                                                                                                                                                   |
| <code>/p taskname</code>         | Ends the ARYRBASP task.<br><b>Note:</b> The RBA Capture task will wait until the next RBA Capture interval before shutting down completely. This may take up to 60 minutes. |
| <code>/f taskname,PARM=nn</code> | Changes the interval at which the RBAs are captured. Valid values for <i>nn</i> are 1-60, in minutes.                                                                       |
| <code>/f taskname,A,ssid</code>  | Adds the specified subsystem to those being monitored by the task. RBAs will be captured for this subsystem beginning immediately after the modify command is processed.    |
| <code>/f taskname,R,ssid</code>  | Suspends the capturing of RBAs for the specified subsystem.                                                                                                                 |

## Managing the repository

If you want to periodically remove older RBA capture information from the repository, you will run the RBA Capture Cleanup job ARYRBACL that was created using Tools Customizer. Edit the PARM in the EXEC statement to specify the number of days of information you want to keep. When you submit this job, records that are older than the number of days specified will be deleted, or you can optionally unload the records to a GDG.

## CHECK DATA invoker

The ARYOUTB utility executes the CHECK DATA (DSNUTILB) utility using the specified SYSIN statements and processes the output. During the plan generation, the ARYOUTB utility is automatically generated instead of DSNUTILB. The ARYOUTB utility can also be manually used as a substitute for the CHECK DATA utility.

### SYSIN inputs

- The maximum length of SYSIN records must not exceed 72 bytes.
- The SYSIN statements must follow the CHECK DATA syntax rules. For more information, see 'Syntax and options of the CHECK DATA control statement' section in the [Db2 13 for z/OS Documentation](#).

### Output

- The output of the DSNUTILB call is stored in DD SYSPRINT.
- If allocated, DD ARYOUT contains output generated by Recovery Expert and messages for constraint violations discovered by the CHECK DATA utility.

### Return codes

- If the CHECK DATA utility detects any constraint violations, the return code is raised from RC=4 to RC=8.
- If DSNUTILB terminates with RC>8 or experiences an abend, ARYOUTB ends with RC=12, and the actual return code is placed in the DD ARYOUT.

### Sample JCL

Example of the JCL used to execute the utility:

```

//CHKDATA EXEC PGM=ARYOUTB,PARM=(ssid),COND=(4,LT)
//STEPLIB DD DISP=SHR,DSN=ARY.IBMTAPE.LOADLIB
// DD DISP=SHR,DSN=DSN.ssid.SDSNEXIT
// DD DISP=SHR,DSN=DSN.Vxxx.SDSNLOAD
//UTPRINT DD SYSOUT=*
//ARYOUT DD SYSOUT=*
//SYSUT1 DD DSN=h1q.SYSUT1,
// UNIT=SYSALLDA,SPACE=(CYL,(1,1),RLSE),
// DISP=(MOD,DELETE,CATLG)
//SORTOUT DD DSN=h1q.SORTOUT,
// UNIT=SYSALLDA,SPACE=(CYL,(1,1),RLSE),
// DISP=(MOD,DELETE,CATLG)
//SYSERR DD DSN=h1q.SYSERR,
// UNIT=SYSALLDA,SPACE=(CYL,(1,1),RLSE),
// DISP=(MOD,DELETE,CATLG)
//SYSIN DD *

CHECK DATA
TABLESPACE DATABASE.TBSPACE
SCOPE ALL
/*

```

In the event of constraint violations for the table space "DATABASE.TBSPACE", the return code will be RC=8, and DD ARYOUT will contain:

```

ARYX191I--Package version = PH55297
ARYX122I--Build date DSNUTILB wrapper = 2023-09-22 12.26.27
DSNU730I 270 09:37:48.36 DSNUKDST - CHECKING TABLE creator.name1
DSNU733I 270 09:37:48.54 DSNUKERK - ROW (RID=X'00000000000201') HAS NO PARENT FOR
creator.name2.fkey1

```

---

# Chapter 11. Troubleshooting

Use these topics to diagnose and correct problems that you experience with Db2 Recovery Expert.

## Determining maintenance levels of Db2 Recovery Expert

---

Identifying maintenance levels for Db2 Recovery Expert modules may help you more accurately troubleshoot problems.

To determine maintenance levels you can issue the DISPLAY MEPL command from the Db2 Recovery Expert ISPF interface. The DISPLAY MEPL command runs a batch job which provides Db2 Recovery Expert module maintenance levels, compile dates, APAR numbers, and APAR build dates and times.

1. Enter the DISPLAY MEPL command on the command line of the Db2 Recovery Expert ISPF interface main panel (RCVYXPRT).
2. On the DISPLAY MEPL panel, enter a PDS name, member, and job card information.
3. Press ENTER to submit the job.
4. Send the job output to product support.

## Gathering diagnostic information

---

Before you report a problem with Db2 Recovery Expert to IBM® Software Support, you need to gather the appropriate diagnostic information.

### Procedure

Provide the following information for all Db2 Recovery Expert problems:

- A clear description of the problem and the steps that are required to re-create the problem.
- All messages that were issued as a result of the problem.
- Db2 Recovery Expert version number, release number and maintenance level.
- Db2 version number, release number and maintenance level.
- Operating system version number and release number.
- Recent maintenance applied.
- Recent changes to the system.

Provide additional information based on the type of problem that you experienced:

### In case of an ABEND

- ABEND code.
- Dump title.
- Failing module/CSECT name.
- A printout of the traceback from a Language Environment® (LE) dump.
- Dumps, if captured (CEEDUMP, SYSUDUMP or SYSMDUMP).

### For online processing

- If problem occurs while using online mode (ISPF UI or Web GUI), screen shots of any error messages and screen shots of all panels before the error.

### For batch processing

- The complete job log of the failing job as well as the JCL for the job.

For issues related to Tools Customizer, see [Tools Customizer troubleshooting](#).

## Conversion tables: Solving conversion errors

---

The following error message is displayed if some conversion tables are not set up on the system:

```
ConvertToUTF16() Conversion failed: RC = 8, RS = 3
```

To add missing conversion tables, perform the steps in the 'Example of building a character map based from an existing conversion table' section in the z/OS 3.1.0 documentation. In following examples *ccsid* is a single byte CSSID (SCCSID) of Db2 subsystem where the error is encountered.

1. Step 1: Create the text format file.

To create the text format file, issue the following JCL:

```
//CUNMITG1 EXEC PGM=CUNMITG1,PARM=(01047,13488,R)
//TABIN DD DISP=SHR,DSN=SYS1.SCUNTB
//CHAROUT DD DISP=SHR,DSN=MYDSN.TEXTMAP(MAP0AAEB)
//SYSPRINT DD SYSOUT=*
```

Where MYDSN.TEXTMAP is allocated DSN with PDS FB 80 parameters and MAP0AAEB is a new member name.

2. (Optional) Step 2: Change the mapping.
3. Step 3: Create the binary file

To do this, issue the following CUNMITG2 JCL

```
//CUNMITG2 EXEC PGM=CUNMITG2,PARM=(ccsid,13488,R)
//CHARIN DD DISP=SHR,DSN=MYDSN.TEXTMAP(MAP0AAEB)
//TABOUT DD DISP=SHR,DSN=MYDSN.BINMAP
//SYSPRINT DD SYSOUT=*
```

Where MYDSN.TEXTMAP(MAP0AAEB) is DSN member, allocated on Step 1, and MYDSN.BINMAP is either system provided SYS1.SCUNTB data set or allocated BINARY DSN with PDS FB 256 parameters.

4. Step 4: Load the new table.

Issue the following command from SDSF:**SETUNI  
ADD, FROM=ccsid, TO=13488, TECH=R, DSNNAME (MYDSN . BINMAP)**

Where MYDSN.BINMAP is previously chosen BINARY data set.

5. Repeat all steps with different parameters:

- Step 1: PARM=(13488,01047,E)
- Step 3: PARM=(13488,ccsid,E)
- Step 4: FROM=13488,TO=ccsid,TECH=E
- (Optional) Step 5: This step will help skip the need to add the same translation tables in the future.

6. To make sure that both tables are successfully added, execute the following commands from SDSF:

- D UNI,TOID=ccsid
- D UNI,FROMID=ccsid

## Installing Db2 Recovery Expert V3.2 on a new Db2 subsystem

---

This topic explains how to install Db2 Recovery Expert V3.2 on a new Db2 subsystem.

### Use Cases: Reinstalling Db2 Recovery Expert V3.2 and installing for the first time

Before you install, it's important to make sure that your user ID has read permission to the CSFSERV resource class. See [RACF Permission requirements](#) for details. You may have to ask your RACF administrator or team to set up read permission for you.

If you have previously installed Db2 Recovery Expert V3.2 and want to reinstall it with a new Db2 subsystem, you will need to generate one or more jobs in Tools Customizer, then execute the jobs in order to migrate your existing database objects from an earlier maintenance level. For more information, see [Reinstalling Db2 Recovery Expert V3.2](#).

If you have never installed Db2 Recovery Expert V3.2 before, you will not have existing database objects to migrate. Follow the steps described in [Installing Db2 Recovery Expert V3.2 for the first time](#).

Once you have installed Db2 Recovery Expert V3.2, it's a good idea to run an Installation Verification Program (IVP) to confirm that the installation was successful. See [Verifying Db2 Recovery Expert V3.2 installation](#) for a sample IVP, and also for a series of steps that provide additional verification that Db2 Recovery Expert V3.2 has been installed successfully.

## Reinstalling Db2 Recovery Expert V3.2

This topic discusses how to reinstall Db2 Recovery Expert V3.2 successfully.

Follow this task if Db2 Recovery Expert V3.2 was previously installed and you want to reinstall with a new Db2 subsystem. For an existing Recovery Expert environment, you will need to generate jobs in Tools Customizer, then execute the jobs, in order to migrate your existing database objects from an earlier maintenance level. For example, for an environment created before APAR PI35099 was issued, apply PI35099, then run the "Alter existing Recovery Expert objects for APAR PI35099" job. The following is a list of jobs you may need to run. In each case, if the APAR listed as not been applied at your site, apply the APAR (for example, PI57597), then run the job itself (for example, B96312AF):

- B64920AF - Alter existing Recovery Expert objects for APAR PI35099
- B74920AF - Alter existing Recovery Expert Auto Tool objects for APAR PI35099
- B86380AF - Alter existing Recovery Expert objects for PI56483
- B96312AF - Alter existing Recovery Expert objects for PI57597
- C16910AF - Alter existing Recovery Expert objects for PI80997
- C27120AF - Alter existing Recovery Expert objects for PI86756
- C67197AF - Recovery Expert repository migration for PI91823 part 1
- C77798AF - Recovery Expert repository migration for PI91823 part 2

Next, proceed with the steps used for a first-time installation. See [Installing Db2 Recovery Expert V3.2 for the first time](#).

After installing, verify the installation: [Verifying Db2 Recovery Expert V3.2 Installation](#).

## Installing Db2 Recovery Expert V3.2 for the first time

Db2 Recovery Expert has never been installed before.

For a new Recovery Expert environment, select the following options in Tools Customizer:

```
/ Create Recovery Expert objects for DB2
/ Drop the Recovery Expert database
/ Create Recovery Expert database
/ Create views on schema-level repository
/ Create views on system catalog
```

In the example above, **Drop the Recovery Expert database** will drop all objects except views on system catalog. 'Create views on system catalog' should be disabled if ARYVDSC\* views already exist and are correct.

If you want to drop all views, run the following commands. In this example, CREATOR is the creator of the views to be dropped; replace it with the user ID that created the views at your site.

```
DROP VIEW CREATOR.ARYVDSCYR00; COMMIT;
DROP VIEW CREATOR.ARYVDSCAR00; COMMIT;
DROP VIEW CREATOR.ARYVDSCBK00; COMMIT;
DROP VIEW CREATOR.ARYVDSCBP00; COMMIT;
```

```

DROP VIEW CREATOR.ARYVDSCC200; COMMIT;
DROP VIEW CREATOR.ARYVDSCCA00; COMMIT;
DROP VIEW CREATOR.ARYVDSCCD00; COMMIT;
DROP VIEW CREATOR.ARYVDSCCN00; COMMIT;
DROP VIEW CREATOR.ARYVDSCDA00; COMMIT;
DROP VIEW CREATOR.ARYVDSCDB00; COMMIT;
DROP VIEW CREATOR.ARYVDSCDP00; COMMIT;
DROP VIEW CREATOR.ARYVDSCDT00; COMMIT;
DROP VIEW CREATOR.ARYVDSCDV00; COMMIT;
DROP VIEW CREATOR.ARYVDSCFK00; COMMIT;
DROP VIEW CREATOR.ARYVDSCIP00; COMMIT;
DROP VIEW CREATOR.ARYVDSCIX00; COMMIT;
DROP VIEW CREATOR.ARYVDSCKA00; COMMIT;
DROP VIEW CREATOR.ARYVDSCKD00; COMMIT;
DROP VIEW CREATOR.ARYVDSCKL00; COMMIT;
DROP VIEW CREATOR.ARYVDSCKS00; COMMIT;
DROP VIEW CREATOR.ARYVDSCKT00; COMMIT;
DROP VIEW CREATOR.ARYVDSCLS00; COMMIT;
DROP VIEW CREATOR.ARYVDSCPA00; COMMIT;
DROP VIEW CREATOR.ARYVDSCPD00; COMMIT;
DROP VIEW CREATOR.ARYVDSCPM00; COMMIT;
DROP VIEW CREATOR.ARYVDSCQA00; COMMIT;
DROP VIEW CREATOR.ARYVDSCRA00; COMMIT;
DROP VIEW CREATOR.ARYVDSCRL00; COMMIT;
DROP VIEW CREATOR.ARYVDSCSA00; COMMIT;
DROP VIEW CREATOR.ARYVDSCSC00; COMMIT;
DROP VIEW CREATOR.ARYVDSCSD00; COMMIT;
DROP VIEW CREATOR.ARYVDSCSF00; COMMIT;
DROP VIEW CREATOR.ARYVDSCSG00; COMMIT;
DROP VIEW CREATOR.ARYVDSCSK00; COMMIT;
DROP VIEW CREATOR.ARYVDSCSP00; COMMIT;
DROP VIEW CREATOR.ARYVDSCSQ00; COMMIT;
DROP VIEW CREATOR.ARYVDSCSR00; COMMIT;
DROP VIEW CREATOR.ARYVDSCSV00; COMMIT;
DROP VIEW CREATOR.ARYVDSCSX00; COMMIT;
DROP VIEW CREATOR.ARYVDSCSY00; COMMIT;
DROP VIEW CREATOR.ARYVDSCTA00; COMMIT;
DROP VIEW CREATOR.ARYVDSCTB00; COMMIT;
DROP VIEW CREATOR.ARYVDSCTC00; COMMIT;
DROP VIEW CREATOR.ARYVDSCTP00; COMMIT;
DROP VIEW CREATOR.ARYVDSCTR00; COMMIT;
DROP VIEW CREATOR.ARYVDSCTS00; COMMIT;
DROP VIEW CREATOR.ARYVDSCTV00; COMMIT;
DROP VIEW CREATOR.ARYVDSCTX00; COMMIT;
DROP VIEW CREATOR.ARYVDSCTXA00; COMMIT;
DROP VIEW CREATOR.ARYVDSCTXI00; COMMIT;
DROP VIEW CREATOR.ARYVDSCUA00; COMMIT;
DROP VIEW CREATOR.ARYVDSCUK00; COMMIT;
DROP VIEW CREATOR.ARYVDSCVA00; COMMIT;
DROP VIEW CREATOR.ARYVDSCVD00; COMMIT;
DROP VIEW CREATOR.ARYVDSCVS00; COMMIT;
DROP VIEW CREATOR.ARYVDSCXA00; COMMIT;
DROP VIEW CREATOR.ARYVDSCXL00; COMMIT;
DROP VIEW CREATOR.ARYVDSCX000; COMMIT;
DROP VIEW CREATOR.ARYVDSCXS00; COMMIT;
DROP VIEW CREATOR.ARYVDSCYD00; COMMIT;

```

**Note:** It is generally not necessary to select the **Create indexes on DB2 catalog** option in Tools Customizer.

## Verifying Db2 Recovery Expert V3.2 installation

Once customization is complete, it's a good idea to run an Installation Verification Program or job (IVP). More information can be found in the Knowledge Center page on the Product to Customize section of the [Parameters Worksheet](#). Scroll down to **\_Create Install Verification job** for the steps required to generate and run the IVP.

To run the IVP against a specific SSID, update the ARYIN DD with the following code, where DBT1 is an example SSID:

```

//ARYIN DD
* SSID DBT1
/*

```



The following is a complete example of the JCL code for an IVP:

```
//ARYIVP JOB (3,3932), 'DB2REXP', CLASS=3, MSGCLASS=S,
// NOTIFY=&SYSUID
// *JOBPARM S=MSYS
// *
// *
// ***** (tcz-info) *****
// * Product metadata lib: DBS.DB2REXP.MSYS.SARYDENU
// * Original template name: ARYIVP
// * Desc: Install Verification
// * Use group attach: YES
// * Customization library: DBS.DB2REXP.MSYS.$MSYS$.ARY320A3
// * Customized by: AAC5710
// * Customized timestamp: 20190323090448857
// * Data store data set: DBS.DB2REXP.MSYS.DASTASTOR
// * LPAR name: MSYS
// ***** (end-tcz-info-15) *****
// * *
// * 5655-W78 *
// * (c) Copyright Rocket Software, Inc. 2019 All Rights Reserved. *
// * *
// * DESCRIPTION: THIS JCL WILL PERFORM THE INITIAL VERIFICATION *
// * PROCEDURE. *
// * *
// *****
// * *
// ARY#IVP EXEC PGM=ARY@IVP
// STEPLIB DD DISP=SHR,
// DSN=SYS1.DB2REXP.MSYS.SARYLOAD
// DB2PARMS DD DISP=SHR,
// DSN=DBS.DB2REXP.MSYS.CONTROL
// SYSOUT DD SYSOUT=*
// ARYOUT DD SYSOUT=*
// ARYCIN DD DISP=SHR,
// DSN=DBS.DB2REXP.MSYS.SARYCLST(ARYV320)
// ARYIN DD *
// COMPLETE
// *
// *
```

**Note:** The IVP does not need to be run for each LPAR. It's usually better to run them for the entire SYSPLEX. This allows information to be accessed across the LPARs, requiring less tailoring of started tasks and CLIST.

You can also verify that the install was successful by running the following steps:

1. Pick a test tablespace to use for verification testing and take a full image copy of it.
2. Create an application profile with the object from step 1 above (option 2, 1).
3. Add the tablespace object and save the application profile.
4. Use the **P** line command to build the recovery plans, recovering the object to 1-Current.
5. Build the **Using Recover** recovery plan.
6. Run the job and verify that it has completed successfully.

## RACF Permission requirements

The user ID running the IVP must have read permission to the key database and other CSFSERV resources such as CSF1DVK, CSF1GAV, CSF1TRD, CSF1QF, and CSF1GKP. You might have to ask your RACF administrator to grant read permission to your user ID so that you can run the IVP successfully. If you see error ARYX184E, this most likely means that your user ID does not have the necessary read permission. The IBM Knowledge Center gives an example set of commands to perform RACF administrator tasks that include granting a user ID read access to the CSFSERV resource class.

## Dynamic file allocation: Diagnosing B37 and other space errors

Db2 Recovery Expert creates and uses many files and data sets dynamically for internal and temporary use. If these files are improperly sized, B37 ABENDS can occur.

Many data sets that are required for internal and temporary Recovery Expert processing space are dynamically allocated by Db2 Recovery Expert. Because these files are dynamically allocated, they are not readily apparent within the JCL. Almost all of these files are for internal use only, and are not documented or supported for external usage.

All files that are allocated as NEW are written to the SYSOUT DD named CFILES. You can browse that DD to view these allocations. If overrides become necessary due to B37 or D37 errors, this DD can be useful in allocating larger files.

These dynamic allocations are based on internal array sizing when possible. This means that Db2 Recovery Expert attempts to determine the proper size of these data sets based on internal arrays which are to be externalized to the files. In many cases, it is not possible to determine the exact size of dynamically allocated data sets. This can cause a B37-type ABEND on the file. A B37 ABEND (meaning any n37 type ABEND; it could also be D37 or similar) can occur if the initial file size allocation can be satisfied by your system, but more space is actually required for all records. Again, not all dynamically allocated file sizes can be exactly ascertained.

If a B37 ABEND occurs on a dynamically allocated data set, the system will generate a message indicating which file caused the failure. This message is included in your job log and is not controlled by Recovery Expert, but rather by the operating system. If these B37s become frequent, contact your product administrator to notify IBM as the calculations may need to be modified to prevent recurrences.

You can attempt to re-run the job by hard coding a proper JCL DD statement for the failing data set in the failing job step. Because the file names are user-modifiable, it is not possible to document what they will be. The DSNAMES provided in the examples merely identify a component of the internally built data set name. The definitive DSNAMES must come from the B37 ABEND message. The name identified there must be the same DSNAMES used on any hard-coded JCL DD allocation unless the data set is a temporary data set. In that case, any unique temporary name will do (for example, &&TEMPF1). The DDNAMEs are fixed in the JCL, and therefore, these can be used in conjunction with the B37 job log output to correctly add a hard-coded JCL DD statement.

### B37 ABEND errors

This list will help you determine where your B37 ABEND is occurring.

Follow this list according to failing step number and the program that is executed. Again, this list is intended only for an extremely sporadic occurrence of B37s. If they become frequent, contact IBM customer support.

#### General report error in: //STEP2 EXEC PGM=ARYGEN1,...

```
//REFILE DD DSN=REFILE,
// DCB=(LRECL=70, BLKSIZE=23380, RECFM=FB),
// DISP=(NEW, CATLG, DELETE), UNIT=SYSDA,
// SPACE=(TRK, (?????, ??????), RLSE)
//CATFILE DD DSN=CATFILE,
// DCB=(LRECL=400, BLKSIZE=23404, RECFM=VB),
// DISP=(NEW, CATLG, DELETE), UNIT=SYSDA,
// SPACE=(TRK, (?????, ??????), RLSE)
//TEMPEXTF DD DSN=&TEMPEXTF,
// DCB=(LRECL=32752, BLKSIZE=32756, RECFM=VB),
// DISP=(NEW, DELETE, DELETE), UNIT=SYSDA,
// SPACE=(TRK, (?????, ??????), RLSE)
//URIDF DD DSN=URIDF,
// DCB=(LRECL=1300, BLKSIZE=13004, RECFM=VB),
// DISP=(NEW, CATLG, DELETE), UNIT=SYSDA,
// SPACE=(TRK, (?????, ??????), RLSE)
```

## Detail report errors in: //STEP3 EXEC PGM=ARYDTL1,...

```
//REIFILES DD DSN=&REIFILS,
// DCB=(LRECL=70,BLKSIZE=23380,RECFM=FB),
// DISP=(NEW,DELETE,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????),RLSE)
//PLOGD DD DSN=&PLOGD,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,DELETE,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????),RLSE)
//PLOGDS DD DSN=PLOGD,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????),RLSE)
//EDICT DD DSN=&EDICT,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,DELETE,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????),RLSE)
//EDICTS DD DSN=EDICT,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????),RLSE)
//TEMPROWD DD DSN=&TEMPROWD,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,DELETE,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????),RLSE)
//TEMPROWS DD DSN=&TEMPROWS,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,DELETE,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????),RLSE)
```

## Detail report errors in: //STEP4 EXEC PGM=ARYDTL2,...

```
//FRMTFILU DD DSN=FRMTFILU,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????),RLSE)
//TFRMTFIL DD DSN=&TFRMTFIL,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,DELETE,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????),RLSE)
//SORTIN DD DSN=&SORTIN,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,DELETE,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????),RLSE)
//SORTOUT DD DSN=&SORTOUT,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,DELETE,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????),RLSE)
```

## Detail report errors in: //STEP5 EXEC PGM=ARYDTL3,...

```
//FRMTFILE DD DSN=FRMTFILE,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????),RLSE)
```

## Detail report errors in: //STEP6 EXEC PGM=ARYDTL4,...

```
//SORTOUT DD DSN=FRMTFILS,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????),RLSE)
//SQLOUT DD DSN=SQLOUT,
// DCB=(LRECL=80,BLKSIZE=23440,RECFM=FB),
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????),RLSE)
```

## Load details into Db2 errors in: //STEP1 EXEC PGM=ARYGLOAD..., or //STEP1 EXEC PGM=ARYLAUD..., (audit mode only)

```
//LOADFILE DD DSN=LOADFILE,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????)),RLSE)
//LOADCARD DD DSN=LOADCARD,
// DCB=(LRECL=80,BLKSIZE=23440,RECFM=FB),
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????)),RLSE)
//DDLFILE DD DSN=DDLFILE,
// DCB=(LRECL=80,BLKSIZE=23440,RECFM=FB),
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????)),RLSE)
```

## Static SQL program generator errors in: //BUILD EXEC PGM=ARYBSSQL...

```
//CHFILE DD DSN=CHFILE,
// DCB=(LRECL=330,BLKSIZE=23100,RECFM=FB)
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????)),RLSE)
//SFMTFILE DD DSN=SFMTFILE,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????)),RLSE)
//HVFILE DD DSN=HVFILE,
// DCB=(LRECL=70,BLKSIZE=21000,RECFM=FB)
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????)),RLSE)
//DECLFILE DD DSN=DECLFILE,
// DCB=(LRECL=80,BLKSIZE=23440,RECFM=FB)
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????)),RLSE)
//SQLOUT DD DSN=SQLOUT2,
// DCB=(LRECL=80,BLKSIZE=23440,RECFM=FB)
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????)),RLSE)
```

## Process archived output errors in: //STEP2 EXEC PGM=ARYARC2,...

```
//CATFILE DD DSN=CATFILE,
// DCB=(LRECL=400,BLKSIZE=23404,RECFM=VB),
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????)),RLSE)
//TFRMTFIL DD DSN=&TFRMTFIL,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,DELETE,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????)),RLSE)
//FRMA DD DSN=FRMAFILE,
// DCB=(LRECL=32752,BLKSIZE=32756,RECFM=VB),
// DISP=(NEW,DELETE,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(?????,?????)),RLSE)
```

## Correcting B37 ABEND errors in the JCL

You should use the information from "B37 ABEND errors" to correct the error, according to the example found in this topic.

Suppose you got a D37 abend on file SQLOUT in STEP6 of the detail report process. The D37 abend pointed to dsname = USERXX.SQLOUT.JOB1.

1. You look up the current file allocation for data set 'USERXX.SQLOUT.JOB1' and see it was allocated with 100 tracks primary and secondary.
2. You could delete that file and then re-run that step of the job (and any subsequent steps) by adding this DD statement to the JCL step (STEP 6) with a larger allocation amount as such:

```
//SQLOUT DD DSN=USERXX.SQLOUT.JOB1,
// DCB=(LRECL=80,BLKSIZE=23440,RECFM=FB),
```

```
// DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,
// SPACE=(TRK,(200,200),RLSE)
```

This hard-coded JCL DD statement will prevent any use of Recovery Expert's dynamic allocation process for that data set only. In general, B37s should not occur on temporary data sets as they should be based on permanent data set allocations. However, if they do occur, these data sets will not exist after the ABEND, so base your larger file allocations on similarly allocated permanent data sets. You can also search out the DD CFILES for information on all newly allocated (DISP=NEW...) data sets in the job log.

The VSAM file (DD ROWDATA) can also be overwritten this way by creating it on your own and hard coding this DD in the JCL as DISP=SHR only. IDCAMS can be used to create this file, but must be done so using these exact specifications:

```
DEFINE CLUSTER (NAME(vsam.file.name) -
              REUSE -
              VOLUMES(volume1,volume2,volume3) - (optional)
              SHAREOPTIONS(1,3)) -
  DATA (NAME(vsam.file.name.DAT) -
        TRACKS(primary secondary) -
        KEYS(18 0) -
        BUFFERSPACE(36864) -
        FREESPACE(20 10) -
        SHR(1,3) -
        CONTROLINTERVALSIZE(4096) -
        SPANNED -
        RECORDSIZE(200 36864) -
  INDEX (NAME(vsam.filename.IDX) -
        TRACKS(primary secondary) -
        SHR(1,3))
```

The DD CFILES in your job log will contain information on the original allocation size of this file. The file names must adhere to the naming conventions.

#### Notes:

1. All files created in the general report are used in the detail report.
2. Some permanent files have associated temporary files for sorting or other purposes. Those files are identified here. Where temporary files are used, they are identified with the permanent files:
  - REFILE (temporary file is DD REIFILES)
  - ROWDATA (temporary files are DD TEMPROWD, TEMPROWS, SORTIN, SORTOUT)
  - EDICT (temporary file DD EDICT)
  - PLOGD (temporary file DD PLOGD)
  - FRMTFILx (temporary file DD TFRMFIL)
3. Rounding assumptions: 1 track of DASD = 47,000 bytes, 15 track per cylinder.

## Correcting B37 errors using a sample job

You can use a sample member ARYSJ001 to correct for B37 allocation errors by rerunning part of the configuration for Recovery Expert.

If you repeatedly encounter a B37 abend when you select recovery plan JCL to be generated, you can create a more lasting correction by running the sample member ARYSJ001 after editing it to increase the data set allocations for FTW (file tailoring work), ICF (image copy file), and RDA (recovery data set allocation).

These data set allocations are initially set to allocate cylinders with a default value of one for both the primary and secondary quantities. You should adjust the quantities according to your needs, using the following information:

The approximate number of JCL lines that the data sets will hold on a 3390 DASD device as follows:

340 = number of 80-byte records/27200 half-track block

680 = 340 X 2 number of 27200 block/track

10200 = 680 X 15 number of tracks/cylinder

163200 = 10200 x 16 number of cylinders in the data set

After you determine your size requirements,

1. Edit ARYSJ001 to increase the data sets accordingly.
2. Rerun the sample job to allocate the data sets with the new quantities.

## Files used in Log Analysis processing

These are the files created by Log Analysis processing. This information should help in sizing the files should a B37 ABEND occur.

### DD REFILE

This file holds an internal snapshot of log records. One record per log record matching filter criteria. Length = fixed, 70 bytes. Example: If 1,000 transactions are expected to be found in the log, 1,000 REFILE records will be needed.  $1,000 * 70$  bytes = 70,000 bytes of space required. Therefore, 2 tracks are sufficient.

### DD CATFILE

This file holds Db2 catalog information for each table reported on. CATFILE is VB, LRECL=400. It holds one record per table reported on, therefore, 5 tracks is usually sufficient.

### DD EXTFILE

This file holds log records that are read in the general report and that can be used exclusively in the detail report. If the general report determines that this file cannot be used exclusively by the detail report (that is, the detail report will have to read more Db2 logs), then this file will hold one record to indicate that condition to the detail report. Assuming the file can be used by the detail report, it will hold all Db2 log records matching the filter criteria in the general report.

Example 1: If 1,000 transactions are expected to be found, and a single table of fixed length 100 bytes is being filtered on, this file will need to be allocated to handle the maximum amount of all these transactions:  $(1,000 * (100 + 80)) = 180,000$  bytes.

**Attention:** 80 is an approximate length of log record header information.

Therefore, a 4 track space allocation is sufficient. Example 2: There are many tables filtered on, and the expected number of transactions returned is 500,000, and the largest table row length is 200 bytes. To handle the maximum case, this is the formula:  $(500,000 * (200 + 80)) = 140,000,000$  bytes, so approximately a 3,000 track space allocation would be needed, or 200 cylinders.

### DD URIDF

This file holds one record per unit of work reported on. Its size is totally dependent on the log data, like EXTFILE. If your site typically has few transactions per unit of work, this file's size could be large, like the EXTFILE. If your site typically has many transactions per unit of work, the size of this file could be smaller than the EXTFILE. URIDF is VB, LRECL=1300.

### DD ROWDATA

This VSAM file holds multiple row images of each row reported on in the general report. The multiple row images reflect either the row's current image, pre-change image, or post-change image. Current images are not present in log-forward mode, however, for simplicity in this example, assume three row images exist for every log record. This file has 18 bytes of header information per record. To best size this file do this:

1. Determine the number of log records returned (this will be the total number of UPDATES, INSERTs, and DELETES from both committed and rollback activity). Assume total number = 5,000.
2. Determine the largest maximum row length of any tables in the result set. Assume maximum row length = 200 bytes.
3. Apply this formula:

$$(5,000 * (200 + 18)) * 3 = 3,270,000 \text{ bytes}$$

Therefore, 70 tracks is sufficient.

## DD EDICT

This file will hold compression dictionary information in a log-forward process only. It will not be present in log-backward mode. This file is used only if compressed data is found in the logs. Assume a maximum of 65,000 bytes per table space or partition of compressed data. Example: If 10 table spaces (all non-partitioned) are in your general report result set, a maximum of 650,000 bytes would be needed (65,000 \* 10). A space allocation of 14 tracks is sufficient.

## DD PLOGD

This file holds all the log records needed to materialize full row images for every log record reported on by the general report. A general rule is that this file must be allocated at least as large as the DD ROWDATA VSAM file (the data component), though it is not a VSAM file itself. Beyond that, it is impossible to determine in advance how many log records will be used in materializing full row images. Another useful guideline here is that if after the general report is run, the DD EXTFILE has more than one record in it, the DD PLOGD file can be allocated with the same space allocation as the DD EXTFILE.

## DD FRMTFILx

This file contains the displayable column data for each row affected by each log record reported on in the general report. (Where x represents different letters depending on the current sort of the file. This file should be sized the same for each value of x.) This is another unpredictable file size for any given run of Log Analysis Services. A general rule here is to make the space allocation for this file at least as large as the DD PLOGD file.

## DD SQLOUT

This file holds the generated Undo/Redo SQL, if any was requested. This is a fixed length, 80 byte file which can be used as input to IBM's Db2 SPUFI application. It should be sized at least as large as the DD PLOGD file.

## Messages and Codes

---

This topic documents the messages and error codes issued by Tools Customizer and Db2 Recovery Expert. Messages are presented in ascending numerical and alphabetical order.

### Tools Customizer messages

Use the information in these messages to help you diagnose and solve Tools Customizer problems.

**CCQB000I      The product parameter data was saved in the data store.**

**Explanation:**

Changes that were made to the product parameters were saved in the data store.

**System action:**

None.

**User response:**

No action is required.

---

**CCQB001I      The DB2 parameter data was saved in the data store.**

**Explanation:**

Changes that were made to the Db2 parameters were saved in the data store.

**System action:**

None.

**User response:**

No action is required.

---

**CCQB002I**      **The LPAR parameter data was saved in the data store.**

**Explanation:**

Changes that were made to the LPAR parameters were saved in the data store.

**System action:**

None.

**User response:**

No action is required.

---

**CCQB003E**      **At least one step must be selected in a selected task. The selected task is *task\_description*.**

**Explanation:**

When a task is selected, at least one step must be selected. A selected step is missing from the specified task.

**System action:**

Processing stops.

**User response:**

Select a step in the specified task or deselect the task.

---

**CCQB004I**      **The required information to run the Discover EXEC was saved in the data store.**

**Explanation:**

The data store contains all the information that is required to run the Discover EXEC.

**System action:**

None.

**User response:**

No action is required.

---

**CCQB005E**      **The conflicting values for the *parameter\_name* parameter must be resolved before the information can be saved.**

**Explanation:**

Two values for one parameter conflict with each other, and they must be resolved to save the information.

**System action:**

Processing stops.

**User response:**

Resolve the conflicting values for the parameter.

---

**CCQB006E**      **One row must be selected.**

**Explanation:**

One row in the table must be selected.

**System action:**

Processing stops.

**User response:**

Select one row.

---

**CCQB007E**      **Only one row can be selected.**

**Explanation:**

Multiple rows in the table are selected, but only one row is allowed to be selected.

**System action:**

Processing stops.

**User response:**

Select only one row.

---

**CCQC000I**      **The jobs have been customized on the selected DB2 entries.**

**Explanation:**

The jobs were customized on the Db2 entries that were selected.

**System action:**

None.

**User response:**

Press Enter to clear the message.

---

**CCQC001W**      **The jobs were not generated on one or more of the selected DB2 entries. Press PF3 to check the Db2 entries that were not customized.**

**Explanation:**

The product was not customized on one or more of the Db2 entries that were selected.

**System action:**

None.

**User response:**

Press PF3 to see the Db2 entries on which the product was not customized. The status of these Db2 entries is Errors in Customization.

---

**CCQC002I**      **The edit session was started automatically because values for required parameters are missing or must be verified.**

**Explanation:**

If product, LPAR parameters, or Db2 parameters are not defined or if parameter definitions must be verified, an editing session for the undefined or unverified parameters starts automatically.

**System action:**

None.

**User response:**



Define values for all required product, LPAR parameters, or Db2 parameters.

---

**CCQC003W**      **The *template\_name* template in the *library\_name* metadata library does not contain any parameters.**

**Explanation:**

The specified template does not have parameters.

**System action:**

None.

**User response:**

No action is required.

---

**CCQC004S**      **The value of the "type" attribute for the *template\_name* template in the *library\_name* metadata library does not match the value that was previously specified. The value is *value\_name*, and the previously specified value is *value\_name*.**

**Explanation:**

The value of the "type" attribute must match the value that was previously specified.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQC005S**      **The *template\_name* template exceeds the number of allowed templates for a customization sequence. The template is in the *library\_name* metadata library.**

**Explanation:**

The customization sequence can process only *number* templates. The specified template cannot be processed because the customization sequence already contains the maximum number of templates.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQC006E**      **The jobs could not be generated for the *group\_attach\_name* Db2 group attach name.**

**Explanation:**

The customization jobs could not be generated for the specified Db2 group attach name.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQC007E**      **The jobs could not be generated for the *subsystem\_ID* Db2 subsystem.**

**Explanation:**

The customization jobs could not be generated for the specified Db2 subsystem.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQC008E**      **The jobs could not be generated for the *member\_name* Db2 member.**

**Explanation:**

The customization jobs could not be generated for the specified Db2 member.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQC009S**      **The jobs were not generated for the DB2 entries.**

**Explanation:**

One or more errors occurred while customization jobs were being generated for the selected Db2 entries.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQC010S**      **The *template\_name* template could not be accessed in the *library\_name* metadata library.**

**Explanation:**

The specified template could not be accessed because the user does not have RACF access to the data set, the data set has incorrect data characteristics, or the data set is not cataloged.

**System action:**

Processing stops.

**User response:**

Ensure that you have RACF access to the data set, that the characteristics are correct according to the specifications of the product that you are customizing, and that the data set is cataloged. If the problem persists, contact IBM Software Support.

---

**CCQC011S**      **The *template\_name* template could not be written to the *library\_name* customization library.**

**Explanation:**

The specified template could not be accessed because the user does not have RACF access to the data set, the data set has incorrect data characteristics, or the data set is not cataloged.

**System action:**

Processing stops.

**User response:**

Ensure that you have RACF access to the data set, that the characteristics are correct according to the specifications of the product that you are customizing, and that the data set is cataloged. If the problem persists, contact IBM Software Support.

---

**CCQC012W**      **The job card was generated with default values because the JOB keyword was missing.**

**Explanation:**

Default values were used to generate the job card because the JOB keyword was not specified in the first line of the job card.

**System action:**

The job card was generated with default values.

**User response:**

No action is required. To generate the job card with your own values, add the JOB keyword in the first line of the job card.

---

**CCQC013W**      **The job card was generated with the default value for the programmer name because the specified programmer name exceeded 20 characters.**

**Explanation:**

Default values were used to generate the job card because the specified programmer name contained too many characters.

**System action:**

The job card was generated with default values.

**User response:**

No action is required. To generate the job card with your own values, add a valid programmer name in the job card. A valid programmer name is 1 - 20 characters.

---

**CCQC014W**      **The job card was generated with default values because the JOB keyword was not followed by a space.**

**Explanation:**

Default values were used to generate the job card because a space did not follow the JOB keyword.

**System action:**

The job card was generated with default values.

**User response:**

No action is required. To generate the job card with your own values, add a space after the JOB keyword in the job card.

---

**CCQC015S**      **The *template\_name* template in the *library\_name* metadata library contains the following file-tailoring control statement: *statement\_name*. This control statement is not valid in a *template\_type* template.**

**Explanation:**

The *template\_type* template cannot contain the specified type of file-tailoring control statement.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQC016S**      **The )DOT file-tailoring control statement exceeded the number of allowed occurrences for the *template\_name* template in the *library\_name* metadata library.**

**Explanation:**

The )DOT file-tailoring control statement can occur only a limited number of times in the specified template.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQC017S**      **The nested )DOT file-tailoring control statements exceeded the number of allowed occurrences in the *template\_name* template in the *library\_name* metadata library.**

**Explanation:**

Nested )DOT file-tailoring control statements can occur only *number* times.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQC018S**      **The *template\_name* template in the *library\_name* metadata library is not valid because it does not contain any data.**

**Explanation:**

The specified template is missing required data.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQC019S**      **The *template\_name* template in the *library\_name* metadata library is not valid because an )ENDDOT file-tailoring control statement is missing.**

**Explanation:**

A )ENDDOT file-tailoring control statement is required in the specified template.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQC021S**      **The *template\_name* template in the *library\_name* metadata library is not valid because the template must start with the *parameter\_name* job card parameter.**

**Explanation:**

The specified template must start with the specified job card parameter.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQC022S**      **The parameters used in a )DOT file-tailoring control statement exceeded the number of allowed parameters in the *template\_name* template. The template is in the *library\_name* metadata library. The error occurs in )DOT section *section\_number*.**

**Explanation:**

A )DOT file-tailoring control statement can contain only a limited number of parameters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQC023S**      **The )DOT file-tailoring control statement must include the *table-name* table name in the *template\_name* template. The template is in the *library\_name* metadata library. The error occurs in )DOT section *section\_number*.**

**Explanation:**

The )DOT file-tailoring control statement is missing a required table name.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQC024S**      **ISPF file tailoring failed for the *template\_name* template in the *library\_name* metadata library.**

**Explanation:**

An error occurred during ISPF file tailoring for the specified template.

**System action:**

Processing stops.

**User response**

Review the Tools Customizer-generated trace data set and the ISPF file tailoring trace data set. To create an ISPF file tailoring trace data set, complete the following steps:

1. Run Tools Customizer until the error is about to occur.
2. Specify the ISPFTRC command, and press Enter.
3. Issue the Tools Customizer command that issues the error.
4. Specify the ISPFTRC command, and press Enter. The ISPF file tailoring trace data set is created. It adheres the following naming convention: *TSO\_ID*.ISPFTRACE, where *TSO\_ID* is the TSO user ID that is being used.

If the problem persists, gather the following information and contact IBM Software Support.

- A screen capture of the Tools Customizer error. Ensure that the complete error message is displayed by pressing PF1.
- The Tools Customizer trace data set. It adheres to the following naming convention:

*TSO\_ID.CCQ.TRACE*, where *TSO\_ID* is the TSO user ID that is running Tools Customizer.

- The ISPF file tailoring trace data set.

---

**CCQC025I**      **Customized jobs do not exist because they have not been generated.**

**Explanation:**

The list of customized jobs cannot be displayed because the product has not been customized for any Db2 entries.

**System action:**

None.

**User response:**

Complete the steps to customize a product. Customized jobs are generated when all required product, LPAR parameters, and Db2 parameters are defined and at least one Db2 entry on which to customize the product has been selected.

---

**CCQC026S**      **The value of the "customized" attribute for the *parameter\_name* parameter in the *library\_name* metadata library template does not match the value that was previously specified. The value is *value\_name*, and the previously specified value is *value\_name*.**

**Explanation:**

The value for the "customized" attribute for a parameter must match the value that was previously specified.

**System action:**

Processing stops.

**User response:**

See ["Tools Customizer troubleshooting"](#) on page 151. Contact IBM Software Support.

---

**CCQC027S**      **The *job\_name* customization job was not found in the *library\_name* customization library.**

**Explanation:**

The selected customization job does not exist in the customization library.

**System action:**

Processing stops.

**User response:**

See ["Tools Customizer troubleshooting"](#) on page 151. Contact IBM Software Support.

---

**CCQC028S**      **The *library\_name* customization library was not found.**

**Explanation:**

The customization library does not exist.

**System action:**

Processing stops.

**User response:**

See ["Tools Customizer troubleshooting"](#) on page 151. Contact IBM Software Support.

---

**CCQC029I**      **The customization jobs were generated for *Product\_name*.**

**Explanation:**

The customization jobs were generated for the specific product.

**System action:**

None.

**User response:**

No action is required.

---

**CCQC030S**      **The customization jobs cannot be generated because at least one DB2 entry must be associated with this product.**

**Explanation:**

The product that you are customizing requires at least one Db2 entry to be associated with it before customization jobs can be generated.

**System action:**

None.

**User response:**

Associate a Db2 entry with the product that you are customizing, and regenerate the jobs.

---

**CCQC031I**      **The jobs were generated for the associated DB2 entries.**

**Explanation:**

The customization jobs were generated for the Db2 entries that are associated with the product.

**System action:**

None.

**User response:**

No action is required.

---

**CCQC032S**      **The customization jobs were not generated for *Product\_name*.**

**Explanation:**

A severe error occurred while the jobs were being generated for the specified product.

**System action:**

None.

**User response:**

See ["Tools Customizer troubleshooting"](#) on page 151. Contact IBM Software Support.

---

**CCQC033S**      **The *customization\_library\_name* has no customized jobs.**

**Explanation:**

The specified customization library cannot be browsed or edited because it is empty.

**System action:**

None.

**User response:**

Generate customization jobs for the specified library, and browse or edit the library again.

---

**CCQC034S**      **The specified operation is not allowed.**

**Explanation:**

Issuing commands against customization jobs from the customization library from an ISPF browse or edit session that was started on the **Finish Product Customization** panel is restricted.

**System action:**

None.

**User response:**

To make changes to customization jobs, follow the steps for recustomization.

---

**CCQC035E**      **Before you generate customization jobs, edit the product parameters to select one or more tasks or steps, and then issue the G line command or the GENERATEALL command again.**

**Explanation:**

One or more tasks or steps must be selected before customization jobs can be generated.

**System action:**

None.

**User response:**

Edit the product parameters to select one or more tasks or steps. Then, issue the G line command or the GENERATEALL command again.

---

**CCQC036E**      **Before you exit the Product Parameters panel, you must select one or more tasks or steps to generate customization jobs or issue the CANCEL command.**

**Explanation:**

One or more tasks or steps must be selected to generate customization jobs or the CANCEL command must be issued before you can exit the **Product Parameters** panel.

**System action:**

None.

**User response:**

Select one or more tasks or steps, or issue the CANCEL command.

---

**CCQC037W**      **The customization information was not found.**

**Explanation:**

To use the JOBLIST command, the customization jobs must be regenerated by using the GENERATEALL command or the G line command.

**System action:**

None.

**User response:**

Issue the GENERATEALL command or the G line command to generate the customization jobs.

---

**CCQC038W**      **The customization information cannot be accessed because the *customization\_member* customization member is being used.**

**Explanation:**

The customization member that was specified on NNN is currently being used.

**System action:**

None.

**User response:**

Determine why the customization member is in use, release it, and redo the work.

---

**CCQC039I**      **The VERIFY/VERIFYOFF command is not active in Generate mode.**

**Explanation:**

The VERIFY/VERIFYOFF command is not active in Generate mode because all values saved in Generate mode must already have been verified.

**System action:**

None.

**User response:**

No action is required.

---

**CCQD000W**      **The *member\_name* environment index member is not valid. The PL/I XML parser issued the following exception warning code: *code\_number*.**

**Explanation:**

While determining if the specified environment index member is valid, the PL/I XML parser issued an exception warning code.

**System action:**

Processing continues.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the warning.

---

**CCQD001S**      **The *member\_name* environment index member is not valid. The PL/I XML parser issued the following exception error code: *code\_number*.**

**Explanation:**

While determining if the specified environment index member is valid, the PL/I XML parser issued an exception error code.

**System action:**

Processing continues.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the error.

---

**CCQD002S**      **The XML structure of the *member\_name* environment index member is not valid. The *element\_name* element is unknown.**

**Explanation:**

The specified environment index member contains an unknown element.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD003S**      **The XML structure of the *member\_name* environment index member is not valid. Content is not allowed for the *element\_name* element, but content was found.**

**Explanation:**

Content was found in an element that cannot contain content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD004S**      **The XML structure of the *member\_name* environment index member is not valid. Content is required for the *element\_name* element, but content was not found.**

**Explanation:**

The specified element does not contain required content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD005S**      **The XML structure of the *member\_name* environment index member is not valid. The content length for the *element\_name* element exceeds *maximum\_number* characters.**

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD006S**      **The XML structure of the *member\_name* environment index member is not valid. The *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**

The specified element occurs too many times in the environment index member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD007S**      **The XML structure of the *member\_name* environment index member is not valid. The *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified element does not occur enough times in the environment index member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD008S**      **The XML structure of the *member\_name* environment index member is not valid. The *attribute\_name* attribute in the *element\_name* element cannot occur more than *maximum\_number* times.**



**Explanation:**

The specified attribute occurs too many times in the environment index member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD009S**      **The XML structure of the *member\_name* environment index member is not valid. The *attribute\_name* attribute in the *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified attribute does not occur enough times in the environment index member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD010S**      **The XML structure of the *member\_name* environment index member is not valid. Content is not allowed for the *attribute\_name* attribute in the *element\_name* element, but content was found.**

**Explanation:**

Content was found in an attribute that cannot contain content. The name of the attribute and the name of the element that contains it are indicated in the message text.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD011S**      **The XML structure of the *member\_name* environment index member is not valid. Content is required for the *attribute\_name* attribute in the *element\_name* element, but content was not found.**

**Explanation:**

An attribute does not contain required content. The name of the attribute and the name of the element that contains it are indicated in the message text.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD012S**      **The XML structure of the *member\_name* environment index member is not valid. The content length for the *element\_name* element exceeds *maximum\_number* characters.**

**Explanation:**

An element contains too many characters. The name of the element and the maximum number of allowed characters are indicated in the message text.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD013S**      **The XML structure of the *member\_name* environment index member is not valid. The *attribute\_name* attribute in the *element\_name* element is unknown.**

**Explanation:**

The environment index member contains an unknown attribute. The name of the unknown attribute and the name of the element that contains it are indicated in the message text.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD050S**      **The following LPAR serial number is duplicated in the environment index member: *serial\_number*.**

**Explanation:**

The environment index member contains duplicate LPAR serial numbers. The duplicate serial number is indicated in the message text.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD051S**      **The following DB2 serial number is duplicated in the environment index member: *serial\_number*.**

**Explanation:**

The environment index member contains duplicate Db2 serial numbers. The duplicate serial number is indicated in the message text.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQD052S**      **The following Db2 group attach name is duplicated in the environment index member: *group\_attach\_name*.**

**Explanation:**

The environment index member contains duplicate group attach names.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQD053S**      **The reference to the following DB2 subsystem for a Db2 group attach name is duplicated in the environment index member: *subsystem\_ID*.**

**Explanation:**

The environment index member contains duplicate references to a Db2 subsystem for a Db2 group attach name.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQD054S**      **The reference to the following DB2 subsystem for the *LPAR\_name* LPAR is duplicated in the environment index member: *subsystem\_ID*.**

**Explanation:**

The environment index member contains duplicate references to a Db2 subsystem for an LPAR. The duplicate subsystem ID is indicated in the message text.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQD055S**      **The following Db2 group attach name was not found in the environment index member: *group\_attach\_name*.**

**Explanation:**

A group attach name that is referenced by a Db2 member does not exist in the environment index member.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQD056S**      **The following LPAR was not found in the environment index member: *LPAR\_name*.**

**Explanation:**

The LPAR does not exist in the environment index member.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQD057S**      **The following LPAR is duplicated in the environment index member: *LPAR\_name*.**

**Explanation:**

The environment index member contains duplicate LPARs. The name of the duplicate LPAR name is indicated in the message text.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQD100W**      **The *member\_name* product index member is not valid. The PL/I XML parser issued the following exception warning code: *code\_number*.**

**Explanation:**

While determining if the product index member is valid, the PL/I XML parser issued the specified exception warning code.

**System action:**

Processing continues.

**User response:**



See the *Enterprise PL/I for z/OS Programming Guide* for more information about the specified exception warning code.

---

**CCQD101S**      **The *member\_name* product index member is not valid. The PL/I XML parser issued the following exception error code: *code\_number*.**

**Explanation:**

While determining if the product index member is valid, the PL/I XML parser issued the specified exception error code.

**System action:**

Processing stops.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the specified exception error code. Ensure that the Tools Customizer data store data set DCB is the same as the sample SCCQSAMP(CCQCDATS) data set DCB.

---

**CCQD102S**      **The XML structure of the *member\_name* product index member is not valid. The *element\_name* element is unknown.**

**Explanation:**

The specified product index member contains an unknown element.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD103S**      **The XML structure of the *member\_name* product index member is not valid. Content is not allowed for the *element\_name* element, but content was found.**

**Explanation:**

Content was found for an element that cannot contain content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD104S**      **The XML structure of the *member\_name* product index member is not valid. Content is required for the *element\_name***

**element, but content was not found.**

**Explanation:**

The specified element does not contain required content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD105S**      **The XML structure of the *member\_name* product index member is not valid. The content length for the *element\_name* element exceeds *maximum\_number* characters.**

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD106S**      **The XML structure of the *member\_name* product index member is not valid. The *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**

The specified element occurs too many times in the product index member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD107S**      **The XML structure of the *member\_name* product index member is not valid. The *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified element does not occur enough times in the product index member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD108S**      **The XML structure of the *member\_name* product index member is not valid. The *attribute\_name* attribute in the *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**

An attribute occurs too many times. The name of the attribute and the element that contains it are indicated in the message text.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD109S**      **The XML structure of the *member\_name* product index member is not valid. The *attribute\_name* attribute in the *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified attribute does not occur enough times in the product index member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD110S**      **The XML structure of the *member\_name* product index member is not valid. Content is not allowed for the *attribute\_name* attribute in the *element\_name* element, but content was found.**

**Explanation:**

An attribute cannot contain content. The name of the attribute and the element that contains it are indicated in the message text.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD111S**      **The XML structure of the *member\_name* product index member is not valid. Content is required for the *attribute\_name* attribute in the *element\_name***

**element, but content was not found.**

**Explanation:**

An attribute requires content. The name of the attribute and the name of the element that contains it are indicated in the message text.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD112S**      **The XML structure of the *member\_name* product index member is not valid. The content length for the *element\_name* element exceeds *maximum\_number* characters.**

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD113S**      **The XML structure of the *member\_name* product index member is not valid. The *attribute\_name* attribute in the *element\_name* element is unknown.**

**Explanation:**

The specified attribute in the product index member is unknown.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD118S**      **The content of the *member\_name* product index member is not valid. The *configuration\_ID* configuration ID for the *configuration-name* configuration name is not unique.**

**Explanation:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD120S**      **The content of the *member\_name* product index member is not valid. The pack ID *pack\_ID* that is referenced by product prefix *product\_prefix* in the metadata library *library\_name* could not be found.**

**Explanation:**

The specified pack ID could not be found in the metadata library.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD121I**      **The specified pack contains the *component\_name*, which was previously specified as a stand-alone product.**

**Explanation:**

The specified component of the pack was previously specified as a stand-alone product.

**System action:**

None.

**User response:**

No action is required.

---

**CCQD122I**      **The specified component metadata library was previously specified as part of the *pack\_name*.**

**Explanation:**

The specified metadata library for the component was previously specified as part of a pack.

**System action:**

None.

**User response:**

No action is required.

---

**CCQD123E**      **The customization library name *library\_name* is being used by another product or component. Specify another customization library qualifier on the Tools Customizer Settings panel.**

**Explanation:**

A different product or component is using the specified customization library.

**System action:**

None.

**User response:**

Specify another customization library qualifier on the **Tools Customizer Settings** panel.

---

**CCQD124E**      **The customization library *library\_name* is in use by another metadata library.**

**Explanation:**

A different product or component is using the specified customization library. Specify another metadata library in the **Workplace** panel.

**System action:**

None.

**User response:**

Specify another customization library qualifier in the **Tools Customizer Settings** panel.

---

**CCQD300W**      **The *member\_name* product environment member is not valid. The PL/I XML parser issued the following exception warning code: *code\_number*.**

**Explanation:**

While determining if the product environment member is valid, the PL/I XML parser issued the specified exception warning code.

**System action:**

Processing continues.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the specified exception warning code.

---

**CCQD301S**      **The *member\_name* product environment member is not valid. The PL/I XML parser issued the following exception error code: *code\_number*.**

**Explanation:**

While determining if the product environment member is valid, the PL/I XML parser issued the specified exception error code.

**System action:**

Processing stops.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the specified exception error code.

---

**CCQD302S**      **The XML structure of the *member\_name* product environment member is not valid. The *element\_name* element is unknown.**

**Explanation:**

The specified product environment member contains an unknown element.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD303S**      **The XML structure of the *member\_name* product environment member is not valid. Content is not allowed for the *element\_name* element, but content was found.**

**Explanation:**

Content was found for an element that cannot contain content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD304S**      **The XML structure of the *member\_name* product environment member is not valid. Content is required for the *element\_name* element, but content was not found.**

**Explanation:**

The specified element does not contain required content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD305S**      **The XML structure of the *member\_name* product environment member is not valid. The content length for the *element\_name* element exceeds *maximum\_number* characters.**

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD306S**      **The XML structure of the *member\_name* product**

**environment member is not valid. The *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**

The specified element occurs too many times in the product environment member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD307S**      **The XML structure of the *member\_name* product environment member is not valid. The *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified element does not occur enough times in the product environment member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD308S**      **The XML structure of the *member\_name* product environment member is not valid. The *attribute\_name* attribute in the *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**

The specified attribute occurs too many times. The name of the attribute and the element that contains it are indicated in the message text.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD309S**      **The XML structure of the *member\_name* product environment member is not valid. The *attribute\_name* attribute in the *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified attribute does not occur enough times in the product environment member.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQD310S**      **The XML structure of the *member\_name* product environment member is not valid. Content is not allowed for the *attribute\_name* attribute in the *element\_name* element, but content was found.**

**Explanation:**  
The specified attribute cannot contain content. The name of the attribute and the element that contains it are indicated in the message text.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQD311S**      **The XML structure of the *member\_name* product environment member is not valid. Content is required for the *attribute\_name* attribute in the *element\_name* element, but content was not found.**

**Explanation:**  
The specified attribute requires content. The name of the attribute and the name of the element that contains it are indicated in the message text.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQD312S**      **The XML structure of the *member\_name* product environment member is not valid. The content length for the *element\_name* element exceeds *maximum\_number* characters.**

**Explanation:**  
The specified element contains too many characters.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQD313S**      **The XML structure of the *member\_name* product environment member is not valid. The *attribute\_name* attribute in the *element\_name* element is unknown.**

**Explanation:**  
The specified attribute in the product environment member is unknown.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQD350I**      **The *subsystem\_ID* Db2 subsystem is associated with this product.**

**Explanation:**  
The specified Db2 subsystem was added and saved in the Tools Customizer data store for the product to be customized.

**System action:**  
Processing continues.

**User response:**  
No action is required.

---

**CCQD351I**      **The *member\_name* Db2 member for the *group\_attach\_name* Db2 group attach name is associated with this product.**

**Explanation:**  
The specified Db2 member for the group attach name was added and saved in the Tools Customizer data store for the product to be customized.

**System action:**  
Processing continues.

**User response:**  
No action is required.

---

**CCQD352I**      **The *group\_attach\_name* Db2 group attach name is associated with this product.**

**Explanation:**  
The specified Db2 group attach name was added and saved in the Tools Customizer data store for the product to be customized.

**System action:**  
Processing continues.

**User response:**  
No action is required.

---

**CCQD353E**      **The *subsystem\_ID* Db2 subsystem is already associated with this product.**

**Explanation:**

The specified Db2 subsystem cannot be added for the product to be customized because it already exists in the product environment in the data store.

**System action:**

None.

**User response:**

Ensure that the Db2 subsystem is specified correctly. If the problem persists, contact IBM Software Support.

---

**CCQD354E**      **The *member\_name* Db2 member for the *group\_attach\_name* Db2 group attach name is already associated with this product.**

**Explanation:**

The specified Db2 member for the group attach name cannot be added for the product to be customized because it already exists in the product environment in the data store.

**System action:**

None.

**User response:**

Ensure that the Db2 group attach name is specified correctly. If the problem persists, contact IBM Software Support.

---

**CCQD355E**      **The *group\_attach\_name* Db2 group attach name is already associated with this product.**

**Explanation:**

The specified Db2 group attach name cannot be added for the product to be customized because it already exists in the product environment in the data store.

**System action:**

Processing stops.

**User response:**

Ensure that the Db2 group attach name is specified correctly. If the problem persists, contact IBM Software Support.

---

**CCQD356S**      **The *library\_name* metadata library is already associated with the maximum number of allowed Db2 entries for this product.**

**Explanation:**

The specified metadata library cannot be associated with more Db2 entries because it is already associated with the number of Db2 entries that are allowed.

**System action:**

Processing stops.

**User response:**

Delete an associated Db2 entry, and associate the specified library with another Db2 entry again.

---

**CCQD357I**      **The *subsystem\_ID* Db2 subsystem is unassociated with this product.**

**Explanation:**

The specified Db2 SSID was unassociated with the product that you are customizing.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**CCQD358I**      **The *member\_name* Db2 member for the *group\_attach\_name* Db2 group attach name is unassociated with this product.**

**Explanation:**

The specified Db2 member for the Db2 group attach name was unassociated with the product that you are customizing.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**CCQD359I**      **The *group\_attach\_name* Db2 group attach name is unassociated with this product.**

**Explanation:**

The specified Db2 group attach name was unassociated with the product that you are customizing.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**CCQD360S**      **The *library\_name* metadata library is not associated with the specified Db2 subsystem *subsystem\_ID*.**

**Explanation:**

The specified Db2 subsystem and metadata library are not associated with each other.

**System action:**

None.

**User response:**

Ensure that the Db2 subsystem and the metadata library are associated. If the problem persists, contact IBM Software Support.

---

**CCQD361S**      **The *library\_name* metadata library is not associated with the specified DB2 data sharing group member *member\_name* for the *group\_attach\_name* Db2 group attach name.**

**Explanation:**

The specified Db2 data sharing group member for the group attach name and metadata library are not associated with each other.

**System action:**

None.

**User response:**

Ensure that the Db2 data sharing group member for the group attach name and the metadata library are associated. If the problem persists, contact IBM Software Support.

---

**CCQD362S**      **The *library\_name* metadata library is not associated with the specified *group\_attach\_name* Db2 group attach name.**

**Explanation:**

The specified Db2 group attach name and metadata library are not associated with each other.

**System action:**

None.

**User response:**

Ensure that the Db2 group attach name and the metadata library are associated. If the problem persists, contact IBM Software Support.

---

**CCQD400W**      **The customization parser issued the *code\_number* warning code while it parsed the product customization member *member\_name*. See the PL/I programming guide for more information about this XML parser continuable exception code.**

**Explanation:**

While determining if the specified member is valid, the PL/I XML parser issued an exception warning code.

**System action:**

Processing stops.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the warning.

---

**CCQD401S**      **The customization parser issued the *code\_number* error code while it parsed the product customization member *member\_name*. See the PL/I**

**programming guide for more information about this XML parser terminating exception code.**

**Explanation:**

While determining if the specified member is valid, the PL/I XML parser issued an exception error code.

**System action:**

Processing stops.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the error.

---

**CCQD500W**      **The *data\_set\_name* data store data set was not found.**

**Explanation:**

Tools Customizer could not find the specified data store data set.

**System action:**

None.

**User response:**

No action is required.

---

**CCQD501W**      **The *data\_set\_name* data store data set was not found, so it was created.**

**Explanation:**

Tools Customizer created the specified data set because it could not be found.

**System action:**

None.

**User response:**

No action is required.

---

**CCQD502E**      **The *data\_set\_name* data store data set is not writable.**

**Explanation:**

Tools Customizer cannot write to the specified data set.

**System action:**

None.

**User response:**

Ensure that the data set is writable.

---

**CCQD503E**      **The *data\_set\_name* data store data set could not be opened with the *disposition\_type* disposition.**

**Explanation:**

Tools Customizer could not open the data set with the specified disposition.

**System action:**

Processing stops.

**User response:**



Ensure that you have WRITE authority access to this data set.

---

**CCQD504E**      **The *data\_set\_name* data store data set could not be opened with the *option\_name* option.**

**Explanation:**

Tools Customizer could not open the data set with the specified option.

**System action:**

Processing stops.

**User response:**

Ensure that you have WRITE authority access to this data set.

---

**CCQD505E**      **The data store data set *data\_set\_name* already exists in a different volume.**

**Explanation:**

Tools Customizer could not create the specified data set because the specified data set already exists in a different volume. Data store data set names must be unique.

**System action:**

Processing stops.

**User response:**

Specify a different data store data set name.

---

**CCQD510I**      **The DB2 SSID and Db2 group attach name were created.**

**Explanation:**

The Db2 SSID and Db2 group attach name were created and saved in the data store.

**System action:**

None.

**User response:**

No action is required.

---

**CCQD511E**      **The DB2 entry already exists in the list of Db2 entries to be associated.**

**Explanation:**

The Db2 entry cannot be added because it already exists in the list of Db2 entries to be associated.

**System action:**

None.

**User response:**

Specify a different Db2 entry.

---

**CCQD512S**      **An error occurred while a DB2 entry was being created.**

**Explanation:**

A severe error occurred while a Db2 entry was being created.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD513E**      **The specified DB2 entry already exists and is associated with the current product on the Customizer Workplace panel.**

**Explanation:**

The Db2 entry cannot be added because it already exists, and it is already associated with the product to be customized.

**System action:**

None.

**User response:**

Press F3 to go to the **Customizer Workplace** panel to see the Db2 entry, or specify a different Db2 entry.

---

**CCQD514E**      **A value is required for a DB2 subsystem, a Db2 group attach name, or both before they can be created.**

**Explanation:**

Required information is missing. A Db2 subsystem, a Db2 group attach name, or both must be specified.

**System action:**

None.

**User response:**

Specify a Db2 subsystem, a Db2 group attach name, or both.

---

**CCQD515E**      **The specified DB2 entry already exists in the list of Db2 entries and is already associated with the current product.**

**Explanation:**

The Db2 entry has already been created and associated with the product that you want to customize.

**System action:**

None.

**User response:**

Specify a different Db2 entry.

---

**CCQD516E**      **The specified DB2 entry already exists in the list of Db2 entries on the Associate DB2 Entry with Product panel but is not associated with the current product.**

**Explanation:**



The Db2 entry exists, but it must be associated with the product to be customized.

**System action:**  
None.

**User response:**  
On the **Customizer Workplace** panel, issue the ASSOCIATE command to associate the Db2 entry with the product.

---

**CCQD517S**      **An error occurred while a DB2 entry was being copied.**

**Explanation:**  
A severe error occurred while a Db2 entry was being copied

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD518E**      **A value is required for a DB2 subsystem, a Db2 group attach name, or both before they can be copied.**

**Explanation:**  
Required information is missing. A Db2 subsystem, a Db2 group attach name, or both must be specified.

**System action:**  
None.

**User response:**  
Specify a Db2 subsystem, a Db2 group attach name, or both.

---

**CCQD519I**      **The DB2 entry was copied.**

**Explanation:**  
The Db2 entry was copied and saved in the Tools Customizer data store.

**System action:**  
None.

**User response:**  
No action is required.

---

**CCQD520S**      **The DB2 entry was copied to the list of Db2 entries but was not associated because the product is already associated with the allowed number of Db2 entries.**

**Explanation:**  
The Db2 entry was not completely copied because a product can be associated with only 1200 Db2 entries.

**System action:**  
Processing stops.

**User response:**

Remove a Db2 entry from the list, and copy the specified Db2 entry again.

---

**CCQD521E**      ***Line\_command* is not a valid line command.**

**Explanation:**  
The specified line command is not valid. Valid line commands are on the panel.

**System action:**  
Processing stops.

**User response:**  
Specify a valid line command.

---

**CCQD522E**      **The *subsystem\_ID* Db2 subsystem ID occurs more than once in the list. Each row must be unique.**

**Explanation:**  
The specified Db2 subsystem ID can be used only once.

**System action:**  
Processing stops.

**User response:**  
Specify a different Db2 subsystem ID.

---

**CCQD523E**      **The *group\_attach\_name* Db2 group attach name occurs more than once in the list. Each row must be unique.**

**Explanation:**  
The specified Db2 group attach name can be used only once.

**System action:**  
Processing stops.

**User response:**  
Specify a different Db2 group attach name.

---

**CCQD524E**      **The *member\_name* Db2 member for the Db2 group attach name occurs more than once in the list. Each row must be unique.**

**Explanation:**  
The specified Db2 member for the Db2 group attach name can be used only once.

**System action:**  
Processing stops.

**User response:**  
Specify a different Db2 member for the Db2 group attach name.

---

**CCQD525I**      **The DB2 entries were created.**

**User response:**  
No action is required.

---

**CCQD526E**      **The *subsystem\_ID* Db2 subsystem ID occurs more than once in the list. Each Db2 subsystem ID must be unique.**

**Explanation:**

The specified Db2 subsystem ID can be used only once.

**System action:**

Processing stops.

**User response:**

Specify a different Db2 subsystem ID.

---

**CCQD527I**      **DB2 group attach names cannot be created during the copy process.**

**Explanation:**

The ability to create Db2 group attach names is not available during the copy process.

**System action:**

None.

**User response:**

Create Db2 group attach names by issuing the CREATE command on the **Customizer Workplace** panel.

---

**CCQD528E**      **The *metadata\_library* metadata library is already associated with *number* Db2 entries. The maximum number of associated Db2 entries for this metadata library is 256.**

**Explanation:**

A metadata library can be associated with a maximum of 256 Db2 entries. The specified metadata library is already associated with 256.

**System action:**

Processing stops.

**User response:**

Remove an existing association between the specified metadata library and a Db2 entry, and associate the specified the metadata library with another entry.

---

**CCQD529I**      **At least one row is required.**

---

**CCQD560E**      **The *subsystem\_ID* Db2 subsystem already exists and is associated with the current product on the Customizer Workplace panel.**

**Explanation:**

The specified Db2 subsystem exists and is associated with the product that you are customizing.

**System action:**

None.

**User response:**

Specify another Db2 subsystem.

---

**CCQD561E**      **The *member\_name* Db2 member for the *group\_attach\_name* Db2 group attach name already exists and is associated with the current product on the Customizer Workplace panel.**

**Explanation:**

The specified Db2 data sharing group for the Db2 group attach name exists and is associated with the product that you are customizing.

**System action:**

None.

**User response:**

Specify another Db2 subsystem.

---

**CCQD562E**      **The *group\_attach\_name* Db2 group attach name already exists and is associated with the current product on the Customizer Workplace panel.**

**Explanation:**

The specified Db2 group attach name exists and is associated with the product that you are customizing. The subsystem is in the table on the **Customizer Workplace** panel.

**System action:**

None.

**User response:**

Specify another Db2 group attach name.

---

**CCQD563E**      **A value is required for a DB2 subsystem, a Db2 group attach name, or both before they can be created.**

**Explanation:**

A Db2 subsystem, a Db2 group attach name, or both are not specified so one or both of them cannot be created.

**System action:**

None.

**User response:**

Specify a value for the Db2 subsystem, the Db2 group attach name, or both.

---

**CCQD565E**      **The *subsystem\_ID* Db2 subsystem already exists in the list of Db2 entries and is already associated with the current product.**

**Explanation:**

The specified subsystem is already associated.

**System action:**

None.

**User response:**

Specify a different Db2 subsystem.

---

**CCQD566E**      **The *member\_name* Db2 member for the *group\_attach\_name* Db2 group attach name already exists in the list of Db2 entries and is already associated with the current product.**

**Explanation:**

The specified Db2 member is already associated.

**System action:**

None.

**User response:**

Specify a different Db2 member.

---

**CCQD567E**      **The *group\_attach\_name* Db2 group attach name already exists in the list of Db2 entries and is already associated with the current product.**

**Explanation:**

The specified Db2 group attach name is already associated.

**System action:**

None.

**User response:**

Specify another Db2 group attach name.

---

**CCQD568I**      ***product\_name* is not associated with a DB2 entry.**

**Explanation:**

The product that you are trying to customize is not associated with a Db2 entry. Before a product can be customized, it must be associated with at least one Db2 entry.

**System action:**

None.

**User response:**

Associate one or more Db2 entries with the product.

---

**CCQD569I**      **The *product\_name* product configuration is not associated with a DB2 entry.**

**Explanation:**

The configuration for the specified product is not associated with a Db2 entry.

**System action:**

None.

**User response:**

Associate one or more Db2 entries with the configuration.

---

**CCQD577W**      **The *mode\_name* Db2 mode of the *subsystem\_ID* Db2 subsystem is not supported by the product.**

**Explanation:**

The product does not support the specified Db2 mode.

**System action:**

None.

**User response:**

Specify a supported Db2 mode.

---

**CCQD578W**      **The *mode\_name* Db2 mode of the *member\_name* Db2 member for the Db2 group is not supported by the product.**

**Explanation:**

The product does not support the specified Db2 mode.

**System action:**

None.

**User response:**

Specify a supported Db2 mode.

---

**CCQD579W**      **The *mode\_name* Db2 mode of the *group\_name* Db2 group attach name is not supported by the product.**

**Explanation:**

The product does not support the specified Db2 mode.

**System action:**

None.

**User response:**

Specify a supported Db2 mode.

---

**CCQD580S**      **The *subsystem\_ID* Db2 subsystem was copied to the list of Db2 entries but was not associated because the product is already associated with the allowed number of Db2 entries.**

**Explanation:**

The copied Db2 subsystem was not associated with the product because the product is associated with the maximum number of Db2 entries.

**System action:**

None.

**User response:**

Remove an associated Db2 entry and associate the product with the copied Db2 subsystem.

---

**CCQD581S**      **The *member\_name* Db2 member for the *group\_attach\_name* Db2 group attach name was copied to the list of Db2 entries but was not associated because the product**

**is already associated with the allowed number of Db2 entries.**

**Explanation:**

The copied Db2 member for the Db2 group attach name was not associated with the product because the product is associated with the maximum number of Db2 entries.

**System action:**

None.

**User response:**

Remove an associated Db2 entry and associate the product with the copied Db2 member.

---

**CCQD582S**      **The *group\_attach\_name* Db2 group attach name was copied to the list of Db2 entries but was not associated because the product is already associated with the allowed number of Db2 entries.**

**Explanation:**

The copied Db2 group attach name was not associated with the product because the product is associated with the maximum number of Db2 entries.

**System action:**

None.

**User response:**

Remove an associated Db2 entry and associate the product with the copied Db2 group attach name.

---

**CCQD583I**      **The *from\_DB2* Db2 subsystem was copied to the *to\_DB2* subsystem.**

**System action:**

None.

**User response:**

No action is required.

---

**CCQD584I**      **The *member\_name* DB2 member for the *group\_attach\_name* DB2 group attach name is copied to the *subsystem\_ID* DB2 subsystem.**

**Explanation:**

The specified Db2 member was copied.

**System action:**

None.

**User response:**

No action is required.

---

**CCQD585I**      **The *group\_attach\_name* Db2 group attach name cannot be copied because a Db2 member is required.**

**Explanation:**

The specified Db2 group attach name was not copied because a Db2 member was missing.

**System action:**

None.

**User response:**

No action is required.

---

**CCQD586S**      **The current LPAR is *LPAR\_name*, but the data store contains information about the *LPAR\_name* LPAR. You must use the *LPAR\_name* LPAR to customize the product.**

**Explanation:**

The LPAR that is stored in the data store data set must be used to customize the product.

**System action:**

Processing stops.

**User response:**

Use the LPAR that is stored in the data store data set.

---

**CCQD587W**      **The *level\_number* Db2 level of the *subsystem\_name* Db2 subsystem is not supported by the product.**

**Explanation:**

The product does not support the specified Db2 level.

**System action:**

Processing continues.

**User response:**

Specify a supported level of Db2.

---

**CCQD588W**      **The *level\_number* Db2 level of the *member\_name* Db2 member of the *group\_name* Db2 group is not supported by the product.**

**Explanation:**

The product does not support the specified Db2 level.

**System action:**

Processing continues.

**User response:**

Specify a supported level of Db2.

---

**CCQD589W**      **The *level\_number* Db2 level of the *group\_name* Db2 group attach name is not supported by the product.**

**Explanation:**

The product does not support the specified Db2 level.

**System action:**

Processing continues.

**User response:**

Specify a supported level of Db2.

---

**CCQD593I**      **The *subsystem\_ID* Db2 subsystem was deleted.**

**User response:**  
No action is required.

---

**CCQD594I**      **The *member\_name* Db2 for the *group\_attach\_name* Db2 group attach name was deleted.**

**User response:**  
No action is required.

---

**CCQD595I**      **The *group\_attach\_name* Db2 group attach name was deleted.**

**User response:**  
No action is required.

---

**CCQD596E**      **The *subsystem\_ID* Db2 subsystem was not deleted.**

**Explanation:**  
An internal error occurred while the specified Db2 subsystem was being deleted.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD597E**      **The *member\_name* Db2 member for the *group\_attach\_name* Db2 group attach name was not deleted.**

**Explanation:**  
An internal error occurred while the specified Db2 member was being deleted.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD598E**      **The *group\_attach\_name* Db2 group attach name was not deleted.**

**Explanation:**  
An internal error occurred while the specified Db2 group attach name was being deleted.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD600W**      **The *member\_name* product customization member is not valid. The PL/I XML parser issued the following exception warning code: *code\_number*.**

**Explanation:**

While determining if the XML structure of the product customization member is valid, the PL/I XML parser issued an exception warning code.

**System action:**  
Processing continues.

**User response:**  
See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.

---

**CCQD601S**      **The *member\_name* product customization member is not valid. The PL/I XML parser issued the following exception error code: *code\_number*.**

**Explanation:**  
While determining if the XML structure of the product customization member is valid, the PL/I XML parser issued an exception error code.

**System action:**  
Processing stops.

**User response:**  
See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception error code.

---

**CCQD602S**      **The XML structure of the *member\_name* product customization member is not valid. The *element\_name* element is unknown.**

**Explanation:**  
The data store member contains an unknown element.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD603S**      **The XML structure of the *member\_name* product customization member is not valid. Content is not allowed for the *element\_name* element, but content was found.**

**Explanation:**  
The specified element cannot contain content.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD604S**      **The XML structure of the *member\_name* product customization member is not**

**valid. Content is required for the *element\_name* element, but content was not found.**

**Explanation:**

The specified element is missing required content.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQD605S**      **The XML structure of the *member\_name* product customization member is not valid. The content length for the *element\_name* element exceeds *maximum\_number* characters.**

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQD606S**      **The XML structure of the *member\_name* product customization member is not valid. The *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**

The specified element occurs too many times.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQD607S**      **The XML structure of the *member\_name* product customization member is not valid. The *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified element does not occur enough times.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQD608S**      **The XML structure of the *member\_name* product customization member is not valid. The *attribute\_name* attribute in the *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**

The specified attribute occurs too many times.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQD609S**      **The XML structure of the *member\_name* product customization member is not valid. The *attribute\_name* attribute in the *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified attribute does not occur enough times.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQD610S**      **The XML structure of the *member\_name* product customization member is not valid. Content is not allowed for the *attribute\_name* attribute in the *element\_name* element, but content was found.**

**Explanation:**

The specified attribute cannot contain content.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQD611S**      **The XML structure of the *member\_name* product customization member is not valid. Content is required for the *attribute\_name* attribute in the *element\_name* element, but content was not found.**

**Explanation:**

The specified attribute does not contain required content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD612S**      **The XML structure of the *member\_name* product customization member is not valid. The content length for the *element\_name* element exceeds *maximum\_number* characters.**

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD613S**      **The XML structure of the *member\_name* product customization member is not valid. The *attribute\_name* attribute in the *element\_name* element is unknown.**

**Explanation:**

The specified attribute in the data store member is unknown.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD614S**      **The content of the *member\_name* product customization member is not valid. The value of the *element\_name* element is not valid. The value is *value\_name*.**

**Explanation:**

The specified value is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQD700W**      **The *member\_name* Db2 data member is not valid. The PL/I XML parser issued the**

**following exception warning code: *code\_number*.**

**Explanation:**

While determining if the XML structure of the Db2 data member is valid, the PL/I XML parser issued an exception warning code.

**System action:**

Processing continues.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.

---

**CCQD701S**      **The *member\_name* Db2 data member is not valid. The PL/I XML parser issued the following exception error code: *code\_number*.**

**Explanation:**

While determining if the XML structure of the Db2 data member is valid, the PL/I XML parser issued an exception error code.

**System action:**

Processing continues.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception error code.

---

**CCQD750W**      **The *value\_number* value in the Db2 parameter *parameter\_name* was skipped because only *maximum\_number* values are allowed.**

**Explanation:**

The specified value was skipped because it exceeds the number of allowed values in the Db2 parameter.

**System action:**

Processing continues.

**User response:**

No action is required. To stop this message from being issued, remove the extra values from the Db2 parameter.

---

**CCQD800W**      **The *member\_name* LPAR data member is not valid. The PL/I XML parser issued the following exception warning code: *code\_number*.**

**Explanation:**

While determining if the XML structure of the LPAR data member is valid, the PL/I XML parser issued an exception warning code.

**System action:**

Processing continues.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.

---

**CCQD801S**      **The *member\_name* LPAR data member is not valid. The PL/I XML parser issued the following exception error code: *code\_number*.**

**Explanation:**

While determining if the XML structure of the LPAR data member is valid, the PL/I XML parser issued an exception error code.

**System action:**

Processing continues.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception error code.

---

**CCQD850W**      **The *value\_number* value in the LPAR parameter *parameter\_name* was skipped because only *maximum\_number* values are allowed.**

**Explanation:**

The specified value was skipped because it exceeds the number of allowed values in the LPAR parameter.

**System action:**

Processing continues.

**User response:**

No action is required. To stop this message from being issued, remove the extra values from the LPAR parameter.

---

**CCQD851I**      **The *subsystem\_ID* Db2 subsystem is copied to the *member\_name* Db2 member for the *group\_attach\_name* Db2 group attach name.**

**User response:**

No action is required.

---

**CCQD852I**      **The *member\_name* Db2 member for the *group\_attach\_name* Db2 group attach name is copied to the *member\_name* Db2 member for the *group\_attach\_name* Db2 group attach name.**

**User response:**

No action is required.

---

**CCQD854I**      **The *member\_name* Db2 member for the *group\_attach\_name* Db2 group 'attach name is copied to multiple Db2 entries.**

**User response:**

No action is required.

---

**CCQD900W**      **The *member\_name* product data member is not valid. The PL/I XML parser issued the following exception warning code: *code\_number*.**

**Explanation:**

While determining if the XML structure of the product data member is valid, the PL/I XML parser issued an exception warning code.

**System action:**

Processing continues.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.

---

**CCQD901S**      **The *member\_name* product data member is not valid. The PL/I XML parser issued the following exception error code: *code\_number*.**

**Explanation:**

While determining if the XML structure of the product data member is valid, the PL/I XML parser issued an exception error code.

**System action:**

Processing continues.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.

---

**CCQD950W**      **The *value\_number* value in the product parameter *parameter\_name* was skipped because only *maximum\_number* values are allowed.**

**Explanation:**

The specified value was skipped because it exceeds the number of allowed values in the product parameter.

**System action:**

Processing continues.

**User response:**

No action is required. To stop this message from being issued, remove the extra values from the product parameter.

---

**CCQD960I**      **The *subsystem\_ID* Db2 subsystem was changed to the *member\_name* Db2 member for the *group\_attach\_name* Db2 group attach name.**

**User response:**

No action is required.



---

**CCQD961I**      **The *member\_name* Db2 member for the *group\_attach\_name* Db2 group attach name was changed to the *subsystem\_ID* Db2 subsystem.**

**User response:**  
No action is required.

---

**CCQD962I**      **The *member\_name* Db2 member for the *group\_attach\_name* Db2 group attach name was changed to the *member\_name* Db2 member for the *group\_attach\_name* Db2 group attach name.**

**User response:**  
No action is required.

---

**CCQD963E**      **The DB2 group attach name cannot be blank when the Db2 subsystem ID is blank.**

**Explanation:**  
A Db2 group attach name, Db2 subsystem ID, or both must be specified.

**System action:**  
Processing stops.

**User response:**  
Specify a Db2 group attach name, Db2 subsystem ID, or both.

---

**CCQE000S**      **The specified message field name or message *message\_ID* was not found.**

**Explanation:**  
An error occurred while displaying a message field name or the specified message.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQE001E**      **An incorrect trace level was specified. Valid trace levels are 0 - 4.**

**Explanation:**  
A wrong trace level was specified. Valid trace levels are 0 - 4.

**System action:**  
Processing stops.

**User response:**  
Specify a valid trace level 0 - 4.

---

**CCQF028E**      **An asterisk was improperly specified in a filter argument.**

**Explanation:**

An asterisk, which is treated as data, is embedded in the filter arguments. A generic filter argument is specified by placing the asterisk in the last nonblank position of the argument. No rows match the filter arguments, so all rows will be shown.

**System action:**  
Processing stops.

**User response:**  
Specify a valid filter argument.

---

**CCQF029I**      **More Db2 entries are associated with the specified product. All Db2 entries are listed.**

**System action:**  
None.

**User response:**  
No action is required.

---

**CCQF080I**      **The customized jobs for the product that you are customizing are stored in this data set.**

**System action:**  
None.

**User response:**  
No action is required.

---

**CCQF081I**      **The JCL must be browsed or edited.**

**Explanation:**  
You can either browse or edit the JCL.

**System action:**  
None.

**User response:**  
No action is required.

---

**CCQF082E**      **The *sort-command* command has an invalid sort field or order. The valid fields are *list-of-column-names*. The valid sort orders are A (for ascending) or D (for descending).**

**Explanation:**  
An invalid sort field or order was specified.

**System action:**  
Processing stops.

**User response:**  
Specify a valid sort field or order.

---

**CCQF083E**      **The *sort-command* command is missing a sort field.**

**Explanation:**  
A sort field must be specified.

**System action:**

Processing stops.

**User response:**

Specify a valid sort field.

---

**CCQF084E**      **The *sort-command* command has more than two sort fields specified.**

**Explanation:**

The specified sort command included more than two sort fields. The sort command can have up to two fields specified.

**System action:**

Processing stops.

**User response:**

Specify only one or two sort fields.

---

**CCQF085E**      **A sort order was specified incorrectly in the *sort-command* command. A sort order can be specified only after a field name.**

**Explanation:**

Valid orders are A (for ascending) or D (for descending).

**System action:**

Processing stops.

**User response:**

Specify a valid sort order after a field name.

---

**CCQF086E**      **The *sort-command* command has an invalid sort field. The valid fields are *list-of-the-table-column-names*.**

**Explanation:**

An invalid sort field was specified.

**System action:**

Processing stops.

**User response:**

Specify a valid sort field.

---

**CCQF087E**      **The *sort-command* command has an invalid sort order. The valid orders are A (for ascending) or D (for descending).**

**Explanation:**

An invalid sort order was specified.

**System action:**

Processing stops.

**User response:**

Specify a valid sort order.

---

**CCQF088E**      **No row match the specified filter argument. All rows are shown.**

**Explanation:**

No rows match the selected values.

**System action:**

Processing stops.

**User response:**

Specify a matched value for filtering.

---

**CCQF089I**      **Type the search arguments to filter objects. A generic filter argument is a search argument of the form AA\*.**

**Explanation:**

In a generic filter argument, only the characters up to the asterisk (\*) are compared. The \* must be placed in the last nonblank position of the argument. Asterisks embedded in the argument are treated as data.

**System action:**

None.

**User response:**

No action is required.

---

**CCQF110I**      **To show the panel instructions section, specify a slash (/). To hide the panel instructions section, remove the slash.**

**System action:**

None.

**User response:**

No is action required.

---

**CCQF111I**      **To show the Products to Customize section, specify a slash (/). To hide the Products to Customize section, remove the slash. The Product to Customize section can be shown or hidden only on the Customizer Workplace panel.**

**System action:**

None.

**User response:**

No is action required.

---

**CCQF112I**      **To show the Usage Notes section, specify a slash (/). To hide the Usage Notes section, remove the slash. The Usage Notes section can be shown only on the Product Parameters, LPAR Parameters, and DB2 Parameters panels.**

**System action:**

None.

**User response:**

No action is required.

---

**CCQF113I**      **The specified values have been saved.**

**System action:**

None.

**User response:**

No action is required.

---

**CCQF114I**      **Displays the Panel Display Options panel. Use this panel to select which information to display on panels .**

**System action:**

None.

**User response:**

No action is required.

---

**CCQF116I**      **The fully qualified name of the data set into which you want to copy the current user profile. If the data set name exceeds 42 characters, enclose the name in quotation marks. ALTER or UPDATE authorization to this data set is required.**

**System action:**

None.

**User response:**

No action is required.

---

**CCQF117I**      **The volume name in which the data set will reside. If left blank, the volume name will be decided by the system.**

**System action:**

None.

**User response:**

No action is required.

---

**CCQF110I**      **To show the panel instructions section, specify a slash (/). To hide the panel instructions section, remove the slash.**

**System action:**

None.

**User response:**

No is action required.

---

**CCQH001W**      **The specified option *option\_name* is not valid.**

**Explanation:**

The option that was specified is not a valid option on the panel.

**System action:**

Tools Customizer stops.

**User response:**

Specify a valid option on the panel.

---

**CCQH006W**      **Before you customize a product, verify your user settings.**

**Explanation:**

The user settings must be verified before a product can be customized.

**System action:**

Tools Customizer stops.

**User response:**

Verify the user settings.

---

**CCQH007E**      **Check the user settings. One or more current values are not valid.**

**Explanation:**

One or more of the values in the user settings is not valid.

**System action:**

Tools Customizer stops.

**User response:**

Ensure that the specified values for the user settings are valid.

---

**CCQH008W**      **Before you use Tools Customizer, you must select option 0 to verify your user settings.**

**Explanation:**

The user settings must be changed before a product can be customized.

**System action:**

Tools Customizer stops.

**User response:**

Change the user settings.

---

**CCQH009E**      **You must select option 0 to change your user settings.**

**Explanation:**

User settings must be changed before a product can be customized.

**System action:**

Tools Customizer stops.

**User response:**

Change the user settings.

---

**CCQI000W**      **The XML structure of the *member\_name* Db2 parameter metadata member is not valid. The PL/I XML parser issued the following exception warning code: *code\_number*.**

**Explanation:**

While determining if the Db2 parameter metadata member is valid, the PL/I XML parser issued an exception warning code.

**System action:**  
Processing continues.

**User response:**  
See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.

---

**CCQI001S**      **The XML structure of the *member\_name* Db2 parameter metadata member is not valid. The PL/I XML parser issued the following exception error code: *code\_number*.**

**Explanation:**  
While determining if the Db2 parameter metadata member is valid, the PL/I XML parser issued an exception error code.

**System action:**  
Processing stops.

**User response:**  
See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.

---

**CCQI002S**      **The XML structure of the *member\_name* Db2 parameter metadata member is not valid. The *element\_name* element is unknown.**

**Explanation:**  
The specified element in the Db2 parameter metadata member is unknown.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI003S**      **The XML structure of the *member\_name* Db2 parameter metadata member is not valid. Content is not allowed for the *element\_name* element, but content was found.**

**Explanation:**  
The specified element cannot contain content.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI004S**      **The XML structure of the *member\_name* Db2 parameter metadata member is not valid. Content is required for the**

***element\_name* element, but content was not found.**

**Explanation:**  
The specified element requires content.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI005S**      **The XML structure of the *member\_name* Db2 parameter metadata member is not valid. The content length for the *element\_name* element cannot exceed *maximum\_number* characters.**

**Explanation:**  
The specified element contains too many characters.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI006S**      **The XML structure of the *member\_name* Db2 parameter metadata member is not valid. The content length for the *element\_name* element must be at least *minimum\_number* characters.**

**Explanation:**  
The specified element does not contain enough characters.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI007S**      **The XML structure of the *member\_name* Db2 parameter metadata member is not valid. The *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**  
The specified element does not occur enough times.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI008S** The XML structure of the *member\_name* Db2 parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element cannot occur more than *maximum\_number* times.

**Explanation:**

The specified attribute occurs too many times.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI009S** The XML structure of the *member\_name* Db2 parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element must occur at least *minimum\_number* times.

**Explanation:**

The specified attribute did not occur enough times.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI010S** The XML structure of the *member\_name* Db2 parameter metadata member is not valid. Content is not allowed for the *attribute\_name* attribute in the *element\_name* element, but content was found.

**Explanation:**

The specified attribute cannot have content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI011S** The XML structure of the *member\_name* Db2 parameter metadata member is not valid. Content is required for the *attribute\_name* attribute in the *element\_name* element, but content was not found.

**Explanation:**

The specified attribute is missing required content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI012S** The XML structure of the *member\_name* Db2 parameter metadata member is not valid. The content length for the *element\_name* element cannot exceed *maximum\_number* characters.

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI013S** The XML structure of the *member\_name* Db2 parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element is unknown.

**Explanation:**

The specified attribute in the Db2 parameter metadata member is unknown.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI014S** The content of the *member\_name* Db2 parameter metadata member is not valid because the value of the *element\_name* element is incorrect. The value is *value\_name*.

**Explanation:**

The specified value of the element is not a valid value.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI015S** The content of the DB2 parameter metadata member is not valid because the value of the *attribute\_name* attribute in the *element\_name* element

is incorrect. The value of the attribute is *value\_name*.

**Explanation:**

The specified value of the attribute is not a valid value.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI016S**      **The content of the DB2 parameter metadata member is not valid because the data type of the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified data type is not a valid data type.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI017S**      **The content of the DB2 parameter metadata member is not valid because the data type of the *attribute\_name* attribute in the *element\_name* element is incorrect. The value of the attribute is *value\_name*.**

**Explanation:**

The specified data type is not a valid data type.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI050S**      **The *member\_name* Db2 parameter metadata member was not found in the *data\_set\_name* data set.**

**Explanation:**

Tools Customizer could not find the specified Db2 parameter metadata member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI051S**      **The *parameter\_name* LPAR parameter in the *template\_name* template does not have associated**

**metadata in the *member\_name* LPAR parameter metadata member.**

**Explanation:**

The specified template does not contain metadata for an LPAR parameter. The name of the LPAR parameter metadata member, the name of the LPAR parameter, and the name of the template are indicated in the message text.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI052S**      **The *parameter\_name* product parameter in the *template\_name* template does not have associated metadata in the *member\_name* product parameter metadata member.**

**Explanation:**

The specified template does not contain metadata for a product parameter. The name of the product parameter metadata member, the name of the product parameter, and the name of the template are indicated in the message text.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI053E**      **The following metadata data set was not found: *data\_set\_name*.**

**Explanation:**

Tools Customizer could not find the specified metadata data set.

**System action:**

Processing stops.

**User response:**

Ensure that the metadata data set is specified correctly. If the problem persists, contact IBM Software Support.

---

**CCQI054E**      **The following metadata data set could not be opened: *data\_set\_name*.**

**Explanation:**

Tools Customizer could not open the specified LPAR metadata data set.

**System action:**

Processing stops.

**User response:**

Ensure the metadata data set was specified correctly.

---

**CCQI055S**      **The CCQ\$\$DB2 Db2 parameter metadata member was not found in the *data\_set\_name* Tools Customizer metadata data set.**

**Explanation:**

Tools Customizer could not find the Db2 parameter metadata member in the specified Tools Customizer metadata data set.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI056S**      **The CCQ\$\$LPR LPAR parameter metadata member was not found in the *data\_set\_name* data set.**

**Explanation:**

Tools Customizer could not find the specified LPAR parameter metadata member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI057S**      **The *member\_name* product parameter metadata member was not found in the *data\_set\_name* data set.**

**Explanation:**

The product parameter metadata member was not found in the specified data set.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI058I**      ***Product\_name* does not have any Db2 parameters.**

**Explanation:**

Db2 parameters are not required to customize the specified product.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**CCQI059I**      ***Product\_name* does not have any LPAR parameters.**

**Explanation:**

LPAR parameters are not required to customize the specified product.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**CCQI060S**      **The *parameter\_name* Db2 parameter in the *task\_description* task condition does not have associated metadata in the *member\_name* Db2 parameter metadata member.**

**Explanation:**

Associated metadata is missing for the specified Db2 parameter in a task.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI061S**      **The *parameter\_name* LPAR parameter in the *task\_description* task condition does not have associated metadata in the *member\_name* LPAR parameter metadata member.**

**Explanation:**

Associated metadata is missing for the specified LPAR parameter in a task.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI062S**      **The *parameter\_name* product parameter in the *task\_description* task condition does not have associated metadata in the *member\_name* product parameter metadata member.**

**Explanation:**

Associated metadata is missing for the specified product parameter in a task.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.



---

**CCQI063S**      **The *parameter\_name* Db2 parameter in the *task\_description* task and the *step\_description* step does not have associated metadata in the *member\_name* Db2 parameter metadata member.**

**Explanation:**

Associated metadata is missing for the specified Db2 parameter in a task and step.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI064S**      **The *parameter\_name* LPAR parameter in the *task\_description* task and the *step\_description* step does not have associated metadata in the *member\_name* LPAR parameter metadata member.**

**Explanation:**

Associated metadata is missing for the specified LPAR parameter in a task and step.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI065S**      **The *parameter\_name* product parameter in the *task\_description* task and the *step\_description* step does not have associated metadata in the *member\_name* product parameter metadata member.**

**Explanation:**

Associated metadata is missing for the specified parameter in a task and step.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI066S**      **The *parameter\_name* Db2 parameter in the *task\_description* task, *step\_description* step, and *template\_name* template condition does not have associated metadata in the *member\_name* Db2 parameter metadata member.**

**Explanation:**

Associated metadata is missing for the specified Db2 parameter in a task, step, and template.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI067S**      **The *parameter\_name* LPAR parameter in the *task\_description* task, *step\_description* step, and *template\_name* template condition does not have associated metadata in the *member\_name* LPAR parameter metadata member.**

**Explanation:**

Associated metadata is missing for the specified LPAR parameter in a task, step, and template.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI068S**      **The *parameter\_name* product parameter in the *task\_description* task, *step\_description* step, and *template\_name* template condition does not have associated metadata in the *member\_name* product parameter metadata member.**

**Explanation:**

Associated metadata is missing for the specified product parameter in a task, step, and template.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI069S**      **Product metadata does not support multiple configurations, but the *template\_name* product template contains the *parameter\_name* parameter. Enable multiple configurations support for this product, and try again.**

**Explanation:**

The specified template contains a parameter for multiple configurations, but the product is not enabled to support multiple configurations.



**System action:**  
Processing stops.

**User response:**  
Enable multiple configurations support, and try again.

---

**CCQI070E**      **The *parameter\_name* Db2 parameter metadata member is not valid. The default length for the *parameter-element\_name* parameter element exceeds the length of the parameter. The default length is *default\_length*, and the specified length is *specified\_length*. The default length will be truncated accordingly.**

**Explanation:**  
The specified length cannot be shorter than the default length.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI071E**      **The *parameter\_name* LPAR parameter metadata member is not valid. The default length for the *parameter-element\_name* parameter element exceeds the length of the parameter. The default length is *default\_length*, and the specified length is *specified\_length*. The default length will be truncated accordingly.**

**Explanation:**  
The specified length cannot be shorter than the default length.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI072E**      **The *parameter\_name* product parameter metadata member is not valid. The default length for the *parameter-element\_name* parameter element exceeds the length of the parameter. The default length is *default\_length*, and the specified length is *specified\_length*. The default length will be truncated accordingly.**

**Explanation:**  
The specified length cannot be shorter than the default length.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI073S**      **The XML structure of the *member\_name* Db2 parameter metadata member is not valid. The following value of the *attribute\_name* attribute in the *element\_name* element already exists: *value\_name*.**

**Explanation:**  
The specified value already exists for an attribute.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI074S**      **The XML structure of the *member\_name* LPAR parameter metadata member is not valid. The following value of the *attribute\_name* attribute in the *element\_name* element already exists: *value\_name*.**

**Explanation:**  
The specified value already exists for an attribute.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI075S**      **The XML structure of the *member\_name* product parameter metadata member is not valid. The following value of the *attribute\_name* attribute in the *element\_name* element already exists: *value\_name*.**

**Explanation:**  
The specified value already exists for an attribute.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI076S** The XML structure of the *member\_name* Db2 parameter metadata member is not valid. The *parameter\_name* parameter refers to the *section-name* section. This section was not found in the Db2 parameter metadata member.

**Explanation:**

The specified value already exists for an attribute.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI077S** The XML structure of the *member\_name* LPAR parameter metadata member is not valid. The *parameter\_name* parameter refers to the *section-name* section. This section was not found in the LPAR parameter metadata member.

**Explanation:**

The specified parameter refers to a section that is not in the LPAR parameter metadata member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI078S** The XML structure of the *member\_name* product parameter metadata member is not valid. The *parameter\_name* parameter refers to the *section-name* section. This section was not found in the product parameter metadata member.

**Explanation:**

The specified parameter refers to a section that is not in the product parameter metadata member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI080S** The content of the *member\_name* Db2 parameter metadata member is not valid because the value of the *attribute\_name* attribute in the *element\_name* element

is incorrect. The value of the attribute is *value\_name*.

**Explanation:**

The specified value for an attribute in the Db2 parameter metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI081S** The content of the *member\_name* LPAR parameter metadata member is not valid because the value of the *attribute\_name* attribute in the *element\_name* element is incorrect. The value of the attribute is *value\_name*.

**Explanation:**

The specified value for an attribute in the LPAR parameter metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI082S** The content of the *member\_name* product parameter metadata member is not valid because the value of the *attribute\_name* attribute in the *element\_name* element is incorrect. The value of the attribute is *value\_name*.

**Explanation:**

The specified value for an attribute in the product parameter metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI088I** The *command* command is not active in BROWSE mode.

**Explanation:**

The specified command can be entered only in Edit mode.

**System action:**

Processing continues.

**User response:**

Put the panel in Edit mode and reissue the command.

---

**CCQI089I**      **The *command* command is already active.**

**System action:**  
Processing continues.

**User response:**  
No action required.

---

**CCQI090S**      **The product-defined Db2 parameter *parameter\_name* in the *member\_name* parameter metadata member references the *section\_ID* section ID, but this ID does not exist in either the parameter metadata member or the Db2 parameter metadata member.**

**Explanation:**  
A section that does not exist in the parameter metadata member or the Db2 parameter metadata member is referenced by the specified Db2 parameter.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI091S**      **The product-defined LPAR parameter in the *member\_name* parameter metadata member references the *section\_ID* section ID, but this ID does not exist in either the parameter metadata member or the LPAR parameter metadata member.**

**Explanation:**  
A section that does not exist in the parameter metadata member or the LPAR parameter metadata member is being referenced by the specified LPAR parameter.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI092S**      **The overridden DB2 parameter *parameter\_name* in the *member\_name* parameter metadata member does not exist in the Db2 parameter metadata member.**

**Explanation:**  
The specified parameter does not exist.

**System action:**

Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI093S**      **The overridden LPAR parameter *parameter\_name* in the *member\_name* parameter metadata member does not exist in the LPAR parameter metadata member.**

**Explanation:**  
The specified parameter does not exist.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI094S**      **The CCQ\$\$PRD product customization parameter metadata member was not found in the *data\_set\_name* data set.**

**Explanation:**  
The specified data set must contain the CCQ\$\$PRD product customization parameter metadata member

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI100W**      **The XML structure of the *member\_name* LPAR parameter metadata member is not valid. The PL/I XML parser issued the following exception warning code: *code\_number*.**

**Explanation:**  
While determining if the LPAR parameter metadata member is valid, the PL/I XML parser issued an exception warning code.

**System action:**  
Processing continues.

**User response:**  
See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.

---

**CCQI101S**      **The XML structure of the *member\_name* LPAR parameter metadata member is not valid. The PL/I XML parser issued the following exception error code: *code\_number*.**

**Explanation:**

While determining if the LPAR parameter metadata member is valid, the PL/I XML parser issued an exception error code.

**System action:**

Processing stops.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.

---

**CCQI102S**      **The XML structure of the *member\_name* LPAR parameter metadata member is not valid. The *element\_name* element is unknown.**

**Explanation:**

The specified element in the LPAR parameter metadata member is unknown.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI103S**      **The XML structure of the *member\_name* LPAR parameter metadata member is not valid. Content is not allowed for the *element\_name* element, but content was found.**

**Explanation:**

The specified element cannot contain content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI104S**      **The XML structure of the *member\_name* LPAR parameter metadata member is not valid. Content is required for the *element\_name* element, but content was not found.**

**Explanation:**

The specified element requires content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI105S**      **The XML structure of the *member\_name* LPAR parameter**

**metadata member is not valid. The content length for the *element\_name* element cannot exceed *maximum\_number* characters.**

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI106S**      **The XML structure of the *member\_name* LPAR parameter metadata member is not valid. The content length for the *element\_name* element must be at least *minimum\_number* characters.**

**Explanation:**

The specified element does not contain enough characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI107S**      **The XML structure of the *member\_name* LPAR parameter metadata member is not valid. The *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified element does not occur enough times.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI108S**      **The XML structure of the *member\_name* LPAR parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**

The specified attribute occurs too many times.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQI109S**      **The XML structure of the *member\_name* LPAR parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified attribute did not occur enough times.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQI110S**      **The XML structure of the *member\_name* LPAR parameter metadata member is not valid. Content is not allowed for the *attribute\_name* attribute in the *element\_name* element, but content was found.**

**Explanation:**

The specified attribute cannot have content.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQI111S**      **The XML structure of the *member\_name* LPAR parameter metadata member is not valid. Content is required for the *attribute\_name* attribute in the *element\_name* element, but content was not found.**

**Explanation:**

The specified attribute is missing required content.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQI112S**      **The XML structure of the *member\_name* LPAR parameter metadata member is not valid. The content length for the *element\_name* element**

**cannot exceed *maximum\_number* characters.**

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQI113S**      **The XML structure of the *member\_name* LPAR parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element is unknown.**

**Explanation:**

The specified attribute in the LPAR parameter metadata member is unknown.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQI114S**      **The content of the *member\_name* LPAR parameter metadata member is not valid because the value of the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified value for an element in the LPAR parameter metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQI115S**      **The content of the *member\_name* LPAR parameter metadata member is not valid because the value of the *attribute\_name* attribute in the *element\_name* element is incorrect. The value of the attribute is *value\_name*.**

**Explanation:**

The specified value for an attribute in the LPAR parameter metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI116S**      **The content of the *member\_name* LPAR parameter metadata member is not valid because the data type of the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified data type value for an element in the LPAR parameter metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI117S**      **The content of the *member\_name* LPAR parameter metadata member is not valid because the data type of the *attribute\_name* attribute in the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified data type value for an attribute in the LPAR parameter metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI120S**      **The XML structure of the *member\_name* Db2 parameter metadata member is not valid. The *element\_name* element in the *parameter\_name* parameter contains duplicate values for the *element\_name* element. The duplicate value is *value\_name*.**

**Explanation:**

An element contains the specified duplicate value.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI121S**      **The XML structure of the *member\_name* LPAR parameter metadata member is not valid. The *element\_name* element in the *parameter\_name* parameter**

**contains duplicate values for the *element\_name* element. The duplicate value is *value\_name*.**

**Explanation:**

An element contains the specified duplicate value.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI122S**      **The XML structure of the *member\_name* parameter metadata member is not valid. The *element\_name* element in the *parameter\_name* parameter contains duplicate values for the *element\_name* element. The duplicate value is *value\_name*.**

**Explanation:**

An element contains the specified duplicate value.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI123S**      **The XML structure of the *member\_name* discover metadata member is not valid. The *element\_name* element in the *parameter\_name* parameter contains duplicate values for the *element\_name* element. The duplicate value is *value\_name*.**

**Explanation:**

An element contains the specified duplicate value.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI124S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The *element\_name* element in the *parameter\_name* parameter contains duplicate values for the *element\_name* element. The duplicate value is *value\_name*.**

**Explanation:**

An element contains the specified duplicate value.



**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI200W**      **The XML structure of the *member\_name* information metadata member is not valid. The PL/I XML parser issued the following exception warning code: *code\_number*.**

**Explanation:**  
While determining if the information metadata member is valid, the PL/I XML parser issued an exception warning code.

**System action:**  
Processing continues.

**User response:**  
See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.

---

**CCQI201S**      **The XML structure of the *member\_name* information metadata member is not valid. The PL/I XML parser issued the following exception error code: *code\_number*.**

**Explanation:**  
While determining if the information metadata member is valid, the PL/I XML parser issued an exception error code.

**System action:**  
Processing stops.

**User response:**  
See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.

---

**CCQI202S**      **The XML structure of the *member\_name* information metadata member is not valid. The *element\_name* element is unknown.**

**Explanation:**  
The specified element in the information metadata member is unknown.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI203S**      **The XML structure of the *member\_name* information metadata member is not valid.**

**Content is not allowed for the *element\_name* element, but content was found.**

**Explanation:**  
The specified element cannot contain content.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI204S**      **The XML structure of the *member\_name* information metadata member is not valid. Content is required for the *element\_name* element, but content was not found.**

**Explanation:**  
The specified element requires content.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI205S**      **The XML structure of the *member\_name* information metadata member is not valid. The content length for the *element\_name* element cannot exceed *maximum\_number* characters.**

**Explanation:**  
The specified element contains too many characters.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI206S**      **The XML structure of the *member\_name* information metadata member is not valid. The content length for the *element\_name* element must be at least *minimum\_number* characters.**

**Explanation:**  
The specified element does not contain enough characters.

**System action:**  
Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQI207S**      **The XML structure of the *member\_name* information metadata member is not valid. The *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified element does not occur enough times.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQI208S**      **The XML structure of the *member\_name* information metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**

The specified attribute occurs too many times.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQI209S**      **The XML structure of the *member\_name* information metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified attribute did not occur enough times.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQI210S**      **The XML structure of the *member\_name* information metadata member is not valid. Content is not allowed for the *attribute\_name* attribute in the *element\_name* element, but content was found.**

**Explanation:**

The specified attribute cannot have content.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQI211S**      **The XML structure of the *member\_name* information metadata member is not valid. Content is required for the *attribute\_name* attribute in the *element\_name* element, but content was not found.**

**Explanation:**

The specified attribute is missing required content.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQI212S**      **The XML structure of the *member\_name* information metadata member is not valid. The content length for the *element\_name* element cannot exceed *maximum\_number* characters.**

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQI213S**      **The XML structure of the *member\_name* information metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element is unknown.**

**Explanation:**

The specified attribute in the information metadata member is unknown.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQI214S**      **The content of the *member\_name* information metadata member is not valid because the value of the *element\_name* element**



is incorrect. The value is *value\_name*.

**Explanation:**

The specified value for an element in the information metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI215S**      **The content of the *member\_name* information metadata member is not valid because the value of the *attribute\_name* attribute in the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified value for an attribute in the information metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI216S**      **The content of the *member\_name* information metadata member is not valid because the data type of the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified data type value for an element in the information metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI217S**      **The content of the *member\_name* information metadata member is not valid because the data type of the *attribute\_name* attribute in the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified data type value for an attribute in the information metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI218S**      **The content of the *member\_name* information metadata member is not valid. The length of the *value\_name* value that of the *attribute\_name* attribute is longer than the *value\_name* value of the *attribute\_name* attribute.**

**Explanation:**

The first specified value cannot be longer than the second specified value.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI219S**      **The content of the *member\_name* information metadata member is not valid. The *value\_name* value of the *attribute\_name* attribute contains the *value\_name* value.**

**Explanation:**

The first specified value cannot be longer than the second specified value.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI220S**      **The XML structure of the *member\_name* information metadata member is not valid. Content for the *attribute\_name* attribute in the *element\_name* element exceed *maximum\_number* characters.**

**Explanation:**

The specified attribute contains too many characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI223S**      **The XML structure of the *member\_name* information metadata member is not valid. The value that is specified for the Db2 Level already exists. The value is *value\_name*.**

**Explanation:**

The specified value already exists.

**System action:**

Processing stops.

**User response:**

Specify a different Db2 level. If the problem persists, contact IBM Software Support.

---

**CCQI224S**      **The XML structure of the *member\_name* information metadata member is not valid. The value that is specified for the Db2 Mode already exists. The value is *value\_name*.**

**Explanation:**

The specified value already exists.

**System action:**

Processing stops.

**User response:**

Specify a different Db2 mode. If the problem persists, contact IBM Software Support.

---

**CCQI250S**      **The information metadata member was not found in the *data\_set\_name* data set.**

**Explanation:**

Tools Customizer could not find the information metadata member in the specified data set.

**System action:**

Processing stops.

**User response**

If this message was issued on the **Specify the Metadata Library** (CCQPHLQ) panel, specify the product metadata library. The name of this library is *hlq.SARYDENU*.

Do not specify the Tools Customizer metadata library, which is *hlq.SCCQDENU*.

If the problem persists, identify the name of the Tools Customizer trace data set and contact IBM Software Support.

---

**CCQI251E**      **The *member\_name* member was not accessible in the *data\_set\_name* data set.**

**Explanation:**

The specified member could not be accessed in the data set.

**System action:**

Processing stops.

**User response:**

Specify the correct metadata library.

---

**CCQI252S**      **The information metadata member was not found in the *library\_name* component metadata library that is part of the *library\_name* pack metadata library. The name of the pack is *pack\_name*.**

**Explanation:**

The specified component metadata library does not contain the information metadata member.

**System action:**

Processing stops.

**User response:**

Specify the correct metadata library.

---

**CCQI253E**      **The *library\_name* Tools Customizer metadata library is not current. Update the metadata library on the Tools Customizer Settings panel.**

**Explanation:**

The specified metadata library is not current.

**System action:**

Processing stops.

**User response:**

Specify a current metadata library on the **Tools Customizer Settings** panel.

---

**CCQI300W**      **The XML structure of the *member\_name* sequence metadata member is not valid. The PL/I XML parser issued the following exception warning code: *code\_number*.**

**Explanation:**

While determining if the sequence metadata member is valid, the PL/I XML parser issued an exception warning code.

**System action:**

Processing continues.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.

---

**CCQI301S**      **The XML structure of the *member\_name* sequence metadata member is not valid. The PL/I XML parser issued the following exception error code: *code\_number*.**

**Explanation:**

While determining if the sequence metadata member is valid, the PL/I XML parser issued an exception error code.

**System action:**  
Processing stops.

**User response:**  
See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception error code, and contact IBM Software Support.

---

**CCQI302S**      **The XML structure of the *member\_name* sequence metadata member is not valid. The *element\_name* element is unknown.**

**Explanation:**  
The specified element in the sequence metadata member is unknown.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI303S**      **The XML structure of the *member\_name* sequence metadata member is not valid. Content is not allowed for the *element\_name* element, but content was found.**

**Explanation:**  
The specified element cannot contain content.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI304S**      **The XML structure of the *member\_name* sequence metadata member is not valid. Content is required for the *element\_name* element, but content was not found.**

**Explanation:**  
The specified element is missing required content.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI305S**      **The XML structure of the *member\_name* sequence metadata member is not valid. Content length for the *element\_name* element cannot exceed *maximum\_number* characters.**

**Explanation:**  
The specified element contains too many characters.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI306S**      **The XML structure of the *member\_name* sequence metadata member is not valid. The *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**  
The specified element occurs too many times.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI307S**      **The XML structure of the *member\_name* sequence metadata member is not valid. The *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**  
The specified element does not occur enough times.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI308S**      **The XML structure of the *member\_name* sequence metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**  
The specified attribute occurs too many times.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI309S**      **The XML structure of the *member\_name* sequence metadata member is not valid. The *attribute\_name* attribute in the**

*element\_name* element must occur at least *minimum\_number* times.

**Explanation:**

The specified attribute does not occur enough times.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQI310S**      **The XML structure of the *member\_name* sequence metadata member is not valid. Content is not allowed for the *attribute\_name* attribute in the *element\_name* element, but content was found.**

**Explanation:**

The specified attribute cannot contain content.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQI311S**      **The XML structure of the *member\_name* sequence metadata member is not valid. Content is required for the *attribute\_name* attribute in the *element\_name* element, but content was not found.**

**Explanation:**

The specified attribute is missing required content.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQI312S**      **The XML structure of the *member\_name* sequence metadata member is not valid. The content length for the *element\_name* element cannot exceed *maximum\_number* characters.**

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQI313S**      **The XML structure of the *member\_name* sequence metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element is unknown.**

**Explanation:**

The specified attribute in the sequence metadata member is unknown.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQI314S**      **The content of the *member\_name* sequence metadata member is not valid because the value of the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified value for an element in the sequence metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQI315S**      **The content of the *member\_name* sequence metadata member is not valid because the value of the *attribute\_name* attribute in the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified value for an attribute in the sequence metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQI316S**      **The content of the *member\_name* sequence metadata member is not valid because the data type of the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified data type value for an element in the sequence metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI317S**      **The content of the *member\_name* sequence metadata member is not valid because the data type of the *attribute\_name* attribute in the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified data type value for an attribute in the sequence metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI350S**      **The XML structure of the *member\_name* sequence metadata member is not valid because the value of the *attribute\_name* attribute in the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

A specified value for an attribute in the sequence metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI351S**      **The *member\_name* sequence metadata member was not found in the *data\_set\_name* metadata data set.**

**Explanation:**

Tools Customizer could not find the specified sequence metadata member in the metadata data set.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI352S**      **The *template\_name* product template was not found in the *data\_set\_name* metadata data set.**

**Explanation:**

Tools Customizer could not find the specified product template in the data set.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI353S**      **The sequence metadata member was not found in the *data\_set\_name* component data set that is part of the *data\_set\_name* pack.**

**Explanation:**

Tools Customizer could not find the sequence metadata member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI360S**      **The XML structure of the *member\_name* sequence metadata member is not valid. The value of the *attribute\_name* attribute in the *element\_name* element already exists.**

**Explanation:**

The specified attribute contains a value that already exists.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI361S**      **The XML structure of the *member\_name* sequence metadata member is not valid. The condition element on the *level\_type* level already contains a relational operator.**

**Explanation:**

A relational operator already exists for the condition element on the specified level.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI362S**      **The XML structure of the *member\_name* sequence metadata member is not valid. The condition element on the *level\_type* level must contain only one content string or content number element.**

**Explanation:**

Only one content string element or content number element can be contained in the condition element on the specified level.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI363S**      **The XML structure of the *member\_name* sequence metadata member is not valid. The condition element in the *element\_name* element with the *attribute\_name* attribute must contain either the content string element or the content number element.**

**Explanation:**

Either the content string element or the content number element must be in the condition element.

**System action:**

Processing stops.

**User response:**

Contact IBM Software Support.

---

**CCQI400W**      **The XML structure of the *member\_name* parameter metadata member is not valid. The PL/I XML parser issued the following exception warning code: *code\_number*.**

**Explanation:**

While determining the parameter metadata member is valid, the PL/I XML parser issued an exception warning code.

**System action:**

Processing continues.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.

---

**CCQI401S**      **The XML structure of the *member\_name* parameter metadata member is not valid. The PL/I XML parser issued the**

**following exception error code: *code\_number*.**

**Explanation:**

While determining if the parameter metadata member is valid, the PL/I XML parser issued an exception error code.

**System action:**

Processing stops.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.

---

**CCQI402S**      **The XML structure of the *member\_name* parameter metadata member is not valid. The *element\_name* element is unknown.**

**Explanation:**

The specified element in the parameter metadata member is unknown.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI403S**      **The XML structure of the *member\_name* parameter metadata member is not valid. Content is not allowed for the *element\_name* element, but content was found.**

**Explanation:**

The specified element cannot contain content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI404S**      **The XML structure of the *member\_name* parameter metadata member is not valid. Content is required for the *element\_name* element, but content was not found.**

**Explanation:**

The specified element requires content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.



---

**CCQI405S** The XML structure of the *member\_name* parameter metadata member is not valid. The content length for the *element\_name* element cannot exceed *maximum\_number* characters.

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI406S** The XML structure of the *member\_name* parameter metadata member is not valid. The content length for the *element\_name* element must be at least *minimum\_number* characters.

**Explanation:**

The specified element does not contain enough characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI407S** The XML structure of the *member\_name* parameter metadata member is not valid. The *element\_name* element must occur at least *minimum\_number* times.

**Explanation:**

The specified element does not occur enough times.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI408S** The XML structure of the *member\_name* parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element cannot occur more than *maximum\_number* times.

**Explanation:**

The specified attribute occurs too many times.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI409S** The XML structure of the *member\_name* parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element must occur at least *minimum\_number* times.

**Explanation:**

The specified attribute does not occur enough times.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI410S** The XML structure of the *member\_name* parameter metadata member is not valid. Content is not allowed for the *attribute\_name* attribute in the *element\_name* element, but content was found.

**Explanation:**

The specified attribute cannot have content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI411S** The XML structure of the *member\_name* parameter metadata member is not valid. Content is required for the *attribute\_name* attribute in the *element\_name* element, but content was not found.

**Explanation:**

The specified attribute is missing required content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI412S** The XML structure of the *member\_name* parameter metadata member is not valid. The content length

for the *element\_name* element cannot exceed *maximum\_number* characters.

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI413S**      **The XML structure of the *member\_name* parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element is unknown.**

**Explanation:**

The specified attribute in the parameter metadata member is unknown.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI414S**      **The content of the *member\_name* parameter metadata member is not valid because the value of the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified value for an element in the parameter metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI415S**      **The content of the *member\_name* parameter metadata member is not valid because the value of the *attribute\_name* attribute in the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified value for an attribute in the parameter metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI416S**      **The content of the *member\_name* parameter metadata member is not valid because the data type of the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified data type value for an element in the parameter metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI417S**      **The content of the *member\_name* parameter metadata member is not valid because the data type of the *attribute\_name* attribute in the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified data type value for an attribute in the parameter metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI420S**      **The XML structure of the *member\_name* parameter metadata member is not valid. The *element\_name* element is unknown for the overridden Db2 parameter.**

**Explanation:**

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI421S**      **The XML structure of the *member\_name* parameter metadata member is not valid. The *element\_name* element is unknown for the overridden LPAR parameter.**

**Explanation:**



**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI422S**      **The XML structure of the *member\_name* parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element is unknown for the overridden Db2 parameter.**

**Explanation:**

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI423S**      **The XML structure of the *member\_name* parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element is unknown for the overridden LPAR parameter.**

**Explanation:**

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI450S**      **The *member\_name* product parameter metadata member was not found in the *data\_set\_name* data set.**

**Explanation:**  
Tools Customizer could not find the specified product parameter metadata member.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI510W**      **The *data\_set\_name* data store data set does not exist.**

**Explanation:**  
The specified data store data set does not exist.

**System action:**  
Processing continues.

**User response:**  
Ensure that the data store data set exists.

---

**CCQI511S**      **The *data\_set\_name* data store data set cannot be opened by using the *disposition\_type* disposition.**

**Explanation:**  
The specified data store data set could not be opened with the specified disposition.

**System action:**  
Processing continues.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI512S**      **The *data\_set\_name* data store data set cannot be opened by using the *option-type* option.**

**Explanation:**  
The specified data store data set was unable to be opened with the specified option.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI600W**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The PL/I XML parser issued the following exception warning code: *code\_number*.**

**Explanation:**  
While determining if the product customization parameter metadata member is valid, the PL/I XML parser issued an exception warning code.

**System action:**  
Processing continues.

**User response:**  
See the *Enterprise PL/I for z/OS Programming Guide* for more information about the warning.

---

**CCQI601S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The PL/I XML parser issued the following exception error code: *code\_number*.**

**Explanation:**

While determining if the product customization parameter metadata member is valid, the PL/I XML parser issued an exception error code.

**System action:**

Processing continues.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the warning.

---

**CCQI602S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The *element\_name* element is unknown.**

**Explanation:**

The specified product customization parameter metadata member contains an unknown element.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI603S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. Content is not allowed for the *element\_name* element, but content was found.**

**Explanation:**

Content was found in an element that cannot contain content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI604S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. Content is required for the *element\_name* element, but content was not found.**

**Explanation:**

The specified element does not contain required content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI605S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The content length for the *element\_name* element 'cannot exceed *maximum\_number* characters.**

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI606S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**

The specified element occurs too many times in the product customization parameter metadata member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI607S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified element does not occur enough times in the product customization parameter metadata member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI608S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid.**

**The *attribute\_name* attribute in the *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**

The specified attribute occurs too many times in the product customization parameter metadata member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI609S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified attribute does not occur enough times in the product customization parameter metadata member.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI610S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. Content is not allowed for the *attribute\_name* attribute in the *element\_name* element, but content was found.**

**Explanation:**

Content was found in an element that cannot contain content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI611S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. Content is required for the *attribute\_name* attribute in the *element\_name* element, but content was not found.**

**Explanation:**

The specified attribute does not contain required content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI612S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The content length for the *attribute\_name* attribute in the *element\_name* element cannot exceed *maximum\_number* characters.**

**Explanation:**

The specified attribute contains too many characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI613S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element is unknown.**

**Explanation:**

The specified product customization parameter metadata member contains an unknown attribute.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI614S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The value of the *element\_name* element is not valid. The value *value\_name*.**

**Explanation:**

The specified value of the element is not a valid value.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI615S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The value of the *attribute\_name* attribute for the *element\_name* element is not valid. The value is *value\_name*.**

**Explanation:**  
The specified value of the attribute is not a valid value.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI616S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The data type of the *element\_name* element is 'not valid. The value of the element is *value\_name*.**

**Explanation:**  
The specified data type is not a valid data type.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI617S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The data type of the *attribute\_name* attribute for the *element\_name* element is not valid. The value of the attribute is *value\_name*..**

**Explanation:**  
The specified data type is not a valid data type.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI650S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The following value of the**

***attribute\_name* attribute in the *element\_name* element already exists: *value\_name*.**

**Explanation:**  
The specified value for an attribute already exists.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI651S**      **The XML structure of the *member\_name* product customization parameter metadata member is not valid. The *parameter\_name* parameter refers to the following section, which was not found in the *member\_name* product customization parameter metadata member: *section-name*.**

**Explanation:**  
The specified section is not in the product customization parameter metadata member.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI652S**      **The *member\_name* product customization metadata member not valid. The default length for the *element\_name* parameter element exceeds the length of the parameter. The default length is *default\_length*, and the specified length is *specified\_length*. The default length will be truncated accordingly.**

**Explanation:**  
The specified length cannot be shorter than the default length.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI653S**      **The content of the *member\_name* product customization parameter metadata member is not valid. The value of the *attribute\_name* attribute in the *element\_name***

**element is not valid. The value of the attribute is *value\_name*.**

**Explanation:**

The specified value of the attribute is not a valid value.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI700W**      **The XML structure of the *member\_name* solution pack metadata member is not valid. The PL/I XML parser issued the following exception warning code: *code\_number*.**

**Explanation:**

While determining if the specified solution pack metadata member is valid, the PL/I XML parser issued an exception warning code.

**System action:**

Processing continues.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the warning.

---

**CCQI701S**      **The XML structure of the *member\_name* solution pack metadata member is not valid. The PL/I XML parser issued the following exception error code: *code\_number*.**

**Explanation:**

While determining if the specified solution pack metadata member is valid, the PL/I XML parser issued an exception error code.

**System action:**

Processing stops.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the error.

---

**CCQI702S**      **The XML structure of the *member\_name* solution pack metadata member is not valid. The *element\_name* element is unknown.**

**Explanation:**

The specified solution pack metadata member contains an unknown element.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI703S**      **The XML structure of the *member\_name* solution pack metadata member is not valid. Content is not allowed for the *element\_name* element, but content was found**

**Explanation:**

Content was found in an element that cannot contain content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI704S**      **The XML structure of the *member\_name* solution pack metadata member is not valid. Content is required for the *element\_name* element, but content was not found.**

**Explanation:**

The specified element does not contain required content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI705S**      **The XML structure of the *member\_name* solution pack metadata member is not valid. The content length for the *element\_name* element cannot exceed *maximum\_number* characters.**

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQI706S**      **The XML structure of the *member\_name* solution pack metadata member is not valid. The *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**

The specified element occurs too many times.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI707S**      **The XML structure of the *member\_name* solution pack metadata member is not valid. The *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified element does not occur enough times.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI708S**      **The XML structure of the *member\_name* solution pack metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**

The specified attribute occurs too many times.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI709S**      **The XML structure of the *member\_name* solution pack metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified attribute does not occur enough times.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI710S**      **The XML structure of the *member\_name* solution pack metadata member is not valid. Content is not allowed for the *attribute\_name* attribute in**

**the *element\_name* element, but content was found.**

**Explanation:**

The specified attribute cannot have content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI711S**      **The XML structure of the *member\_name* solution pack metadata member is not valid. Content is required for the *attribute\_name* attribute in the *element\_name* element, but content was not found.**

**Explanation:**

The specified attribute is missing content.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI712S**      **The XML structure of the *member\_name* solution pack metadata member is not valid. The content length for the *attribute\_name* attribute in the *element\_name* element cannot exceed *maximum\_number* characters.**

**Explanation:**

The specified attribute contains too many characters.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI713S**      **The XML structure of the *member\_name* solution pack metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element is unknown.**

**Explanation:**

The specified attribute in the solution pack metadata member is unknown.

**System action:**

Processing stops.

**User response:**



See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI714S**      **The XML structure of the *member\_name* solution pack metadata member is not valid because the value of the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**  
The specified value of the element is not a valid value.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI715S**      **The XML structure of the *member\_name* solution pack metadata member is not valid because the value of the *attribute\_name* attribute in the *element\_name* element is incorrect. The value of the attribute is *value\_name*.**

**Explanation:**  
The specified value of the attribute is not a valid value.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI716S**      **The XML structure of the *member\_name* solution pack metadata member is not valid because the data type of the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**  
The specified data type is not a valid data type.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI717S**      **The XML structure of the *member\_name* solution pack metadata member is not valid because the data type of the *attribute\_name* attribute in the *element\_name* element is**

**incorrect. The value of the attribute is *value\_name*.**

**Explanation:**  
The specified data type is not a valid data type.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI720S**      **The XML structure of the *member\_name* solution pack metadata member is not valid. The *msg* element is required for the *component\_name* component that is not customizable.**

**Explanation:**  
The *msg* element is required for the specified component, which cannot be customized by using Tools Customizer.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI750S**      **The solution pack metadata member was not found in the *library\_name* metadata library.**

**Explanation:**  
Tools Customizer could not find the solution pack metadata member in the specified library.

**System action:**  
Processing stops.

**User response:**  
See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI751S**      **The version in the *library\_name* solution pack metadata library is different than the version in the *library\_name* component metadata library. The name of the pack is *pack\_name*, and the name of the component is *component\_name*.**

**Explanation:**  
The version in the solution pack metadata library does not match the version in the component metadata library.

**System action:**  
Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI752S**      **The release in the *library\_name* solution pack metadata library is different than the release in the *library\_name* component metadata library. The name of the pack is *pack\_name*, and the name of the component is *component\_name*.**

**Explanation:**

The release in the solution pack metadata library does not match the release in the component metadata library.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI753S**      **The modification level in the *library\_name* solution pack metadata library is different than the modification level in the *library\_name* component metadata library. The name of the pack is *pack\_name*, and the name of the component is *component\_name*.**

**Explanation:**

The modification level in the solution pack metadata library does not match the modification level in the component metadata library.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQI755S**      **The XML structure of the *member\_name* parameter metadata member is not valid. When a default value is not specified in the metadata member, the "required" attribute with a value of "true" cannot be specified.**

**System action:**

Processing stops.

**User response:**

Contact IBM Software Support.

---

**CCQM002E**      **The *command\_name* line command is not valid: .**

**Explanation:**

The specified line command is not valid.

**System action:**

Processing continues.

**User response:**

Specify a valid line command on the panel.

---

**CCQ0000W**      **The XML structure of the *member\_name* discover parameter metadata member is not valid. The PL/I XML parser issued the following exception warning code: *code\_number*.**

**Explanation:**

While determining if the discover parameter metadata member is valid, the PL/I XML parser issued an exception warning code.

**System action:**

Processing continues.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.

---

**CCQ0001S**      **The XML structure of the *member\_name* discover parameter metadata member is not valid. The PL/I XML parser issued the following exception error code: *code\_number*.**

**Explanation:**

While determining if the Discover metadata member is valid, the PL/I XML parser issued an exception error code.

**System action:**

Processing stops.

**User response:**

See the *Enterprise PL/I for z/OS Programming Guide* for more information about the exception warning code.  
Contact IBM Software Support.

---

**CCQ0002S**      **The XML structure of the *member\_name* discover parameter metadata member is not valid. The *element\_name* element is unknown.**

**Explanation:**

The specified element in the discover parameter metadata member is unknown.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQ0003S**      **The XML structure of the *member\_name* discover parameter metadata member is not valid.**



**Content is not allowed for the *element\_name* element, but content was found.**

**Explanation:**

The specified element cannot contain content.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQ0004S**      **The XML structure of the *member\_name* discover parameter metadata member is not valid. Content is required for the *element\_name* element, but content was not found.**

**Explanation:**

The specified element is missing required content.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQ0005S**      **The XML structure of the *member\_name* discover parameter metadata member is not valid. The content length for the *element\_name* element cannot exceed *maximum\_number* characters.**

**Explanation:**

The specified element contains too many characters.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQ0006S**      **The XML structure of the *member\_name* discover parameter metadata member is not valid. The *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**

The specified element occurs too many times.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQ0007S**      **The XML structure of the *member\_name* discover parameter metadata member is not valid. The *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified element does not occur enough times.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQ0008S**      **The XML structure of the *member\_name* discover parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element cannot occur more than *maximum\_number* times.**

**Explanation:**

The specified attribute occurs too many times.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQ0009S**      **The XML structure of the *member\_name* discover parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element must occur at least *minimum\_number* times.**

**Explanation:**

The specified attribute does not occur enough times.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQ0010S**      **The XML structure of the *member\_name* discover parameter metadata member is not valid. Content is not allowed for the *attribute\_name* attribute in the *element\_name* element, but content was found.**

**Explanation:**

The specified attribute cannot contain content.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQ0011S**      **The XML structure of the *member\_name* discover parameter metadata member is not valid. Content is required for the *attribute\_name* attribute in the *element\_name* element, but content was not found.**

**Explanation:**

The specified attribute requires content.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQ0012S**      **The XML structure of the *member\_name* discover parameter metadata member is not valid. The content length for the *attribute\_name* attribute in the *element\_name* element in the cannot exceed *maximum\_number* characters.**

**Explanation:**

The specified attribute contains too many characters.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQ0013S**      **The XML structure of the *member\_name* discover parameter metadata member is not valid. The *attribute\_name* attribute in the *element\_name* element is unknown.**

**Explanation:**

The specified attribute is unknown.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQ0014S**      **The content of the *member\_name* discover parameter metadata member is not valid because the value of the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

A The specified value for an element in the discover parameter metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQ0015S**      **The content of the *member\_name* discover parameter metadata member is not valid because the value of the *attribute\_name* attribute in the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified value for an attribute in the discover parameter metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQ0016S**      **The content of the *member\_name* discover parameter metadata member is not valid because the data type of the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified data type value for an element in the discover parameter metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#).  
Contact IBM Software Support.

---

**CCQ0017S**      **The content of the *member\_name* product parameter metadata member is not valid because the data type of the *attribute\_name* attribute in the *element\_name* element is incorrect. The value is *value\_name*.**

**Explanation:**

The specified data type value for an attribute in the product parameter metadata member is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151.  
Contact IBM Software Support.

---

**CCQ0050S**      **The *data\_set\_name* Discover REXX EXEC data set could not be initialized or was not found.**

**Explanation:**

Tools Customizer could not find or could not initialize the specified Discover REXX EXEC data set.

**System action:**

Processing stops.

**User response:**

Ensure that the Discover REXX EXEC is specified correctly.

---

**CCQ0051W**      **The *data\_sharing\_group\_ID* data sharing group ID cannot contain more than four characters.**

**Explanation:**

The specified data sharing group ID contains too many characters.

**System action:**

Processing continues.

**User response:**

Ensure that the specified data sharing group ID does not exceed four characters.

---

**CCQ0052S**      **The *REXX\_EXEC\_name* Discover REXX EXEC was not found in the *data\_set\_name* Discover data set.**

**Explanation:**

Tools Customizer could not find the Discover REXX EXEC in the specified data set.

**System action:**

Processing stops.

**User response:**

Ensure that the Discover data set was specified correctly.

---

**CCQ0053W**      **The *LPAR\_name* LPAR name cannot contain more than eight characters.**

**Explanation:**

The specified LPAR name contains too many characters.

**System action:**

Processing continues.

**User response:**

Ensure that the specified LPAR name does not exceed eight characters.

---

**CCQ0054W**      **The *subsystem\_ID* Db2 SSID cannot contain more than four**

**characters. The record was not processed.**

**Explanation:**

The specified Db2 SSID contains too many characters.

**System action:**

Processing continues.

**User response:**

Ensure that the specified Db2 SSID does not exceed four characters.

---

**CCQ0055W**      **The *parameter\_name* Db2 group attach name parameter is in the *record\_name* Discover record, but a Db2 group attach name was not specified. The record was not processed.**

**Explanation:**

The Discover record contains a data sharing group parameter, but a Db2 group attach name was not specified.

**System action:**

Processing continues.

**User response:**

Ensure that information is specified correctly on the **Discover Customized Product Information** panel.

---

**CCQ0056W**      **The *parameter\_name* Db2 parameter in the *record\_name* Discover record did not have a Db2 group attach name or a Db2 SSID. The record was not processed.**

**Explanation:**

The Discover record did not have a Db2 group attach name or a Db2 subsystem ID in the Db2 parameter.

**System action:**

Processing continues.

**User response:**

Ensure that information is specified correctly on the **Discover Customized Product Information** panel.

---

**CCQ0057W**      **The Discover EXEC could not find the *parameter\_name* parameter in the metadata for the product to be customized. The record was not processed.**

**Explanation:**

The specified parameter could not be found in the metadata for the product to be customized.

**System action:**

Processing continues.

**User response:**

Ensure that information is specified correctly on the **Discover Customized Product Information** panel.

---

**CCQ0058W**      **The *parameter\_name* product parameter name in the *record\_type* Discover record does not start with CCQ\_LPR\_, CCQ\_DB2\_, or CCQ\_PRD\_. The record was not processed.**

**Explanation:**

The parameter in the record does not start with CCQ\_DB2\_, CCQ\_LPAR\_, or CCQ\_PRD\_.

**System action:**

Processing continues.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQ0059W**      **The *parameter\_name* product parameter cannot contain more than 72 characters. The record was not processed.**

**Explanation:**

The specified product parameter contains too many characters.

**System action:**

Processing continues.

**User response:**

Ensure that the specified product parameter does not exceed 72 characters.

---

**CCQ0060W**      **The *record\_name* Discover record from the REXX EXEC output must start with the following record type: *record\_type*. The record was not processed.**

**Explanation:**

A Discover record from the REXX EXEC output must start with the specified Db2 record type.

**System action:**

Processing continues.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQ0061I**      **If you do not have a previously customized version of the product, do not run the Discover EXEC. Press END to go to the Customizer Workplace panel.**

**Explanation:**

This message is issued when you customize a product for the first time. It prompts you to use the Discover EXEC to discover data from a previous customization of the specified product.

**System action:**

Processing continues.

**User response**

**Tip:** Using the Discover EXEC saves time and reduces errors that can error when parameters are specified manually. If you want to use the Discover EXEC, specify the required information on the **Discover Customized Product Information** panel. Otherwise, press End to continue without discovering data from a previous customization of the product.

---

**CCQ0062W**      **The Discover EXEC could not find the following *parameter\_name* parameter in the Db2 metadata. The record was not processed.**

**Explanation:**

The specified parameter is missing in the Db2 metadata.

**System action:**

Processing continues.

**User response:**

If this parameter is required, contact IBM Software Support.

---

**CCQ0064W**      **The *Discover-record* Discover record did not have a parameter name. The record was not processed.**

**Explanation:**

A parameter name was missing in the Discover record.

**System action:**

Processing continues.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQ0065W**      **The value for the *parameter\_name* parameter is ignored because it has more than *maximum\_number* characters, which is the maximum length that is defined in the metadata. The value is *parameter\_value*.**

**Explanation:**

The specified value exceeded the maximum allowed length, which was defined in the metadata. Tools Customizer truncated the extra characters.

**System action:**

Processing continues.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQ0066W**      **The *record\_name* Discover record from the Discover REXX EXEC output does not have a parameter value. The record was not processed.**

**Explanation:**

The Discover record was missing a parameter value from the Discover EXEC output.

**System action:**

Processing continues.

**User response:**

Ensure that information was specified correctly on the **Discover Customized Product Information** panel.

---

**CCQ0067W**      **The *parameter\_name* parameter is defined in the metadata to support one value, but more than one value was found. The last value was used.**

**Explanation:**

The definition of the parameter in the metadata supports one value, but more than one value was specified. Only the last value was used.

**System action:**

Processing continues.

**User response:**

Ensure that information was specified correctly on the **Discover Customized Product Information** panel.

---

**CCQ0068W**      **The value of the *parameter\_name* parameter is ignored because the parameter is defined as *internal=true*. The value is *value\_name*.**

**Explanation:**

The specified value of the parameter is ignored because it is defined as *internal=true*.

**System action:**

Processing continues.

**User response:**

Ensure that information was specified correctly on the **Discover Customized Product Information** panel.

---

**CCQ0069W**      **The Discover EXEC did not find the *parameter\_name* parameter in the LPAR metadata. The record was not processed.**

**Explanation:**

The specified parameter is missing from the LPAR metadata.

**System action:**

Processing continues.

**User response:**

Ensure that information was specified correctly on the **Discover Customized Product Information** panel.

---

**CCQ0070W**      **The *record\_type* Discover record contains an incorrect delimiter between the Environment section and the Data section. The record was not processed.**

**Explanation:**

Tools Customizer found an incorrect delimiter between the Environment section and the Data section.

**System action:**

None.

**User response:**

No action is required.

---

**CCQ0071W**      **The *member\_name* member could not be found in the *data\_set\_name* Discover data set.**

**Explanation:**

Tools Customizer could not find the specified Discover data set.

**System action:**

None.

**User response:**

No action is required.

---

**CCQ0072S**      **The *member\_name* discover metadata member was not found in the *data\_set\_name* metadata data set.**

**Explanation:**

Tools Customizer could not find the specified metadata member in the data set.

**System action:**

Processing stops.

**User response:**

See [“Tools Customizer troubleshooting” on page 151](#). Contact IBM Software Support.

---

**CCQ0073E**      **The *member\_name* discover metadata member is not valid because the default length for the *element\_name* parameter element exceeds the length of the parameter. The default length is *default\_length*, and the specified length is *specified\_length*. The default length will be truncated accordingly.**

**Explanation:**

The default length for the specified parameter element is longer than the parameter.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**CCQ0074S**      **The content of the *member\_name* discover metadata member is not valid. The value of the *attribute\_name* attribute in the *element\_name* element is not valid. The value of the attribute is *value\_name*.**

**Explanation:**

The specified value is not valid.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQ0075W**      **The *configuration\_ID* configuration ID in the *record\_name* Discover record is incorrect. The record was not processed.**

**Explanation:**

The specified configuration ID is not correct.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**CCQ0076W**      **The *configuration\_ID* configuration ID cannot contain more than *maximum\_number* characters. The record was not processed.**

**Explanation:**

The specified configuration ID contains too many characters.

**System action:**

Processing continues.

**User response:**

No action is required.

---

**CCQ0077S**      **The discover metadata member was not found in the *data\_set\_name* component data set that is part of the *data\_set\_name* pack.**

**Explanation:**

The discover metadata member was not found in the specified component data set.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQ0078I**      **Additional configurations were discovered and saved in the data store. All Db2 entries associated with this configuration are listed.**

**System action:**

None.

**User response:**

No action is required.

---

**CCQ0080I**      ***Product\_name* does not support the Discover process.**

**Explanation:**

The specified product does not support the Discover process.

**System action:**

None.

**User response:**

No action is required.

---

**CCQP000E**      **The value of the *mode\_name* Db2 mode is not valid for the *level\_name* Db2 level.**

**Explanation:**

The specified Db2 mode is not valid for the Db2 level.

**System action:**

Processing stops.

**User response:**

Specify a valid Db2 mode for the Db2 level.

---

**CCQP001E**      **The value of the *mode\_name* Db2 mode is missing.**

**Explanation:**

The specified Db2 mode is not defined.

**System action:**

Processing stops.

**User response:**

Specify a value for the Db2 mode.

---

**CCQP002E**      **The value of the *mode\_name* Db2 level is missing.**

**Explanation:**

The specified Db2 level is not defined.

**System action:**

Processing stops.

**User response:**

Specify a value for the Db2 level.

---

**CCQP003E**      **The value of the *level\_name* Db2 level is not valid.**

**Explanation:**



The specified Db2 level does not have a valid name.

**System action:**

Processing stops.

**User response:**

Specify a valid value for the Db2 level.

---

**CCQP004S**      **The *parameter\_name* parameter does not exist in the CCQ\$\$DB2 Db2 parameter metadata member.**

**Explanation:**

The CCQ\$\$DB2 Db2 parameter metadata member does not contain the specified parameter.

**System action:**

Processing stops.

**User response:**

See “Tools Customizer troubleshooting” on page 151. Contact IBM Software Support.

---

**CCQP005E**      **The value of the *subsystem\_ID* Db2 SSID is missing.**

**Explanation:**

The specified Db2 SSID is not defined.

**System action:**

Processing stops.

**User response:**

Specify a valid value for the Db2 SSID.

---

**CCQP006E**      **The value of the *group\_attach\_name* Db2 group attach name is missing.**

**Explanation:**

The specified Db2 group attach name is not defined.

**System action:**

Processing stops.

**User response:**

Specify a valid Db2 group attach name.

---

**CCQQ000E**      **Specify a valid metadata library. Each qualifier of the library must start with an alphabetic character and must be 1-8 alphanumeric characters. The library name must be 1-44 characters.**

**Explanation:**

The metadata library was not specified in the correct format. The high-level qualifier must contain alphanumeric characters, and the first character cannot be numeric. The name cannot contain wildcard characters, such as asterisks (\*) and percent signs (%).

**System action:**

Tools Customizer prompts for the correct library name.

## User response

Specify a library in the correct format. If the message was issued on the **Specify the Metadata Library** (CCQPHLQ) panel, specify the product metadata library. The name of this library is *hlq.SARYDENU*.

Do not specify the Tools Customizer metadata library, which is *hlq.SCCQDENU*.

---

**CCQQ001E**      **The *data\_set\_name* data set name that was specified for the metadata library was not found.**

**Explanation:**

The data set does not exist, or the data set name was written in the incorrect format. The high-level qualifier must contain alphanumeric characters, and the first character cannot be numeric. The name cannot contain wildcard characters, such as asterisks (\*) and percent signs (%).

**System action:**

Tools Customizer prompts for the correct data set name.

**User response:**

Specify a data set name in the correct format.

---

**CCQQ002E**      **The data set name that was specified for the *library\_name* metadata library cannot be opened.**

**Explanation:**

Tools Customizer could not open the data set.

**System action:**

Tools Customizer prompts for an available data set.

**User response:**

Ensure that the specified data set is available for Tools Customizer to open it.

---

**CCQQ003E**      **The *data\_set\_name* data set name that was specified for the metadata sample library is not valid. The data set must be in the following format: HLQ.SxxxSAMP.**

**Explanation:**

The specified data set name was not specified in the correct format.

**System action:**

None.

**User response:**

Specify the data set name in the following format: HLQ.SxxxSAMP, where xxx is the three-character prefix for the product.

---

**CCQQ004E**      **The *data\_set\_name* data set is being used by another user. Try**

again when the data set is not being used.

**Explanation:**

Another user is using the specified data set.

**System action:**

None.

**User response:**

Ensure that the specified data set is not being used.

---

**CCQQ009E**      **The *data\_set\_name* data set name that was specified for the metadata library is not valid because the data set is empty.**

**Explanation:**

The specified data set is empty.

**System action:**

Tools Customizer prompts for an available data set.

**User response:**

Ensure that the specified data set is available for Tools Customizer to open it.

---

**CCQQ011E**      **The *library\_name* metadata library for the component that is part of the *library\_name* pack was not found in the catalog. The name of the pack is *pack\_name*, and the name of the component is *component\_name*.**

**Explanation:**

The specified metadata library is not in the catalog.

**System action:**

None.

**User response:**

Specify another metadata library.

---

**CCQQ012E**      **The *library\_name* metadata library for the component that is part of the *library\_name* pack cannot be opened.**

**Explanation:**

The specified metadata library cannot be opened.

**System action:**

None.

**User response:**

Ensure that the name of the library is specified correctly.

---

**CCQS000I**      **Tools Customizer is being invoked for the first time or the previous ISPF session ended before Tools Customizer was exited. In both cases, the fields on this panel are populated with default values. Review these default values or**

specify new values to be used to customize products or packs.

**Explanation:**

When you customize a stand-alone product or a solution pack for the first time, or when an ISPF session unexpectedly ends before the ISPF profile is saved, you must specify or review your Tools Customizer user settings.

**System action:**

Processing stops.

**User response:**

Review and accept the default settings, or specify new settings.

---

**CCQS001E**      **The following command is not valid: *command\_name*.**

**Explanation:**

The specified command is not a valid command on the panel.

**System action:**

Processing stops.

**User response:**

Specify a valid command.

---

**CCQS002W**      **The *data\_set\_name* Discover data set could not be found.**

**Explanation:**

Tools Customizer could not find the specified data set.

**System action:**

The data set will be allocated, and processing continues.

**User response:**

Ensure that the data set name is specified correctly because the data set will be allocated with this name after the values are saved.

---

**CCQS003W**      **The *data\_set\_name* Discover data set was not found so it was created.**

**Explanation:**

Tools Customizer could not find the specified data set.

**System action:**

Processing continues.

**User response:**

Ensure that the data set name is specified correctly.

---

**CCQS004I**      **The settings were saved.**

**Explanation:**

The settings that you changed were saved.

**System action:**

Processing continues.

**User response:**



No action is required.

---

**CCQS006W**      **The length of a qualifier for the *data\_set\_name* customization library data set exceeds 26 characters.**

**Explanation:**

The qualifier for the customization library data set is too long. The qualifier cannot exceed 26 characters.

**System action:**

Processing continues.

**User response:**

Specify a qualifier that is 26 characters or less.

---

**CCQS007E**      **The discover data set *data\_set\_name* could not be opened with the *option-type* option.**

**Explanation:**

The specified option could not open the Discover data set.

**System action:**

None.

**User response:**

Specify a data set to which you have WRITE access.

---

**CCQS008E**      **The Discover data set *data\_set\_name* exists on a different volume.**

**Explanation:**

The specified Discover data set must exist on the same volume as where it was created.

**System action:**

Processing continues.

**User response:**

Specify a different Discover data set name.

---

**CCQS010E**      **The customization library qualifier is not valid.**

**Explanation:**

The customization library qualifier that was specified is not valid.

**System action:**

None.

**User response:**

Specify a valid qualifier for the customization library.

---

**CCQS011E**      **The group attach option is not valid.**

**Explanation:**

The group attach option that was specified is not valid.

**System action:**

None.

**User response:**

Specify a valid option for the group attach option.

---

**CCQS012E**      **The Tools Customizer metadata library is not valid.**

**Explanation:**

The metadata library that was specified is not a valid data set.

**System action:**

None.

**User response:**

Specify a valid data set for the metadata library.

---

**CCQS013E**      **The Discover data set is not valid.**

**Explanation:**

The Discover data set that was specified is not a valid data set.

**System action:**

None.

**User response:**

Specify a valid Discover data set.

---

**CCQS014E**      **The data store data set is not valid.**

**Explanation:**

The data set that was specified is not a valid data set.

**System action:**

None.

**User response:**

Specify a valid data store data set.

---

**CCQS015E**      **Tools Customizer is already running.**

**Explanation:**

A session of Tools Customizer is already running in your environment. Only one Tools Customizer session is allowed.

**System action:**

None.

**User response:**

The trace data set is being used. Free the trace data set, and start Tools Customizer again.

---

**CCQS018E**      **Information on the first line of the job card exceeds 57 characters.**

**Explanation:**

The first line of the job card can contain only 57 characters. This character limit includes a continuation character.

**System action:**

Tools Customizer clears the first line of the job card.

**User response:**

Specify information that does not exceed 57 characters on the first line of the job card.

---

**CCQS019E**      **The required trace data set, *data\_set\_name*, is currently not accessible.**

**Explanation:**

The trace data set must be accessible.

**System action:**

Processing stops.

**User response:**

Ensure that the trace data set is accessible.

---

**CCQS020E**      **An error occurred while the customization library data set was being created. ALTER authority on the high-level qualifier for the customization library data set is required.**

**Explanation:**

To create the customization library data set, ALTER authority on the specified high-level qualifier must be granted.

**System action:**

None.

**User response:**

Ensure that ALTER authority for the specified customization library data set is granted.

---

**CCQS021E**      **The value *value\_name* in the field that contains the cursor position is not valid.**

**Explanation:**

The specified value is not valid.

**System action:**

None.

**User response:**

Specify a valid value.

---

**CCQS022E**      **An error occurred while the customization library data set was being opened. UPDATE authority on the high-level qualifier for the customization library data set is required.**

**Explanation:**

To open the customization library data set, UPDATE authority on the specified high-level qualifier must be granted.

**System action:**

None.

**User response:**

Ensure that UPDATE authority for the specified customization library data set is granted.

---

**CCQS023E**      **An error occurred while the customization library data set was being opened. UPDATE authority on the high-level qualifier for the customization library data set is required.**

**Explanation:**

To open the customization library data set, UPDATE authority on the specified high-level qualifier must be granted.

**System action:**

None.

**User response:**

Ensure that UPDATE authority for the specified customization library data set is granted, or specify a different high-level qualifier for the customization library data set on the **Tools Customizer Settings** panel.

---

**CCQS024E**      **An error occurred while the customization library data set was being created. ALTER authority on the high-level qualifier for the customization library data set is required.**

**Explanation:**

To create the customization library data set, ALTER authority on the specified high-level qualifier must be granted.

**System action:**

None.

**User response:**

Ensure that ALTER authority for the specified customization library data set is granted, or specify a different high-level qualifier for the customization library data set on the **Tools Customizer Settings** panel.

---

**CCQS025I**      **The display options were saved.**

**System action:**

None.

**User response:**

No action is required.

---

**CCQS026E**      **The customization library data set *data\_set\_name* could not be opened because the requester does not have UPDATE authority on this data set.**

**Explanation:**

Users must have UPDATE authority to open the customization library data set. Users must have UPDATE authority to open the customization library data set.

**System action:**

None.

**User response:**

Ensure that UPDATE authority for the specified customization library data set is granted or specify a different high-level qualifier for the customization library data set on the **Tools Customizer Settings** panel.

---

**CCQS027E**      **The customization library data set *data\_set\_name* could not be created because the requester does not have ALTER authority on this data set.**

**Explanation:**

To create the customization library data set, ALTER authority on the data set must be granted.

**System action:**

Processing stops.

**User response:**

Ensure that ALTER authority for the specific customization library data set is granted, or specify a different high-level qualifier for the customization library data set on the **Tools Customizer Settings** panel.

---

**CCQS029E**      **The customization library data set is not valid. Enter a valid data set name or use the Tools Customizer default: *data\_set\_name*.**

**Explanation:**

The specified data set is invalid.

**System action:**

Processing stops.

**User response:**

Specify a valid data set name.

---

**CCQS030E**      **The following command is not a valid CREATE statement: *command\_statement*.**

**Explanation:**

The specified CREATE command statement is invalid because it contains blanks or alphabetic characters.

**System action:**

Processing stops.

**User response:**

Specify a valid CREATE command statement. The correct syntax is CREATE *nn*, where *nn* is 1 - 99.

---

**CCQS031E**      **The following command is not a valid CREATE statement: *command\_statement*. The number that can be specified with the CREATE command is 1 - 99.**

**Explanation:**

The specified CREATE command statement is invalid because it contains either 0 or a number greater than 99.

**System action:**

Processing stops.

**User response:**

Specify a valid CREATE command statement. The correct syntax is CREATE *nn*, where *nn* is 1 - 99.

---

**CCQS033E**      **A user profile cannot be copied into the same user profile**

**Explanation:**

The specified data set cannot be copied into user's own user profile.

**System action:**

Processing stops.

**User response:**

Enter a different data set name.

---

**CCQS034E**      **The shared user profile data set *data\_set\_name* could not be created because the requester does not have UPDATE authority on this data set or because the data set already exists in another volume serial.**

**Explanation:**

To create a shared user profile data set, the requester must have update authority on the data set, and the specified data set name must be unique.

**System action:**

Processing stops.

**User response:**

Ensure that the requester has UPDATE authority on the data set and ensure that the data set name is unique.

---

**CCQS035E**      **The specified data set already has a user profile. Specify a different data set, or press Enter again to replace the existing user profile.**

**Explanation:**

Pressing Enter overwrites the previous user profile for the specified data set with user's own user profile.

**System action:**

Processing stops.

**User response:**

Specify a different data set name.

---

**CCQS036E**      **The customization library *data\_set\_name* already exists in volume and cannot be created in a different volume. Enter a different customization library name.**

**Explanation:**

The same data set name cannot exist in a different volume.

**System action:**

Processing stops.

**User response:**

Specify a different data set name.

---

**CCQS037E      The data set name was either not specified or invalid.**

**Explanation:**

The data set name specified does not follow the IBM data set name convention.

**System action:**

Processing stops.

**User response:**

Specify a valid data set name.

---

**CCQS038E      The specified data set cannot be used.**

**Explanation:**

The specified data sets contain information that supports Tools Customizer, but this data set cannot be used.

**System action:**

Processing stops.

**User response:**

Specify a different data set.

---

**CCQS039E      The specified data set has an invalid record format.**

**Explanation:**

The specified data set should be saved as a different record format. For example, the record format should be FB (Formatted Block) but it is set to VB (Variable Block).

**System action:**

Processing stops.

**User response:**

Specify a valid record format.

---

**CCQT000I      The product configuration ID *copied\_configuration\_ID* was successfully copied from *configuration\_ID*.**

**Explanation:**

The specified configuration ID was copied.

**System action:**

None.

**User response:**

No action is required.

---

**CCQT001E      The *command\_name* line command was specified more than once, which is not allowed.**

**Explanation:**

The specified line command cannot be specified more than one time.

**System action:**

Processing stops.

**User response:**

Specify the line command only once.

---

**CCQT002E      The *configuration\_ID* configuration ID already exists. Specify a different configuration ID.**

**Explanation:**

The specified configuration ID exists.

**System action:**

Processing stops.

**User response:**

Ensure that the specified configuration ID is unique.

---

**CCQT003I      The product configuration ID *configuration\_ID* was created.**

**Explanation:**

The specified configuration ID was created.

**System action:**

None.

**User response:**

No action is required.

---

**CCQT004I      The product configuration ID *configuration\_ID* was removed.**

**Explanation:**

The specified configuration ID was removed.

**System action:**

None.

**User response:**

No action is required.

---

**CCQT005E      The product configuration ID *configuration\_ID* is not valid. The product configuration ID cannot contain a colon (:).**

**Explanation:**

The specified configuration ID contains a colon (:), but a colon is not valid.

**System action:**

Processing stops.

**User response:**

Specify a configuration ID that does not contain a colon.

---

**CCQT006E**      **The *configuration\_ID* configuration ID exists. Specify a different configuration ID.**

**Explanation:**

The specified configuration ID exists.

**System action:**

Processing stops.

**User response:**

Specify another configuration ID.

---

**CCQT007E**      **The *configuration\_ID* configuration ID exists but was removed from the list of configurations. To use this configuration ID, you must restore it.**

**Explanation:**

The specified configuration ID exists but was removed from the list of available configuration.

**System action:**

Processing stops.

**User response:**

Specify another configuration ID. To restore the specified configuration ID, issue the CREATE command, and specify the same configuration ID again.

---

**CCQT008E**      **The *configuration\_ID* configuration ID exceeds *maximum\_number* characters.**

**Explanation:**

The specified configuration ID contains too many characters.

**System action:**

Processing stops.

**User response:**

Specify another configuration ID that does not exceed the maximum number of characters that was set by Db2 Recovery Expert.

---

**CCQT010I**      **Create request for *configuration\_ID* configuration was cancelled by user.**

**Explanation:**

The request to create the specified configuration was canceled.

**System action:**

Processing stops.

**User response:**

No action is required.

---

**CCQT011I**      **The *configuration\_ID* configuration was not copied.**

**Explanation:**

The specified configuration was not copied.

**System action:**

Processing stops.

**User response:**

No action is required.

---

**CCQT012I**      **The *configuration\_ID* configuration was not removed.**

**Explanation:**

The specified configuration was not removed.

**System action:**

Processing stops.

**User response:**

No action is required.

---

**CCQT013I**      **None of the configurations were copied or removed. All of the previously selected configurations are deselected.**

**Explanation:**

The selected configurations were not copied or removed, and they are deselected.

**System action:**

Processing stops.

**User response:**

No action is required.

---

**CCQT014E**      **Specify Y or N and press Enter to continue, or press End to cancel.**

**Explanation:**

A function requires input.

**System action:**

Processing stops.

**User response:**

To continue, specify Y or N and press Enter. Otherwise, press End to cancel.

---

**CCQT015E**      **The *command\_name* command is not allowed during the process of "Select" configuration line command.**

**Explanation:**

The specified command is not allowed while the line command for selecting configurations is processing.

**System action:**

Processing stops.

**User response:**

Remove the specified line command.

---

**CCQT016I**      **The *configuration\_ID* configuration was not created**

**Explanation:**

The specified configuration was not created.

**System action:**

Processing stops.

**User response:**

No action is required.

---

**CCQT017I**      **The *configuration\_ID* configuration was not copied.**

**Explanation:**

The specified configuration was not copied.

**System action:**

Processing stops.

**User response:**

No action is required.

---

**CCQT018E**      **Specify Y or N, and press Enter.**

**Explanation:**

A function requires input.

**System action:**

Processing stops.

**User response:**

To continue, specify Y or N, and press Enter.

---

**CCQT019I**      **The select *configuration\_ID* configuration process ended.**

**Explanation:**

The select process for the specified configuration is finished.

**System action:**

Processing stops.

**User response:**

No action is required.

---

**CCQT020E**      **The *configuration\_ID* configuration was not created because the data store was not accessible.**

**Explanation:**

The specified configuration was not created because the data store could not be accessed.

**System action:**

Processing stops.

**User response:**

Ensure that the data store is accessible and create the configuration again.

---

**CCQT021E**      **The *configuration\_ID* configuration was not copied because the data store was not accessible.**

**Explanation:**

The specified configuration was not copied because the data store could not be accessed.

**System action:**

Processing stops.

**User response:**

Ensure that the data store is accessible and copy the configuration again.

---

**CCQT025I**      **The *configuration\_ID* configuration was not updated.**

**Explanation:**

The specified configuration was not updated because the edit process was canceled.

**System action:**

Processing stops.

**User response:**

No action is required.

---

**CCQT027I**      **The product configuration ID has been updated from *edit\_from\_id* to *edit\_to\_id*.**

**System action:**

Processing continues.

**User response:**

No action is required.

---

**CCQT028I**      **The product configuration ID has been updated from *edit\_from\_id* to *edit\_to\_id*, and the description has been updated from *edit\_from\_des* to *edit\_to\_des*.**

**System action:**

Processing continues.

**User response:**

No action is required.

---

**CCQT029I**      **The product configuration description has been updated from *edit\_from\_des* to *edit\_to\_des*.**

**System action:**

Processing continues.

**User response:**

No action is required.

---

**CCQX001S**      ***Product\_name* has already been customized by using values from *data\_set\_name* data store data set. Switch to the specified data store data set to continue customizing this product.**

**Explanation:**

The specified product was customized by using values from the specified data store data set.

**System action:**

Processing stops.

**User response:**

Use the specified data store data set to continue customizing the product.

**CCQX002S** *component\_name* has already been customized by using values from *data\_set\_name* data store data set. Switch to the specified data store data set to continue customizing this component.

**Explanation:**

The specified component was customized by using values from the specified data store data set.

**System action:**

Processing stops.

**User response:**

Use the specified data store data set to continue customizing the component.

**CCQX011I** *Product\_name* was not found.

**Explanation:**

The specified product was not found.

**System action:**

Processing stops.

**User response:**

Specify another product.

## Db2 Recovery Expert for z/OS messages and codes

Use the information in these messages to help you diagnose and solve Db2 Recovery Expert problems.

All messages generated by Db2 Recovery Expert have a severity code printed as the last character of the message ID. The severity codes are described in this table:

Table 32. Error message severity codes

| Severity Code | Description                                                                                            |
|---------------|--------------------------------------------------------------------------------------------------------|
| I             | Information message. No user action required.                                                          |
| S             | Status message. No user action required.                                                               |
| W             | Warning message. Results may not be as expected.                                                       |
| E             | Error message. Some may be user-correctable, read the User Response to determine the course of action. |

**ARYS603I** *Volser volser* is being processed by another job. It will be bypassed.

**Explanation:**

During offload or restore processing when running with the multijob option, the specified volume will be skipped because it is being processed by another job.

**User response:**

None required.

**ARYS638W** *The copypool dumping* is already running.

**Explanation:**

The offload process has already started in another job.

**User response:**

Wait until another offload job finishes.

**ARYS640E** *Profile profile\_creator.profile\_name* is not a Combined SLB profile

**Explanation:**

During BACKUP processing for a Combined SLB group, the profile being processed was not associated with a Combined SLB group. Processing was terminated.

**User response:**

When performing BACKUP processing for a Combined SLB group, ensure that you select a profile that is associated with a Combined SLB group.

**ARYS641E** *parameter* is not supported for CSLB profiles (currently only LOG SUSPEND)

**Explanation:**

While processing a Combined SLB profile, it was determined that one of the parameters in the profile is not allowed for Combined SLB processing. The parameter is displayed in the message. Processing is terminated.

**User response:**

Edit the Combined SLB profile and ensure that the listed parameter is set appropriately.

**ARYS642E** *module* is an invalid CSLB offset table

**Explanation:**

While processing a Combined SLB profile, it was determined that one of the load modules which contains offset values is not valid. Processing is terminated.

**User response:**

Ensure that the module listed was correctly installed.

---

**ARYS643E      Error encountered during module phase processing**

---

**Explanation:**

While processing a Combined SLB profile, an error occurred in the listed module during the listed phase. Processing is terminated.

**User response:**

Review the job log for other messages that identify the error. Correct the error and resubmit the job.

---

**ARYS644E      Parameter mismatch Section: section, Parameter: parameter**

---

**Explanation:**

While performing BACKUP processing for a Combined SLB group, it was determined that the parameter listed was inconsistently set between IMS Recovery Expert and Db2 Recovery Expert. Processing continues.

**User response:**

Review the listed parameter and the values displayed in “ARYS645W” on page 692 for each product. Determine what you must do to make the parameter consistent.

---

**ARYS645W      BSY value: value1, ARY value: value2**

---

**Explanation:**

This message appears after message “ARYS644E” on page 692 and displays the mismatched parameter values for IMS Recovery Expert (BSY) and Db2 Recovery Expert (ARY).

**User response:**

Review the listed parameter and the values displayed for each product. Determine what you must do to make the parameter consistent.

---

**ARYS646E      Error processing Combined SLB group group, error**

---

**Explanation:**

While processing a Combined SLB profile, an error was detected in the group. The group and the error are listed in the message. Processing was terminated.

**User response:**

Review the listed error. Correct the problem and resubmit the job.

---

**ARYS647E      SSID ssid was not found in the Combined SLB backup**

---

**Explanation:**

While performing image copy processing against a Combined SLB, it was determined that the listed SSID is not part of the backup. Processing was terminated.

**User response:**

Select a backup that contains the SSID for which image copy processing is being performed, and resubmit the job.

---

**ARYS648E      Combined SLB repository record validation failed**

---

**Explanation:**

While attempting to create a Combined SLB, validation failed for the repository records that are created by the process.

**User response:**

Contact technical support and provide them with the information displayed in this message.

---

**ARYS650I      CSLB backup not allowed due to prior error**

---

**Explanation:**

While performing BACKUP processing for a Combined SLB group, an error occurred that prevents the backup from completing. Processing was terminated.

**User response:**

Review the job log for other messages that identify the error. Correct the error and resubmit the job.

---

**ARY801E      Pgm: programname Stmt: statementnumber Type: sqlstatementtype**

---

**Explanation:**

This message is issued when an SQL error has occurred. It displays the program name where the SQL error occurred, the statement number, and the type of SQL statement.

**User response:**

Correct the SQL error.

---

**ARY901E      The default load library could not be located**

---

**Explanation:**

The data set name entered for the load library was not found.

**User response:**

Enter a valid load library data set name and continue.

---

**ARY902E      A Db2 subsystem ID has to be entered for processing**

---

**Explanation:**

There was no valid value entered for Db2 subsystem ID.

**User response:**

Enter a valid Db2 subsystem name.

---

**ARY904E      The specified dataset could not be opened for I/O**

---

**Explanation:**



A VSAM open error occurred while attempting to open the data set specified for the Db2 control data set.

**User response:**

Verify that the VSAM data set is accessible.

---

**ARY905E**            **An unexpected return code from VSAM was encountered while doing a read of the control file. RC=return code**

**Explanation:**

A VSAM read error occurred while attempting to access the data set specified for the Db2 control data set. The VSAM return code is provided for diagnostic purposes.

**User response:**

Use the return code to resolve the VSAM read error before continuing.

---

**ARY906I**            **The control file record for Db2 subsystem ssid has been successfully updated**

**Explanation:**

The control file named in the Db2 Control Dataset field has been successfully updated to include the specified changes and definitions for the listed Db2 subsystem.

**User response:**

None required.

---

**ARY907E**            **An unexpected return code from VSAM was encountered while doing an update operation of the control file. RC1=return code 1 RC2=return code 2**

**Explanation:**

A VSAM update error occurred while attempting to update the data set specified for the Db2 control data set. The RC1 and RC2 (VSAM return codes) are provided for diagnostic purposes.

**User response:**

Use the return codes to resolve the VSAM errors before continuing.

---

**ARY908I**            **The control file record for Db2 subsystem ssid has been successfully added**

**Explanation:**

The control file named in the Db2 Control Dataset field has been successfully updated to include the new record, based on the specified definitions for the listed Db2 subsystem.

**User response:**

None required.

---

**ARY909E**            **Invalid value. Valid options are 1 and 2.**

**Explanation:**

The value you specified is not valid. Valid values are 1 and 2.

**User response:**

Enter a valid value.

---

**ARY910E**            **An unexpected return code from VSAM was encountered while doing an add operation to the control file. RC1= return\_code\_1 RC2=return\_code\_2 .**

**Explanation:**

A VSAM error occurred while attempting to perform an add operation to the specified Db2 control data set. The RC1 and RC2 (VSAM return codes) are provided for diagnostic purposes.

**User response:**

Use the return codes to resolve the VSAM errors before continuing.

---

**ARY911E**            **The FIND command requires specification of a target string.**

**Explanation:**

No parameters were specified with the F(ind) command. No match can be made unless you specify a string to find.

**User response:**

Enter a FIND parameter.

---

**ARY912I**            **The requested find string was not found.**

**Explanation:**

No matches were found for the string you specified with the FIND command.

**User response:**

None required.

---

**ARY913I**            **The control file record has been successfully updated.**

**Explanation:**

The control file was updated successfully.

**User response:**

None required.

---

**ARY914E**            **An unknown column was specified using the SORT command.**

**Explanation:**

The column you specified with the SORT command is not known.

**User response:**

Verify that you correctly typed the name of the column or select another column.

---

**ARY915E**            **SORT is not supported for the specified column.**

**Explanation:**

The column you attempted to SORT is not supported as a column on which to sort.

**User response:**

Refer to the sort columns listed on the Define Sort Columns panel for a list of valid columns on which the sort can be based and redefine the sort.

---

**ARY916E**      **Sort column not entered. Column name or number must be specified.**

**Explanation:**

A column was not specified with the SORT. A column name or number must be specified for the SORT command.

**User response:**

Ensure that if the column name is used, that all spaces in the name are replaced with an underscore.

---

**ARY917E**      **Incomplete string: Put an ending quote at the end of the string.**

**Explanation:**

The ending quote was omitted from the string.

**User response:**

Put an ending quote at the end of the string.

---

**ARY918**      **Bottom of Data reached: CHARS string not found. Press PF5 to continue from top.**

**Explanation:**

The indicated character string was not found.

**User response:**

To continue searching for the character string from the top of the dialog, press PF5.

---

**ARY919**      **Top of data reached: CHARS string not found. Press PF5 to continue from bottom.**

**Explanation:**

The indicated character string was not found.

**User response:**

To continue searching for the character string from the bottom of the dialog, press PF5.

---

**ARY920E**      **File tailoring open returned a file tailoring already in progress condition.**

**Explanation:**

An attempt to perform file tailoring for utility customization failed. There was a file tailoring session already in progress. File tailoring sessions cannot be performed concurrently.

**User response:**

None required.

---

**ARY921E**      **File tailoring open returned the output file already in use condition - ENQ failed.**

**Explanation:**

An attempt to open the Db2 control data set failed with an ENQ error. The data set is already open for output.

**User response:**

Verify that you are the only user attempting to access this file.

---

**ARY922E**      **File tailoring open returned the skeletal file or output file not allocated condition.**

**Explanation:**

An attempt to perform file tailoring failed because either the tailoring skeleton file or output file is not allocated.

**User response:**

Verify that all required files are allocated prior to performing file tailoring.

---

**ARY923E**      **File tailoring open returned a severe error condition.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on open.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARY924E**      **File tailoring open returned an unknown code -- severe error.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on open.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARY925E**      **File tailoring close returned a file not open condition -- severe error.**

**Explanation:**

An attempt to perform file tailoring failed because a file not open condition was encountered on close.

**User response:**

Verify that all required files are allocated and accessible and that there are no other tailoring sessions running concurrently with your session.

---

**ARY926E**      **File tailoring close returned an output file in use condition.**

**Explanation:**

An attempt to perform file tailoring failed because an output file in use condition was encountered on close.

**User response:**

Verify that all required files are allocated and accessible and that there are no other tailoring sessions running concurrently with your session.

---

**ARY927E**            **File tailoring close returned a skeletal file or output file not allocated condition.**

**Explanation:**

An attempt to close file tailoring failed because either a tailoring skeleton file or output file was not allocated.

**User response:**

Verify that all required files are allocated and accessible and that there are no other tailoring sessions running concurrently with your session.

---

**ARY928E**            **File tailoring close returned a severe error.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on close.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARY929E**            **File tailoring close returned an unknown code -- severe error.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on close.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARY930E**            **File tailoring close returned a output member exists in the output library and NOREPL was specified.**

**Explanation:**

An attempt to perform file tailoring failed because the close process could not replace the pre-existing tailored member in the output file.

**User response:**

Change the output member name to a new name or ensure that the output library allows for member replacement.

---

**ARY931E**            **File tailoring include returned a skeleton does not exist condition.**

**Explanation:**

An attempt to perform file tailoring failed because the tailoring process could not locate a required tailoring skeleton.

**User response:**

Assure that all required files are allocated to perform file tailoring.

---

**ARY932E**            **File tailoring include returned a skeleton in use -- ENQ failed condition.**

**Explanation:**

An attempt to access a tailoring skeleton failed with an ENQ error (member-in-use).

**User response:**

Verify that all required tailoring files are allocated and that there are no other tailoring sessions running concurrently.

---

**ARY933E**            **File tailoring include returned a data truncation or skeleton library or output file not allocated condition.**

**Explanation:**

An attempt to perform file tailoring failed because either the tailoring skeleton file or output file is not allocated.

**User response:**

Verify that all required files are allocated prior to performing file tailoring.

---

**ARY934E**            **File tailoring include returned a severe error condition.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on an include operation.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARY935E**            **File tailoring include returned an unknown condition -- severe error.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on an include operation.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARY936E**            **Allocation Error - The ISPF DD is already allocated and cannot be deallocated - Process not completed.**

**Explanation:**

The ISPF DD allocation failed. The DD is already allocated and cannot be deallocated for this TSO session. The process did not complete successfully.

**User response:**

None required.

---

**ARY937E**      **Allocation Error - An error was encountered allocating the ISPWRK1 or ISPWRK2 DD - Process not complete.**

**Explanation:**

The ISPWRK1 or ISPWRK2 DD allocation failed

**User response:**

Verify TSO session parameters are set correctly for your site prior to allocation of these DD statements. The process did not complete successfully.

---

**ARY938E**      **Field Required - The dataset entered is a partitioned dataset and the member name is required.**

**Explanation:**

A required field was not specified. The data set entered is a PDS (partitioned data set) and a member in this PDS must be referenced.

**User response:**

Please enter a valid member name for PDS access.

---

**ARY940E**      **The specified dataset could not be found in the MVS catalog.**

**Explanation:**

The specified data set could not be found in the z/OS (MVS) catalog.

**User response:**

Ensure that the data set name is correct.

---

**ARY941**      **The RFIND key works only after a FIND character string is entered.**

**Explanation:**

A repeat FIND (RFIND) was issued before a FIND command was issued. You must issue FIND before RFIND will work.

**User response:**

Issue FIND prior to attempting to issue RFIND.

---

**ARY942E**      **Invalid Sort number. Enter a valid digit.**

**Explanation:**

An invalid character was entered in the Srt column. Valid characters are the digits 1, 2, 3,... up to 9, or the number of sortable columns, whichever is less.

**User response:**

Specify a valid sort number.

---

**ARY943E**      **Same Sort number entered twice.**

**Explanation:**

The same sort number was entered for more than one column. The screen is positioned to the second instance. Sort sequence numbers must be unique.

**User response:**

Specify a valid sort number.

---

**ARY944E**      **Sort sequence skips a number.**

**Explanation:**

The selected sorting sequence skips a number. This is not allowed. The screen is positioned to a selection whose number is lacking an immediate predecessor. The sort sequence is completely rebuilt from the Cmd (and Dir) information. Any previously existing sort sequence is entirely replaced. It is not added to or extended by the new entries.

**User response:**

Please specify a valid sort sequence that does not skip a number.

---

**ARY945E**      **Invalid Dir entered. Must be A or D (ascending/descending).**

**Explanation:**

The selected sorting direction is invalid. Only A (ascending) or D (descending) can be specified. A blank indicates ascending (default).

**User response:**

Please specify a valid sorting direction.

---

**ARY946E**      **Dir not valid without Ord.**

**Explanation:**

A sorting direction was selected for a column that was not selected to be sorted. Sorting direction is only a valid choice for selected columns.

**User response:**

Select a sorting direction and order.

---

**ARY947E**      **Max Sort Columns exceeded. Sorting first 10 columns.**

**Explanation:**

More columns were selected for sorting than are supported. Nine columns can be selected. Under certain circumstances the limit is less than nine, due to internal constraints. For example, sorting a date field can be implemented by three sorts of partial column fields. In that case, the column would count as three toward the maximum of nine, not one.

**User response:**

Specify the appropriate allowable maximum number of sort columns.

---

**ARY948E**      **Fix Columns cannot exceed screen size.**

**Explanation:**

More columns were selected to be fixed than will fit on the screen.

**User response:**

Remove the (F) selection character from one or more columns.

---

**ARY950E Invalid selection character. "F" and "U" are valid.**

---

**Explanation:**

An invalid Cmd character was entered. Valid characters are F (fix) and U (unfix). Fix causes the column to move to the fixed area on the left side of the screen. Fixed columns do not scroll horizontally when LEFT or RIGHT scrolling commands are issued. Unfix moves the column out of the fixed area, and allows it to scroll horizontally when LEFT and RIGHT scroll commands are issued.

**User response:**

Either remove the invalid character or enter a valid one.

---

**ARY951E Invalid entry. Must be numeric.**

---

**Explanation:**

An invalid Cmd value was entered. Cmd values must be numeric. If the column is fixed, the number must be in the fixed range. If the column is not fixed, the number must be in the unfixed range.

**User response:**

Either remove the invalid number or enter a valid one.

---

**ARY952E Invalid entry for fixed column.**

---

**Explanation:**

An invalid Cmd value was entered for a fixed column. Valid selections for fixed column are up to the number of fixed columns.

**User response:**

Either remove the invalid number or enter a valid one.

---

**ARY953E Invalid entry for unfixed column.**

---

**Explanation:**

An invalid Cmd value was entered for an unfixed column. The number must be less than the number of columns, and greater than the number of fixed columns.

**User response:**

Either remove the invalid number or enter a valid one.

---

**ARY954E Invalid value entered for column size: non-numeric data.**

---

**Explanation:**

An invalid Cmd value was entered. This must be a number between the values in the MIN and MAX fields.

**User response:**

Either remove the invalid number or enter a valid one.

---

**ARY955E Invalid value entered for column size: out of range.**

---

**Explanation:**

An invalid Cmd value was entered. This must be a number between the values in the MIN and MAX fields.

MIN is the smallest acceptable value. MAX is the largest acceptable value.

**User response:**

Either remove the invalid number or enter a valid one.

---

**ARY956E Total fixed column sizes cannot exceed screen size.**

---

**Explanation:**

The Cmd values entered would result in the sum of the fixed column sizes to exceed the screen size. This is not allowed. The fixed columns are those with an or in the Fix column. Fixed columns are always displayed, and so must fit on the screen.

**User response:**

Either change the fixed column sizes so that the total is less than the screen size or cancel to return to the previous panel.

---

**ARY957E New configuration makes column size invalid.**

---

**Explanation:**

Due to the requested column sizes, at least one unfixed column is not displayed properly. The cursor is positioned on the value where the problem was detected. The unfixed area on the screen would be too small to show the column where the cursor is placed.

**User response**

Do one of the following:

- Make the column where the cursor is smaller so that it can fit in the available unfixed area
- Set it to its maximum size (width)
- Make the fixed area smaller
- Cancel to return to the previous panel

---

**ARY958E Column does not fit in unfixed area in new configuration.**

---

**Explanation:**

The unfixed column where the cursor is positioned will not be displayed with the requested column sizes. The unfixed area on the screen would be too small to show this column.

**User response:**

Shrink the fixed area by either unfixing columns or making fixed columns smaller. The column where the cursor is partially displayed (min-max) so its size cannot be changed.

---

**ARY959E New configuration makes this column size invalid.**

---

**Explanation:**

Fixing the requested columns would shrink the available area for unfixed columns unacceptably. One or more unfixed columns would not fit in the remaining

unfixed area of the screen. The cursor is placed on a row that represents one such column. Therefore, the requested configuration is not allowed.

**User response:**

To change column sizes, cancel out of the CFIX function and invoke the CSIZE function. Either cancel to exit CFIX with no change or blank out one or more FIX selections until an allowable fixed size is reached.

---

**ARY960E Invalid fixed selections. Would not leave enough space for this column.**

**Explanation:**

Fixing the columns requested would make at least one unfixed column undisplayable. The cursor is positioned on the row that represents one such unfixed column, whose minimum displayable size would not fit in the available screen area.

**User response**

Shrink the requested fixed area by either:

- Requesting fewer fixed columns
- Unfixing one or more fixed columns
- Cancel out of CFIX and invoke CSIZE in order to shrink one or more fixed columns enough so that all unfixed columns have the space they require

---

**ARY962E Duplicate Cmd values entered.**

**Explanation:**

Duplicate Cmd numbers were entered. The cursor points to the second instance of a Cmd value.

**User response:**

Either change this value, clear it, or exit the CORDER function.

---

**ARY963E Cursor not on data element.**

**Explanation:**

CEXPAND was issued and the cursor was not located on a valid (expandable) area. CEXPAND requires the cursor to be positioned on a data element (non-heading area) in the dynamic area of the display. Or CEXPAND can be issued specifying the row and column of the data element to expand.

**User response:**

Ensure the cursor is located on a valid (expandable) area prior to issuing the CEXPAND command.

---

**ARY964E Invalid scroll amount for CRIGHT. Must be numeric.**

**Explanation:**

Invalid (non-numeric) parameter to CRIGHT specified. CRIGHT accepts one numeric parameter: the number of columns to scroll right. If no parameter is entered a value of 1 is assumed.

**User response:**

Specify a numeric parameter to the CRIGHT command.

---

**ARY965E Invalid scroll amount for CLEFT. Must be numeric.**

**Explanation:**

Invalid (non-numeric) parameter to CLEFT specified. CLEFT accepts one numeric parameter: the number of columns to scroll left. If no parameter is entered, a value of 1 is assumed.

**User response:**

Specify a numeric parameter to the CLEFT command.

---

**ARY966E Invalid parameter to ICRIGHT; Must be numeric.**

**Explanation:**

A parameter to ICRIGHT is not numeric. ICRIGHT (inner column scroll right) accepts either zero, one, or two numeric parameters. ICRIGHT can be abbreviated as ICR.

**User response:**

Specify a valid, numeric parameter for ICRIGHT.

---

**ARY967E Parameter to ICRIGHT too long. Invalid.**

**Explanation:**

A parameter to ICRIGHT is too long. ICRIGHT does not process more than eight digits in a parameter, which is more than double any reasonable value.

**User response:**

Specify a valid parameter for ICRIGHT.

---

**ARY968E Parameter to ICRIGHT is zero. Invalid.**

**Explanation:**

A parameter to ICRIGHT has the value zero. This is not supported.

**User response:**

Specify non-zero parameters to ICRIGHT.

---

**ARY969E ICRIGHT: unspecified column.**

**Explanation:**

ICRIGHT was invoked with no parameters and the cursor is not positioned in the dynamic panel area.

**User response:**

Either put the cursor in the column that should be scrolled or specify the column by number. Column numbers can refer to visible columns (in the current display window) only. Number starts at 1, on the left side.

---

**ARY971E ICRIGHT: Column number specified is too big.**

**Explanation:**

A column number parameter to ICRIGHT must be between 1 and the number of columns currently on the display screen.

**User response:**

To refer to a column by number, you must first position the display window so that the desired column is visible.

---

**ARY972E**            **Invalid parameter to ICLEFT; Must be numeric.**

**Explanation:**

A parameter to ICLEFT is not numeric. ICLEFT (inner column scroll left) accepts either zero, one, or two numeric parameters. ICLEFT can be abbreviated as ICL.

**User response:**

Specify a valid parameter for ICLEFT.

---

**ARY973E**            **Parameter to ICLEFT too long. Invalid.**

**Explanation:**

A parameter to ICLEFT is too long. ICLEFT does not process more than eight digits in a parameter which is more than double reasonable value.

**User response:**

Specify a parameter less than or equal to eight digits for ICLEFT.

---

**ARY974E**            **Parameter to ICLEFT is zero. Invalid.**

**Explanation:**

A parameter to ICLEFT has the value zero. This is not supported.

**User response:**

Specify a non-zero number for ICLEFT.

---

**ARY975E**            **ICLEFT: unspecified column.**

**Explanation:**

ICLEFT was invoked with no parameters and the cursor is not positioned in the dynamic panel area.

**User response:**

Either put the cursor in the column that should be scrolled or specify the column by number. Column numbers can refer to visible columns (in the current display window) only. Numbering starts at 1 on the left side.

---

**ARY976E**            **Column selected not sortable. Sort selection list presented.**

**Explanation:**

You cannot perform a SORT on the column you selected. Valid sort columns are displayed in the sort selection list.

**User response:**

Sort on one of the valid columns displayed in the selection list.

---

**ARY977E**            **ICLEFT: Column number specified is too big.**

**Explanation:**

A column number parameter to ICLEFT must be between 1 and the number of columns currently on the display screen.

**User response:**

To refer to a column by number, you must first position the display window so that the desired column is visible.

---

**ARY978E**            **Invalid column number specified for SORT (not numeric).**

**Explanation:**

A non-numeric value was specified for the column number sort parameter.

**User response:**

Specify a column number parameter to CSORT that is between 1 and the number of columns currently on the display screen. This can be followed by a direction value A or D (ascending/ descending).

---

**ARY979E**            **Invalid Column number specified. Too many digits.**

**Explanation:**

Invalid parameter to CSORT specified. More than eight digits were specified. Parsing stops at eight digits.

**User response:**

Specify a column number parameter between 1 and the number of columns currently on the display screen. This can be followed by a direction value A or D (ascending/descending).

---

**ARY980E**            **Invalid Column number specified: zero.**

**Explanation:**

Invalid parameter to CSORT was specified (zero)

**User response:**

Specify a column number parameter to CSORT that is between 1 and the number of columns currently on the display screen. This can be followed by a direction value A or D (ascending/ descending).

---

**ARY981E**            **Invalid Column number specified: out of range.**

**Explanation:**

Invalid parameter to CSORT was specified (zero).

**User response:**

Specify a column number parameter to CSORT that is between 1 and the number of columns currently on the display screen. This can be followed by a direction value A or D (ascending/ descending).

---

**ARY982E Invalid View. View adjusted.****Explanation:**

The current view was adjusted but not deleted. The saved view did not match the report requirements. This could be caused by the report changing or the view file getting corrupted.

**User response:**

The adjusted view will be used. You can issue CSET to modify the view.

---

**ARY983E Invalid View. View deleted.****Explanation:**

Invalid data was found in a view for this report. The view was deleted and contents ignored. This could be caused by the report changing or the view file getting corrupted.

**User response:**

You can issue CSET to create a view that will match the current report.

---

**ARY984E Unexpected return code from TBSTATS: return code****Explanation:**

An unexpected failure issuing TBSTATS was received.

**User response:**

Please refer to the ISPF Services Guide for (hex) return code descriptions. Also, review the ISPTLIB and ISPTABL allocations. For information about ISPTLIB and ISPBABL, see ISPF manuals.

---

**ARY985E View Library not allocated.****Explanation:**

A view input library has not been allocated. In order for a user to save and use report customizations that are created via the CSET command, ISPTABL and ISPTLIB must be allocated.

**User response:**

Refer to ISPF manuals for information on ISPTLIB and ISPTABL.

---

**ARY986E TBCREATE failed. RC=return code****Explanation:**

TBCREATE was issued to create a view. It failed with a (hex) return code as indicated in the message.

**User response:**

Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the ISPF Services Guide.

---

**ARY987E TBOPEN failed. RC=return code****Explanation:**

TBOPEN was issued to open a view. It failed with a (hex) return code as indicated in the message.

**User response:**

Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the ISPF Services Guide.

---

**ARY988E TBGET failed. RC=return code****Explanation:**

A TBGET produced a return code (as indicated in the message).

**User response:**

Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the ISPF Services Guide.

---

**ARY989E TBMOD failed. RC=return code****Explanation:**

A TBMOD produced an error and return code (as indicated in the message).

**User response:**

Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the ISPF Services Guide.

---

**ARY990E TBCLOSE failed. RC=return code****Explanation:**

TBCLOSE failed with a (hex) return code as indicated in the message.

**User response:**

Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the ISPF Services Guide.

---

**ARY991E TBDELETE failed. RC=return code****Explanation:**

TBDELETE failed with a (hex) return code as indicated in the message.

**User response:**

Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the ISPF Services Guide.

---

**ARY992E Invalid selection.****Explanation:**

A command that is not supported on this panel was selected.

**User response:**

Issue a valid command for the panel.

---

**ARY993I Permanent view not supported.****Explanation:**



ARY has detected something that prevents views from being saved. The permanent view flag cannot be set to Y. The most likely cause of this is that either ISPTLIB or ISPTABL (or both) have not been properly allocated.

**User response:**

Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the ISPF Services Guide.

---

**ARY994E Invalid row number.**

**Explanation:**

CEXPAND was issued with an invalid parameter of zero. CEXPAND can be issued with no parameters and the cursor on a data field, or with two parameters. The two parameters are the row number, followed by the column number of the data element to be expanded. The row number is counted down from the top, starting with the first scrollable row (heading not counted). The column number is counted from left to right, starting with the left column in the current display window.

**User response:**

Specify a valid parameter count for use with CEXPAND.

---

**ARY995E Invalid column number.**

**Explanation:**

CEXPAND was issued with an invalid parameter of zero. CEXPAND can be issued with no parameters and the cursor on a data field, or with two parameters. The two parameters are the row number, followed by the column number of the data element to be expanded. The row number is counted down from the top, starting with the first scrollable row (heading not counted). The column number is counted from left to right, starting with the left column in the current display window.

**User response:**

Specify a valid parameter count for use with CEXPAND.

---

**ARY996E Invalid digits.**

**Explanation:**

CEXPAND was issued with an invalid parameter of zero. CEXPAND can be issued with no parameters and the cursor on a data field, or with two parameters. The two parameters are the row number, followed by the column number of the data element to be expanded. The row number is counted down from the top, starting with the first scrollable row (heading not counted). The column number is counted from left to right, starting with the left column in the current display window.

**User response:**

Specify a valid parameter count for use with CEXPAND.

---

**ARY997E Too many digits.**

**Explanation:**

CEXPAND was issued with an invalid parameter of zero. CEXPAND can be issued with no parameters and the cursor on a data field, or with two parameters. The two parameters are the row number, followed by the column number of the data element to be expanded. The row number is counted down from the top, starting with the first scrollable row (heading not counted). The column number is counted from left to right, starting with the left column in the current display window.

**User response:**

Specify a valid parameter count for use with CEXPAND.

---

**ARY998E Zero parameter invalid.**

**Explanation:**

CEXPAND was issued with an invalid parameter of zero. CEXPAND can be issued with no parameters and the cursor on a data field, or with two parameters. The two parameters are the row number, followed by the column number of the data element to be expanded. The row number is counted down from the top, starting with the first scrollable row (heading not counted). The column number is counted from left to right, starting with the left column in the current display window.

**User response:**

Specify a non-zero parameter.

---

**ARY999E Invalid parameter count: must be either two or zero parms.**

**Explanation:**

CEXPAND was issued with an invalid number of parameters. CEXPAND can be issued with no parameters and the cursor on a data field, or with two parameters. The two parameters are the row number, followed by the column number of the data element to be expanded. The row number is counted down from the top, starting with the first scrollable row (heading not counted). The column number is counted from left to right, starting with the left column in the current display window.

**User response:**

Specify a valid parameter count for use with CEXPAND.

---

**ARY1000A Could not obtain SSID from input parameters.**

**Explanation:**

Db2 Recovery Expert for z/OS could not obtain the SSID from the input parameters.

**User response:**

Ensure that the correct SSID value has been specified.

---

**ARY1001A Could not open the SYSOUT DD.**

**Explanation:**

The SYSOUT data set defined in your Db2 Recovery Expert for z/OS JCL could not be opened for output.

**User response:**

Verify that the SYSOUT data set you specified in your Db2 Recovery Expert for z/OS JCL is available for use and resubmit the job.

---

**ARY1002A Invalid SYSOUT DD LRECL.**

**Explanation:**

The SYSOUT DD specified in Db2 Recovery Expert for z/OS JCL does not have a 133-byte LRECL.

**User response:**

Ensure SYSOUT DD has a 133-byte LRECL and resubmit the job.

---

**ARY1003E The param\_name keyword has already been coded for this space group.**

**Explanation:**

The **param\_name** parameter was specified more than once for the SPACE group.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1004E The param\_name keyword group has already been coded for this space group.**

**Explanation:**

The **param\_name** keyword group has already been coded for this space group.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1005E The param\_name keyword has already been coded for this run.**

**Explanation:**

The **param\_name** parameter was specified more than once for the run.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1006E The param\_name keyword has already been coded for this group.**

**Explanation:**

The **param\_name** parameter was specified more than once for the group.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1007E The param\_name keyword coded multiple times for the same object.**

**Explanation:**

The **param\_name** parameter was specified more than once for the same object.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1008E The param\_name keyword has already been coded.**

**Explanation:**

The **param\_name** parameter was specified more than once.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1009E The param\_name keyword group has already been coded.**

**Explanation:**

The **param\_name** keyword group has already been coded for the run.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1010E The following space is not set to LOG for a required log range.**

**Explanation:**

The space listed in the messages is not set to LOG for a required log range.

**User response:**

No action is required.

---

**ARY1011E The following space's input image copy was migrated and could not be recalled.**

**Explanation:**

The recall for the input image copy failed for the space that is listed in the message.

**User response:**

Contact IBM Software Support.

---

**ARY1012E No valid full image copy in the SYSCOPY history was found for space(s): spaces**

**Explanation:**

Db2 Recovery Expert for z/OS was unable to find a valid full image copy in the SYSCOPY history for the table space(s) indicated in the message. Db2 Recovery Expert for z/OS requires a full image copy that is registered in SYSCOPY.

**User response:**

Ensure the image copy is registered in SYSCOPY and that it is valid.

---

**ARY1013E A table update ICTYPE was found in SYSCOPY that did not log for space(s): spaces**

**Explanation:**

There were multiple spaces being processed that Db2 Recovery Expert for z/OS could not process because

an operation (such as LOAD REPLACE LOG(NO) or REORG LOG(NO)) occurred sometime between the selected starting point and the specified end point.

**User response:**

No action is required.

---

**ARY1014I**      **Database: *database* Space: *space*  
Partition: *partition***

**Explanation:**

This message is issued in conjunction with other Db2 Recovery Expert for z/OS messages to indicate the database, space, and partition to which other messages apply.

**User response:**

No action is required.

---

**ARY1015E**      **Could not determine disk/tape  
status of unit name *unit\_name*  
(from control file).**

**Explanation:**

The device type for work data sets entered in the control file is invalid.

**User response:**

Enter the correct device type.

---

**ARY1016E**      **The device type of the unit name  
from the control file could not be  
determined.**

**Explanation:**

The device type for work data sets entered in the control file is invalid.

**User response:**

Enter the correct device type.

---

**ARY1017E**      **The REPORT utility returned an  
unrecoverable error.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Software Support.

---

**ARY1018E**      **The FULL image copy DD  
CA(LP/LB/RP/RB) {1} is missing  
from the JCL. Each CAxxxx  
DD correlates to each SPACE(...)  
control card group.**

**Explanation:**

The full image copy data set is not included in your Db2 Recovery Expert for z/OS JCL.

**User response:**

Verify that the JCL is formatted correctly and contains the necessary information for your Db2 Recovery Expert for z/OS job.

---

**ARY1019E**      **The FULL image copy DD CA {1}  
refers to a DSNAME already in  
SYSCOPY.**

**Explanation:**

You specified a full image copy data set name that already exists in SYSCOPY.

**User response:**

Specify a different image copy data set name.

---

**ARY1020I**      **Each CAxxxx DD correlates to  
each SPACE(...) control card group.**

**Explanation:**

Each CAxxxx DD statement must be associated with a corresponding SPACE(...) control card group.

**User response:**

Verify that the JCL is formatted correctly and that each CAxxxx DD statement is associated with a SPACE(...) control card group.

---

**ARY1021E**      **The TO\_QUIESCE control card was  
specified, but no quiesce point(s)  
was found.**

**Explanation:**

The TO\_QUIESCE control card directs Db2 Recovery Expert for z/OS to read the log and incorporate data into the image copy up to the most recent quiesce point but no quiesce point was found.

**User response:**

No action is required.

---

**ARY1022E**      **The stop point precedes  
the start point for space:  
*database\_name.space\_name part:  
partition* Start point X'*startpoint*'  
End point X'*endpoint*' Start  
timestamp: *start\_timestamp* End  
timestamp: *end\_timestamp*.**

**Explanation:**

The Db2 Recovery Expert for z/OS job will not run if the stop point precedes the start point for the listed object.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1023I**      **The version of Db2 [subsystem]  
group attach] [*ssid/member\_name*]  
is *ver*.**

**Explanation:**

Displays the SSID and the version of the Db2 subsystem.

**User response:**

No action is required.

---

**ARY1024E**      **The keyword value cannot be 0.**

**Explanation:**

The value specified for the listed keyword cannot be 0.

**User response:**

Specify a valid value for the keyword.

---

**ARY1025I**      **Control card stream process complete. Selected space count =space count.**

**Explanation:**

The control card scanning process completed. The number of objects found in the control card set is indicated by the *space count* variable.

**User response:**

No action is required.

---

**ARY1026E**      **The following space was converted to PBR RPN after image copy was taken.**

**Explanation:**

This message is followed by ARY1014I messages with the names of the relevant spaces. The image copy to be used as the start point for an object was taken before the object was converted from absolute page numbering (APN) to relative page numbering (RPN). This image copy must be taken after the conversion.

**User response:**

Take a new image copy for the object.

---

**ARY1027I**      **RECOVERY EXPERT will read DSN: data\_set\_name for [table space| index space] space\_name PART part LRSN/RBA=X'lrsn/rba' ICTYPE='ictype' STYPE='stype' SHRLEVEL='shrlevel' ICBACKUP='icbackup'.**

**Explanation:**

This message displays the data set name that Db2 Recovery Expert for z/OS will process.

**User response:**

No action is required.

---

**ARY1028I**      **The image copy is of all parts.**

**Explanation:**

This message indicates that the image copy is of all partitions of the table space.

**User response:**

No action is required.

---

**ARY1029I**      **The image copy contains one partition (partition\_number).**

**Explanation:**

This message displays the one partition number that the image copy contains.

**User response:**

No action is required.

---

**ARY1030E**      **A concurrent image copy was found in the SYSCOPY history. It cannot be used.**

**Explanation:**

The DFDSS concurrent image copy that was found cannot be read by Db2 Recovery Expert for z/OS.

**User response:**

Select an alternative mechanism by which to recover the space.

---

**ARY1031I**      **Only partition partition within the image copy will be updated with log data and written to an individual partition image copy.**

**Explanation:**

Db2 Recovery Expert for z/OS will update only the partition within the image copy with log data and will write to an individual partition image copy.

**User response:**

No action is required.

---

**ARY1032I**      **All partitions will be updated with log data.**

**Explanation:**

Db2 Recovery Expert for z/OS will update all partitions with log data.

**User response:**

No action is required.

---

**ARY1034I**      **RECOVERY EXPERT will process the log only for [table space | index space] space\_name PART part LRSN/RBA=X'lrsn/rba' ICTYPE='ictype' STYPE='stype' SHRLEVEL='shrlevel' ICBACKUP='icbackup'.**

**Explanation:**

Db2 Recovery Expert for z/OS will process only the log for the indicated table space or index space and partition.

**User response:**

No action is required.

---

**ARY1035E**      **An image copy was found, but its RBA precedes the logging start point.**

**Explanation:**

This message indicates that although an image copy was found, it cannot be used because its RBA precedes the logging start point.

**User response:**

No action is required.

---

**ARY1036I**      **RECOVERY EXPERT processing ends.**

**Explanation:**

This message indicates that Db2 Recovery Expert for z/OS processing completed.

**User response:**

No action is required.

**ARY1037I**      **Proceeding anyways due to inclusion of the CONTINUE\_ON\_ERROR control card.**

**Explanation:**

An error has occurred during Db2 Recovery Expert for z/OS processing, but the processing is continued because CONTINUE\_ON\_ERROR is specified.

**User response:**

Review the output to diagnose the errors. Contact IBM Software Support if unable to resolve.

**ARY1038E**      **An incremental image copy was marked as cataloged in SYSCOPY, but was not found in the MVS catalog.**

**Explanation:**

This message indicates that although an incremental image copy was marked as cataloged in SYSCOPY, it was not found in the MVS catalog.

**User response:**

Contact your systems programmer and ensure that the image copy data set exists. If unable to resolve this problem, contact IBM Software Support.

**ARY1039E**      **At least two end points within a single GROUP() are not the same.**

**Explanation:**

At least two end points within a GROUP are not the same.

**User response:**

Verify that the end points you defined are correct.

**ARY1040E**      **[task\_number] The SPACE(...) set involved that the error was detected in was #'number'**

**Explanation:**

There was an error in the SPACE set that is displayed in the message.

**User response:**

Ensure that the correct SPACE syntax has been specified.

**ARY1041W**      **An error occurred during processing, but was overridden. Check all messages.**

**Explanation:**

An error occurred.

**User response:**

Check messages for an error in processing.

**ARY1041E**      **An error occurred during processing, but was ignored. Check all messages.**

**Explanation:**

An error occurred.

**User response:**

Check messages for an error in processing.

**ARY1042W**      **All objects are marked to skip. Log reading and further processing skipped.**

**Explanation:**

All objects are marked to be skipped. Db2 Recovery Expert for z/OS will skip further processing and log reading.

**User response:**

No action is required.

**ARY1043W**      **At least two end points within a single GROUP() are not the same.**

**Explanation:**

At least two end points within a GROUP are not the same.

**User response:**

Verify that the end points you defined are correct.

**ARY1045E**      **An error occurred while attempting to load the Db2 call attach service.**

**Explanation:**

A z/OS load error occurred for the Db2 call attach service.

**User response:**

Ensure that the //STEPLIB has the correct version of the Db2 loadlib data sets including SDSNLOAD.

**ARY1046I**      **The space processing database\_name.space\_name partition: partition set TO\_CURRENT**

**Explanation:**

The end point for the object listed in the message was set to TO\_CURRENT.

**User response:**

No action is required.

**ARY1047E**      **The keyword\_1 value was already specified before keyword\_2 in a control group.**

**Explanation:**

In the Db2 Recovery Expert for z/OS JCL, the keyword\_1 value was already specified before keyword\_2 in a control group.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1048E      The ARY runtime environment is not consistent. Installation error.**

**Explanation:**

Modules in the product load library have names that are inconsistent with the product load library.

**User response:**

Contact IBM Software Support.

---

**ARY1049I      "database\_name.  
space\_name" Part #nnnnn  
Consistent RBA/LRSN = X'rsa/lrsn'**

**Explanation:**

Db2 Recovery Expert for z/OS applied all committed units of work up to RBA/LRSN *rsa/lrsn*. This message is issued for each table. In a Db2 data sharing environment, a decimal format timestamp is converted from the hexadecimal RBA/LRSN and displayed in the message.

**User response:**

No action is required.

---

**ARY1050E      The keyword *keyword* was specified without value.**

**Explanation:**

The keyword *keyword* was specified without a corresponding value.

**User response:**

Enter a valid value for the keyword.

---

**ARY1051E      The keyword *keyword* value is either empty or too long.**

**Explanation:**

The values specified for keyword *keyword* is either missing or too long.

**User response:**

Specify a valid value for the listed keyword.

---

**ARY1052E      The [table|index] [CREATOR/  
NAME|INDEX] keyword was specified without value.**

**Explanation:**

The listed keyword was specified without a corresponding value.

**User response:**

Enter a valid value for the keyword.

---

**ARY1053E      The target table space cannot be configured for multiple tables.**

**Explanation:**

A multi-table image copy cannot be specified when the OBIDXLAT\_CATALOG control card is specified.

**User response:**

Specify a single-table image copy or remove the OBIDXLAT\_CATALOG control card from the job.

---

**ARY1054W      Space order collision detected.**

**Explanation:**

The order of the objects that is specified in the control cards is inconsistent with the order on the tape data set sequence. Objects will be rearranged.

**User response:**

No action is required.

---

**ARY1055I      Round-robin distribution used on #space\_count space into #group\_count group.**

**Explanation:**

Space redistribution was performed by round-robin algorithm.

**User response:**

No action is required.

---

**ARY1056I      Sequential distribution used on #space\_count space into #group\_count group.**

**Explanation:**

Space redistribution was performed by sequential algorithm.

**User response:**

No action is required.

---

**ARY1069E      Invalid syntax after [REDIRECTED\_RECOVERY|ADVANCED\_RECOVER|SPACE|GROUP] control card. Expected "(".**

**Explanation:**

The syntax after the listed control card is not valid.

**User response:**

Ensure the control cards are enclosed in parentheses.

---

**ARY1072E      The start RBA or LRSN value has an invalid length.**

**Explanation:**

The correct value form is a 6- or 10- byte hexadecimal value.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1074I      Fallback occurred for DSN: data\_set\_name table space: database\_name.space\_name PART: partition LRSN/RBA=X'lrsn/rba'.**

**Explanation:**

An attempt was made to use a data set as a starting point. The data set could not be allocated. Fallback will not take place to an earlier point in time in SYSCOPY.

**User response:**

No action is required.

---

**ARY1075E**      **The specified IC was taken before object was converted to use RPN space database\_name.space\_name.**

**Explanation:**

The image copy to be used as the start point for the object was taken before object *database\_name.space\_name* conversion from APN (absolute page numbering) to RPN (relative page numbering). This image copy must be taken after conversion.

**User response:**

Specify the correct image copy and resubmit the job.

---

**ARY1076W**      **The SPACE(...) set involved that the warning was detected in was #number.**

**Explanation:**

There was an error in the SPACE set that is listed in the message.

**User response:**

Ensure that the correct SPACE syntax has been specified.

---

**ARY1077I**      **The member *member\_name* of the data sharing group will not be processed because it has no SYSLGRNX data.**

**Explanation:**

Data sharing member *member\_name* has no SYSLGRNX data for any objects on the processed log ranges, so it will be skipped in order to improve performance.

**User response:**

No action is required.

---

**ARY1078W**      **Fetching SYSIBM.SYSLGRNX data by SQL produced an error. The skipping of the quiesced members of the data sharing group will not be performed.**

**Explanation:**

An error occurred during SYSIBM.SYSLGRNX processing for determining the quiesced member. Log ranges for all data sharing members will be processed.

**User response:**

No action is required.

---

**ARY1079E**      **[*task\_number*] The Call Attach Facility returned an error. Message text follows:**

**Explanation:**

An error occurred during a Call Attach Facility call.

**User response:**

Refer to messages returned from the Call Attach Facility.

---

**ARY1080E**      **The *parameter\_name* parameter value is invalid.**

**Explanation:**

The listed parameter was specified but an incorrect value was specified with it.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1081E**      **The [*table|index*] [*CREATOR*] [*NAME*] parameter value is invalid.**

**Explanation:**

The listed parameter was specified but an incorrect value was specified with it.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1082E**      **Invalid *keyword\_name* syntax.**

**Explanation:**

The syntax for the listed keyword is not valid.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1083E**      **The *keyword\_name* value has mismatched apostrophes.**

**Explanation:**

An apostrophe is missing from the value of the listed keyword.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1084E**      **Invalid syntax after the *keyword\_name* control card. Must be *keyword\_name* (...).**

**Explanation:**

The syntax that follows the listed control card contains an error.

**User response:**

Verify that the correct syntax follows the control card. Correct the input and resubmit the job.

---

**ARY1085E**      **The *keyword\_name* parameter was specified, but one of the subparms was out of range.**

**Explanation:**

One of the sub parameters defined with the listed keyword is out of range.

**User response:**

Verify that you specified the correct values pair.

---

**ARY1086E**      **Syntax error around *keyword\_name* value. Form is *valid\_form*.**

**Explanation:**  
The correct syntax for the listed keyword is *valid\_form*.

**User response:**  
Correct the JCL and resubmit the job.

---

**ARY1087E**      **The *keyword\_name* value contains an invalid hexadecimal value.**

**Explanation:**  
The correct syntax for the listed keyword is 6- or 10-byte hexadecimal value.

**User response:**  
Correct the JCL and resubmit the job.

---

**ARY1088E**      **The first control card was not a request for RECOVERY EXPERT.**

**Explanation:**  
The submitted JCL did not specify REDIRECTED\_RECOVERY|ADVANCED\_RECOVER as the first control card in the Db2 Recovery Expert for z/OS.

**User response:**  
Correct the Db2 Recovery Expert for z/OS syntax. Specify REDIRECTED\_RECOVERY|ADVANCED\_RECOVER as the main Db2 Recovery Expert for z/OS keyword. An open parenthesis must follow this keyword and the remainder of the Db2 Recovery Expert for z/OS keywords must be contained within.

---

**ARY1089E**      **One of the following end points must be specified: TO\_CURRENT, TO\_QUIESCE, END\_RBA, END\_LRSN, TO\_IC, or TOLOGPOINT.**

**Explanation:**  
The product requires a log range end point to complete the process.

**User response:**  
Ensure that the control card set includes a valid end point control card or a single end point control card factored out at the group level. You can use one of the options listed in the message text.

---

**ARY1090E**      **Only 1 end point (END\_RBA, END\_LRSN, TO\_CURRENT, TO\_QUIESCE, TO\_TIMESTAMP, TO\_TIMESTAMP\_LOCAL, TO\_IC, TOLOGPOINT) can be specified.**

**Explanation:**  
More than one end point parameter was specified.

**User response:**  
Specify only one end point parameter.

---

**ARY1091E**      **The starting image copy value has no contents.**

**Explanation:**  
There is a problem with the starting image copy data set name included with the STARTING\_IC keyword. Either the data set name is missing or spelled incorrectly, the data set cannot be opened, or the data set is not a valid image copy data set.

**User response:**  
Specify the correct data set.

---

**ARY1092E**      **A token value was found that was either not part of the RECOVERY EXPERT set or was misplaced in the RECOVERY EXPERT control cards. The value of the invalid token is: *keyword***

**Explanation:**  
An invalid keyword appears in the control cards.

**User response:**  
Check the list of valid keywords and parameters, correct the keyword, and resubmit the job.

---

**ARY1093E**      **A table/index space name pair or index name pair is incomplete.**

**Explanation:**  
One of the table/index space name pairs that was specified is incomplete.

**User response:**  
Verify that all table/index space name pairs have been specified correctly. Correct the JCL and resubmit the job.

---

**ARY1094E**      **The space *database\_name.space\_name* was not found in the Db2 catalog. Space# *number*.**

**Explanation:**  
The space that was specified in the Db2 Recovery Expert for z/OS JCL does not exist in the Db2 catalog.

**User response:**  
Correct the JCL and resubmit the job.

---

**ARY1095E**      **A partition was specified for *database\_name.space\_name* but the space is non-partitioned.**

**Explanation:**  
A partition was specified for a non-partitioned space.

**User response:**  
Correct the JCL and resubmit the job.

---

**ARY1096E**      **A partition was specified for *database\_name.space\_name* but the partition is not defined.**



**Explanation:**

A partition was specified but no partition is defined for that space.

**User response:**

Specify the correct space partition information.

---

**ARY1097E**      **In a data sharing environment, specifying RBA values is not allowed.**

**Explanation:**

An RBA value was specified in a data sharing environment. RBA values are not available for use in data sharing environments.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1098E**      **In a non-data sharing environment, specifying LRSN values is not allowed.**

**Explanation:**

An LRSN value was specified in a non-data sharing environment. LRSN values are not available for use in non-data sharing environments.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1099E**      **The command set must end with a close parenthesis ")".**

**Explanation:**

There is no close parenthesis following the ARY input cards.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1100E**      **[task\_number] Dynamic allocation return code = return\_code.**

**Explanation:**

Dynamic allocation produced the return code shown in the message.

**User response:**

For information about the code, see the z/OS MVS Programming Authorized Assembler Services Guide in IBM z/OS documentation. If unable to determine the cause of the error, contact IBM Software Support. Have available the listing that contains this message.

---

**ARY1103E**      **The SYSOUT data set for ARY 'ddname' could not be allocated.**

**Explanation:**

The listed SYSOUT DD for the sort program could not be allocated.

**User response:**

Ensure that the DD was not already allocated. If unable to resolve this error, contact IBM Software Support.

---

**ARY1104E**      **task\_number The most recent full image copy could not be allocated.**

**Explanation:**

This message indicates that the most recent full image copy could not be allocated during the Db2 Recovery Expert for z/OS process.

**User response:**

Verify that the full image copy file has not been damaged. Check with your systems administrator to verify that you have proper authorizations to access the necessary file.

---

**ARY1105E**      **task\_number The work file for sorting the full image copy file could not be allocated.**

**Explanation:**

Db2 Recovery Expert for z/OS could not allocate the work file for the sort program to sort the full image copy file.

**User response:**

Ensure that the DD was not already allocated. If unable to resolve this error, contact IBM Software Support.

---

**ARY1106E**      **task\_number Error TCBTOKEN could not get token.**

**Explanation:**

A system environment error occurred.

**User response:**

Contact IBM Software Support.

---

**ARY1107E**      **task\_number The most recent full image copy could not be opened.**

**Explanation:**

Db2 Recovery Expert for z/OS could not open the most recent full image copy.

**User response:**

Ensure that the full image copy is not currently being used and resubmit the job.

---

**ARY1108E**      **task\_number Error IARV64 GETSTOR could not obtain storage.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Software Support.

---

**ARY1109I**      **task\_number Image copy name= image\_copy\_name LRSN/RBA=X'lrsn/rba'.**

**Explanation:**

This message provides the image copy name and the RBA/LRSN.

**User response:**

No action is required.

---

**ARY1110E**      *task\_number* An invalid return code was detected from the SORT program.

**Explanation:**

Db2 Recovery Expert for z/OS detected an invalid return code when attempting to SORT.

**User response:**

Contact IBM Software Support.

---

**ARY1111I**      *task\_number* The full image copy data\_set\_name could not be deallocated.

**Explanation:**

This message lists the full image copy data set name that could not be deallocated.

**User response:**

No action is required.

---

**ARY1112I**      *task\_number* The sort of the REORG inline full image copy file was successful.

**Explanation:**

The REORG inline full image copy sorting process completed successfully.

**User response:**

No action is required.

---

**ARY1113I**      *task\_number* The sort of the re-keyed REORG inline full image copy file was successful.

**Explanation:**

The sort process for the rekeyed REORG inline full image copy completed successfully.

**User response:**

No action is required.

---

**ARY1114I**      *task\_number* The sort of the LOAD inline full image copy file was successful.

**Explanation:**

The LOAD inline full image copy file sorted successfully.

**User response:**

No action is required.

---

**ARY1115I**      *task\_number* The sort of the re-keyed LOAD inline full image copy file was successful.

**Explanation:**

The re-keyed LOAD inline full image copy file sorting completed successfully.

**User response:**

No action is required.

---

**ARY1116E**      *task\_number* The catalog check on the most recent image copy failed.

**Explanation:**

The catalog check on the most recent image copy did not complete successfully.

**User response:**

No action is required.

---

**ARY1117E**      *task\_number* Error processing was aborted by repeated error.

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Software Support.

---

**ARY1118E**      *task\_number* Unexpected EOF was detected while reading full IC page.

**Explanation:**

An internal error occurred inside the full image copy reader component.

**User response:**

Contact IBM Software Support.

---

**ARY1119E**      *task\_number* Error closing full IC.

**Explanation:**

Db2 Recovery Expert for z/OS could not deallocate the full image copy.

**User response:**

Ensure that the file is not in use or damaged. Check with your systems administrator to ensure that you have proper authorizations to access this file.

---

**ARY1120E**      *task\_number* An invalid return code from a sequential VSAM read was detected.

**Explanation:**

An internal error occurred inside the full image copy reader component. In this case, a VSAM LDS file was used as the input image copy starting point.

**User response:**

Contact IBM Software Support.

---

**ARY1121I**      *task\_number* Db2 Sort block mode used.

**Explanation:**

The Db2 Sort program indicated that block mode was used.

**User response:**

No action is required.

---

**ARY1122I**      *task\_number* The sort of the COMPRESSED full image copy file was successful.

**Explanation:**

SORT program processing was successful on a compressed object image copy.

**User response:**

No action is required.

---

**ARY1123I**      *task\_number* The sort of the re-keyed COMPRESSED full image copy file was successful.

**Explanation:**

A sort of an 8 KB, 16 KB, or 32 KB page-sized compressed object input copy was successful.

**User response:**

No action is required.

---

**ARY1124E**      *task\_number* Error IARV64 DETACH could not release storage.

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Software Support.

---

**ARY1125E**      *task\_number* Unrecoverable I/O error on image copy. Process aborted.

**Explanation:**

A system I/O error was detected.

**User response:**

Re-create the source image copy.

---

**ARY1126I**      *task\_number* The \$ORTPARM override DD is present in the job step JCL.

**Explanation:**

The //\$ORTPARM DD was found in the job step JCL. Db2 Recovery Expert for z/OS will not attempt to allocate and load the parameter file.

**User response:**

No action is required.

---

**ARY1127I**      *task\_number* The \$ORTPARM DD could not be loaded. Using system defaults.

**Explanation:**

An attempt to create and load the //\$ORTPARM file was unsuccessful. Installation defaults will be used.

**User response:**

No action is required.

---

**ARY1128I**      *task\_number* The [\$ORTPARM | \$DB2PRM\$] DD could not be allocated. Using system defaults.

**Explanation:**

An attempt to create and load the //\$ORTPARM or //\$DB2PRM\$ file was not successful. Installation defaults will be used.

**User response:**

No action is required.

---

**ARY1129I**      *task\_number* The \$DB2PRM\$ override DD is present in the job step JCL.

**Explanation:**

The //\$DB2PRM\$ DD was found in the job step JCL. Db2 Recovery Expert for z/OS will not attempt to allocate and load the parameter file.

**User response:**

No action is required.

---

**ARY1130I**      *task\_number* The \$DB2PRM\$ DD could not be loaded. Using system defaults.

**Explanation:**

An attempt to create and load the //\$DB2PRM\$ file was unsuccessful. Installation defaults will be used.

**User response:**

No action is required.

---

**ARY1131I**      *task\_number member\_name* Log range LRSN X'lrsn' to X'lrsn' is being processed. (*begin\_time*) (*end\_time*).

**Explanation:**

This message displays the log range that is being processed by Db2 Recovery Expert for z/OS.

**User response:**

No action is required.

---

**ARY1132I**      *task\_number subsystem\_name* Log range RBA X'rba' to X'rba' is being processed.

**Explanation:**

This message displays the log range that is being processed by Db2 Recovery Expert for z/OS.

**User response:**

No action is required.

---

**ARY1133E**      *task\_number* The output full image copy [LP|LB|RP|RB] could not be opened. DDNAME=*ddname*.

**Explanation:**

Db2 Recovery Expert for z/OS could not open the output full image copy.

**User response:**

Verify that the file is not in use and that you have the proper authority to access this file.

---

**ARY1134E**      **The command set has extra parameters after the close parenthesis.**

**Explanation:**

A command is outside the close parenthesis.

**User response:**

Ensure the Db2 Recovery Expert for z/OS control cards are enclosed in parentheses.

---

**ARY1135E**      **The SYSINAR Y DD card could not be found in the JCL.**

**Explanation:**

Db2 Recovery Expert for z/OS requires the SYSINAR Y DD as input to the job. The SYSINAR Y DD could not be found in the JCL.

**User response:**

Specify this DD as instream or as a data set.

---

**ARY1136E**      **The SYSINAR Y DD card could not be opened for input.**

**Explanation:**

The SYSINAR Y DD points to a data set but that data set could not be opened for input.

**User response:**

Verify that the SYSINAR Y DD is not being accessed by other resources and resubmit the job.

---

**ARY1137E**      **The SYSINAR Y DD input stream is empty.**

**Explanation:**

No control cards appear in the instream file or the input data set.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1138E**      **The parsing process gave an invalid return code.**

**Explanation:**

There is an error in your Db2 Recovery Expert for z/OS JCL.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1139E**      **The functional limit of Db2 Recovery Expert for z/OS is 20000 Space control card groups.**

**Explanation:**

You specified more than 20000 Db2 Recovery Expert for z/OS SPACE control card groups.

**User response:**

Specify less than 20000 SPACE control card groups.

---

**ARY1140E**      **The following object is specified at least 2 times in the control cards:**

**Explanation:**

You specified the listed object twice or more in the control cards.

**User response:**

Specify the object at most once in the control card.

---

**ARY1141E**      **Duplicate objects found in control card stream: database\_name.space\_name PART part SPACE NUMB space\_number.**

**Explanation:**

Duplicate object detected in control card stream.

**User response:**

Remove the duplicate object.

---

**ARY1142E**      *task\_number* Dynalloc function error DSN data\_set\_name rc= return\_code, reason= reason\_code.

**Explanation:**

A call to z/OS dynamic allocation failed.

**User response:**

Contact IBM Software Support.

---

**ARY1143E**      *task\_number* Error processing IDCAMS output. Output follows:

**Explanation:**

An IDCAMS system service request returned an error condition. The IDCAMS output and error messages follow.

**User response:**

Verify the IDCAMS output. If unable to resolve the error, contact IBM Software Support.

---

**ARY1144E**      *task\_number* The number of pages in the incr. image copy is inconsistent with the page size.

**Explanation:**

The page size that was specified is not consistent with the number of pages in the incremental image copy.

**User response:**

Correct the number of pages that was specified and resubmit the job.

---

**ARY1145E**      *task\_number* An unexpected EOF was encountered on the sorted log records file.

**Explanation:**

An unexpected end of file was encountered.

**User response:**

Contact IBM Software Support.

---

**ARY1146E**      *task\_number* The selected full IC has a DBID/PSID mismatch to the Db2 catalog.

**Explanation:**

The DBID/PSID for the selected full image copy does not match those in the Db2 catalog.

**User response:**

Correct the DBID/PSID for the selected full image copy.

---

**ARY1147I**      *task\_number* Number of pages read from the full image copy file(s)=num.

**Explanation:**

This message displays the number of pages that were read from the full image copy files.

**User response:**

No action is required.

---

**ARY1148I**      *task\_number* Number of pages read from the incremental image copy file(s)=num.

**Explanation:**

This message displays the number of pages that were read from the incremental image copy files.

**User response:**

No action is required.

---

**ARY1149I**      *task\_number* Number of records read from the log apply file=num.

**Explanation:**

This message displays the number of records that were read from the log apply file.

**User response:**

No action is required.

---

**ARY1150I**      *task\_number* Number of pages written to the new full image copy file(s)=num.

**Explanation:**

This message displays the number of pages that were written to the new full image copy data sets.

**User response:**

No action is required.

---

**ARY1151I**      *task\_number* Number of pages written to the table/index space file(s)=num.

**Explanation:**

This message displays the number of pages that were written to the table or index space files.

**User response:**

No action is required.

---

**ARY1152I**      [*task\_number*] Since no changes were found for this data set, it has been deleted: *dsn*

**Explanation:**

This message appears during dynamic allocation of an output image copy data set and no output was written to that data set. It is similar to the other message that is reported when no output is written to an output image copy data set in JCL.

**User response:**

No action is required.

---

**ARY1153E**      *task\_number* A [open|open for update|write|close] failure occurred on the VSAM I/O module. DSN: *data\_set\_name*.

**Explanation:**

The failure type that is listed in the message occurred for the VSAM I/O module.

**User response:**

Contact IBM Software Support.

---

**ARY1154E**      *task\_number* A random [fetch|write|close] failure occurred on the VSAM I/O module. DSN: *data\_set\_name*.

**Explanation:**

The failure type that is listed in the message occurred for the VSAM I/O module.

**User response:**

Contact IBM Software Support.

---

**ARY1155I**      Control card stream processed by RECOVERY EXPERT follows...

**Explanation:**

Indicates the control card stream that was processed by Db2 Recovery Expert for z/OS.

**User response:**

No action is required.

---

**ARY1156I**      RECOVERY EXPERT processing messages follow...

**Explanation:**

This message indicates that there are Db2 Recovery Expert for z/OS messages that follow.

**User response:**

No action is required.

---

**ARY1157E**      *task\_number* The underlying table/index space data set could not be found in MVS.

**Explanation:**

The table/index space data set could not be found in MVS.

**User response:**

No action is required.

---

**ARY1158E**      **The GROUP(...) set involved that the error was detected in was #number.**

**Explanation:**

This message displays the GROUP set for which an error was detected.

**User response:**

Verify the syntax of the indicated GROUP set and correct as needed.

---

**ARY1159I**      **RECOVERY EXPERT  
version APAR\_release\_number  
assembly\_date assembly\_time.**

**Explanation:**

This message indicates which version of the product (or in some cases, a product component) is running.

**User response:**

No action is required. If you need assistance locating information about the APAR, contact IBM Software Support.

---

**ARY1160E**      **Either all groups need a mini-log data set or all groups must be without them.**

**Explanation:**

You have specified a mini log data set for some but not all groups in the JCL.

**User response:**

Either specify a mini log data set for all groups or none of the groups within the JCL.

---

**ARY1161E**      **Each group must have it's own unique mini log data set name.**

**Explanation:**

The mini log data sets you specified are not all unique.

**User response:**

Rename mini log data sets so the each have a unique name.

---

**ARY1162I**      **task\_number Object  
Database=database\_name  
Spacename=space\_name  
Partition=partition Will proceed  
to be processed anyways due to  
control card FORCE\_COPIES.**

**Explanation:**

Db2 Recovery Expert for z/OS will write an image copy or data set(s) (if WRITE\_TO\_VSAM) for the object that is listed in the message, because the control card option FORCE\_COPIES has been specified.

**User response:**

No action is required. If you do not want an image copy produced or data sets rewritten, remove the FORCE\_COPIES parameter.

---

**ARY1163E**      **task\_number A CELL64 free request failed.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Software Support.

---

**ARY1164W**      **The NO\_SYSCOPY\_ROW control card is ignored when producing mini logs.**

**Explanation:**

The NO\_SYSCOPY\_ROW control card was specified in the JCL, but this parameter is ignored when producing mini logs.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1165I**      **task\_number Space  
database\_name.space\_name Part  
#partition will be written to DSN.**

**Explanation:**

SWITCH\_VCAT keyword in effect, data set name DSN was generated to place WRITE\_TO\_VSAM result.

**User response:**

No action is required.

---

**ARY1166E**      **The mini log data set value has no contents.**

**Explanation:**

The MINI\_LOG\_DSN keyword has been specified without a value.

**User response:**

Specify a valid value for the MINI\_LOG\_DSN keyword.

---

**ARY1167E**      **Operations on the Db2 directory are not allowed.**

**Explanation:**

You attempted to image copy the Db2 directory table space. This operation is not allowed.

**User response:**

Do not perform operations on the Db2 directory.

---

**ARY1168E**      **Operations on the Db2 Catalog table space DSNDB06.SYSCOPY are not allowed.**

**Explanation:**

You attempted to image copy the Db2 catalog table space. This operation is not allowed.

**User response:**

Do not perform operations on the Db2 catalog.

---

**ARY1170E**      **task\_number Data set organization is not VSAM DSN data\_set\_name.**

**Explanation:**

A WRITE\_TO\_VSAM operation to a specified data set with the REUSE option could not be completed because the data set is not VSAM.

**User response:**

Check the data sets that are involved. If unable to resolve the error, contact IBM Software Support.

---

**ARY1171E**      *task\_number* The [LP|LB|RP|RB] image copy spanned tape could not be freed for a device switch.

**Explanation:**

The dynamic allocation of the image copy data set to the spanned tape failed because the tape could not be freed for a device switch.

**User response:**

Ensure that the spanned tape is available for allocation.

---

**ARY1172E**      *task\_number* The initial [LP|LB|RP|RB] image copy could not be allocated onto the tape device.

**Explanation:**

The allocation of the image copy data set to the tape device failed.

**User response:**

Ensure that the tape device is available for allocation.

---

**ARY1173E**      *task\_number* The [LP|LB|RP|RB] image copy data set to be created on [DASD|tape] could not be opened.

**Explanation:**

The image copy data set that is to be created cannot be opened.

**User response:**

Ensure that the image copy data set that was specified in the Db2 Recovery Expert for z/OS JCL is available for use, then resubmit the Db2 Recovery Expert for z/OS job.

---

**ARY1174E**      *task\_number* The [LP|LB|RP|RB] image copy could not be allocated to the DASD device.

**Explanation:**

The dynamic allocation of the data set to the DASD device failed.

**User response:**

Ensure that the device name is correct and that the device is available for allocation.

---

**ARY1175E**      *task\_number* The spanned [LP|LB|RP|RB] image copy on tape could not be opened.

**Explanation:**

The image copy data set that is to be created cannot be opened.

**User response:**

Ensure that the image copy data set that was specified in the Db2 Recovery Expert for z/OS JCL is available for use, then resubmit the job.

---

**ARY1176E**      The object *creator.name* was not found in the Db2 catalog. Space #*number*.

**Explanation:**

The object that is listed in the message was not found in the Db2 catalog. Processing cannot proceed for the indicated object.

**User response:**

Ensure that object is available for processing. If unable to resolve the error, contact IBM Software Support.

---

**ARY1177E**      The value was not properly enclosed with apostrophes.

**Explanation:**

The syntax you specified was not valid. The value must be enclosed in apostrophes but was not.

**User response:**

Correct the syntax by enclosing the value in apostrophes.

---

**ARY1180E**      The LOCAL\_SITE and RECOVERY\_SITE control cards cannot be specified together.

**Explanation:**

LOCAL\_SITE and RECOVERY\_SITE control cards are mutually exclusive.

**User response:**

Specify either LOCAL\_SITE or RECOVERY\_SITE but not both.

---

**ARY1181I**      *task\_number* A volume written to and left on the system could not be found.

**Explanation:**

When Db2 Recovery Expert for z/OS finishes writing to a tape data set, the tape cartridge is not rewound and ejected. It is left on the tape drive in case another data set needs to be written afterwards. Once any one data set is written, it is closed, and Db2 Recovery Expert for z/OS reads internal MVS control blocks to get specifics about that data set. If the data set that was just written and closed cannot be found, this error occurs.

**User response:**

Contact IBM Software Support.

---

**ARY1182E**      Data set *data\_set* in Db2 loadlib concatenation was not found in the MVS catalog.

**Explanation:**

One of the data sets from DB2 loadlib concatenation cannot be found in the MVS catalog.

**User response:**

Ensure that the correct library name is specified in the control file. If unable to resolve the error, contact IBM Software Support.

---

**ARY1183W**      **The NO\_SYSCOPY\_ROW control card is ignored when writing directly to VSAM.**

**Explanation:**

The NO\_SYSCOPY\_ROW control card is used if you want Db2 Recovery Expert for z/OS to skip updating the SYSCOPY catalog table with a new row for the new image copy. If you specify WRITE\_TO\_VSAM, this is not applicable and therefore, the NO\_SYSCOPY\_ROW control card will be ignored and the SYSCOPY catalog table will be updated with a new row for the image copy.

**User response:**

No action is required.

---

**ARY1184E**      **The WRITE\_TO\_VSAM and MINI\_LOG\_DSN control cards are mutually exclusive.**

**Explanation:**

Your Db2 Recovery Expert for z/OS syntax includes both the WRITE\_TO\_VSAM and MINI\_LOG\_DSN control cards. The WRITE\_TO\_VSAM control card cannot be used with the MINI\_LOG\_DSN control card.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1185E**      **[task\_number] The following mini log data set could not be opened:**

**Explanation:**

The mini log data set could not be opened and therefore cannot be used in Db2 Recovery Expert for z/OS processing. This message is followed by ARY1187E, which displays the name of the mini log data set that could not be opened.

**User response:**

Ensure that the mini log data set is available for use.

---

**ARY1186E**      **[task\_number] The following mini log data set could not be allocated:**

**Explanation:**

The mini log data set could not be allocated and therefore cannot be used in Db2 Recovery Expert for z/OS processing. This message is followed by ARY1187E, which displays the name of the mini log data set that could not be allocated.

**User response:**

Ensure that the mini log data set is available for use.

---

**ARY1187E**      **[task\_number] mini\_log\_dsn.**

**Explanation:**

This message displays a data set name that is associated with other messages.

**User response:**

No action is required.

---

**ARY1188E**      **Only one WRITE\_TO\_ control card can be specified per run.**

**Explanation:**

Multiple WRITE\_TO\_ (WRITE\_TO\_VSAM, WRITE\_TO\_COPIES, WRITE\_TO\_BOTH) control cards have been specified in your JCL. Only one is allowed per run.

**User response:**

Remove all extraneous WRITE\_TO\_ control cards and resubmit the job. If you want to write to VSAM and to image copies, specify WRITE\_TO\_BOTH.

---

**ARY1189E**      **Failed to expand alias *alias* in Db2 loadlib concatenation.**

**Explanation:**

The product tried to resolve the alias specified in the Db2 loadlib concatenation to check the data set authorization but failed.

**User response:**

Contact IBM Software Support.

---

**ARY1190E**      **[task\_number] While trying to read *zparm\_name* information, the program finished with code *hexadecimal\_return\_code*.**

**Explanation**

This message is displayed if an unexpected error occurred when the program is attempting to provide information about Db2 ZPARM fields. The error code is listed in the message. A description of possible error codes follows:

- 00008: Open for Db2 libraries failed.
- 00012: Load for ZPARM module failed.
- 00116: The first Db2 LOADLIB in the subsystem concatenation is blank. Check the control file setup; if it is correct, contact IBM Software Support.
- 00120: One of the Db2 LOADLIBs in the concatenation could not be allocated. Check the control file setup; if it is correct, contact IBM Software Support.
- 00124: The Db2 LOADLIBs in the concatenation list could not be concatenated. Check the control file setup; if it is correct, contact IBM Software Support.



- 00208: At least one of the token names was not found in the token list. Check the control file setup; if it is correct, contact IBM Software Support.
- 00212: The control file could not be opened. Check the control file setup; if it is correct, contact IBM Software Support.

**User response:**

Check the control file setup if the description of the error code requires. If not required, or if the control file is correct, contact IBM Software Support.

---

**ARY1191E**      **Mini log data set #1 must be specified if mini log data set #2 is specified.**

**Explanation**

If you specify a secondary mini log data set, you must also specify a primary mini log data set. Thus, if you include the MINI\_LOG\_DSN\_2 control card in your Db2 Recovery Expert for z/OS syntax, you must also include the MINI\_LOG\_DSN\_1 control card in your Db2 Recovery Expert for z/OS syntax.

**Note:** If you specify a primary mini log data set, you are not required to specify a secondary mini log data set.

**User response**

To resolve this issue, you must do one of the following:

- remove the MINI\_LOG\_DSN\_2 control card from your syntax
- specify both MINI\_LOG\_DSN\_1 and MINI\_LOG\_DSN\_2
- specify only MINI\_LOG\_DSN\_1

---

**ARY1196E**      **The TOLOGPOINT value was already specified before END\_LRSN in a control group.**

**Explanation:**

The TOLOGPOINT value overrides the specified END\_LRSN control card.

**User response:**

Remove the unnecessary END\_LRSN control card and adjust the TOLOGPOINT value as needed or remove the TOLOGPOINT control card.

---

**ARY1197E**      ***task\_number* The specified OBIDXLAT data set could not be found: DSN *data\_set\_name*.**

**Explanation:**

The listed data set could not be found.

**User response:**

Ensure that the correct data set is specified and is available, and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY1198E**      **The grouping end point conflicts/duplicates a SPACE() level end point.**

**Explanation:**

The GROUP end point is invalid and conflicts with that of the SPACE level.

**User response:**

Correct the syntax.

---

**ARY1199E**      ***task\_number* The XML sequence number update process failed.**

**Explanation:**

Coordinating the internal XML sequence number during OBIDXLAT processing could not be completed.

**User response:**

Contact IBM Software Support.

---

**ARY1200E**      **The subsystem RECOVERY EXPERT was started with could not be found in JES2.**

**Explanation:**

The subsystem that Db2 Recovery Expert for z/OS was started with could not be found in JES2.

**User response:**

Verify that the correct subsystem was specified.

---

**ARY1201E**      **The subsystem RECOVERY EXPERT was started with is not active in JES2.**

**Explanation:**

This message indicates that the subsystem that Db2 Recovery Expert for z/OS was started with is not active in JES2.

**User response:**

No action is required.

---

**ARY1202E**      **There are no active Db2 members on this machine for this data sharing group.**

**Explanation:**

The data sharing group that was specified does not have any active Db2 members. Db2 Recovery Expert processing cannot proceed.

**User response:**

Specify a valid data sharing group attach name or a valid subsystem on which the Db2 Recovery Expert for z/OS processing can run.

---

**ARY1203I**      **Db2 subsystem *subsystem* is not defined to z/OS. Using group attach name instead.**

**Explanation:**

The Db2 subsystem that was specified is not defined on z/OS.

**User response:**

Edit the Db2 Recovery Expert for z/OS setup to either connect to a group attach name or to connect to a Db2 subsystem that is active on z/OS.

---

**ARY1204I**      **Db2 subsystem *subsystem* is not active on z/OS. Using group attach name instead.**

**Explanation:**

The Db2 subsystem that was specified is not active on z/OS.

**User response:**

Edit the Db2 Recovery Expert for z/OS setup to either connect to a group attach name or to connect to a Db2 subsystem that is active on z/OS.

---

**ARY1205I**      **The startup parameter used in JCL is the group attach name.**

**Explanation:**

The startup parameter that is used in the Db2 Recovery Expert for z/OS JCL is the group attach name.

**User response:**

No action is required.

---

**ARY1206I**      **The following subsystems are part of the data sharing group:**

**Explanation**

This message, in conjunction with messages ARY1207I and ARY1208I, provides the following information about the subsystem on which the Db2 Recovery Expert for z/OS job ran:

- Subsystem: the subsystem.
- Member ID: the member ID.
- Defined to z/OS: whether this member is defined to z/OS.
- Active: whether this member is known to this z/OS or running on z/OS.

**Note:** Db2 Recovery Expert for z/OS cannot detect the status of a member that is not running on this z/OS. Although a Db2 member may appear to be inactive, it may be running on another z/OS. Regardless, Db2 Recovery Expert for z/OS reads the logs and processes all of the necessary files from each member of the data sharing group.

**User response:**

No action is required.

---

**ARY1207I**      **Subsystem: Member ID: Defined to z/OS: Active:**

**Explanation:**

This message is issued in conjunction with messages ARY1206I and ARY1208I.

**User response:**

No action is required.

---

**ARY1208I**      ***subsystem member\_id system status***

**Explanation**

This message is issued in conjunction with messages ARY1206I and ARY1207I and provides the following information about the subsystem on which the Db2 Recovery Expert for z/OS job ran:

- The subsystem.
- The member ID.
- Whether this member is defined to z/OS.
- Whether this member is running on z/OS.

**Note:** Db2 Recovery Expert for z/OS cannot detect the status of a member that is not running on this z/OS. Although a Db2 member may appear to be inactive, it may be running on another z/OS. Regardless, Db2 Recovery Expert for z/OS reads the logs and processes all of the necessary files from each member of the data sharing group.

**User response:**

No action is required.

---

**ARY1209A**      **RECOVERY EXPERT is not in an APF authorized concatenation, but is required to be.**

**Explanation:**

To run, Db2 Recovery Expert for z/OS requires that the target load libraries are APF authorized.

**User response:**

Include the target load libraries as part of your system APF authorized list.

---

**ARY1210A**      **RECOVERY EXPERT needs to run from a //STEPLIB concatenation.**

**Explanation:**

The JCL does not specify a //STEPLIB concatenation.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1211A**      **The following data set in the //STEPLIB concatenation is not APF authorized: *data\_set*.**

**Explanation:**

The data set that is listed in the message requires APF authorization.

**User response:**

APF authorize the data set.

---

**ARY1212A**      **An internal error occurred attempting to ascertain APF authorization status.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Software Support.

**ARY1213E** *task\_number* The space *database\_name.space\_name* resulted in the error condition.

**Explanation:**

This message accompanies other error messages and lists the object that caused the error.

**User response:**

Review other error messages for possible actions.

**ARY1214E** *task\_number* The alternative SSID XML sequence column update program failed.

**Explanation:**

Coordinating the internal XML sequence number during OBIDLAT processing could not be completed.

**User response:**

Contact IBM Software Support.

**ARY1215E** *task\_number* Allocation parms were not specified, data set cannot be allocated.

**Explanation:**

A VSAM data set cannot be allocated because allocation parameters were not specified.

**User response:**

Specify the allocation parameters.

**ARY1216E** *task\_number* The target SSID for XML translation is missing in the control cards.

**Explanation:**

There is a missing parameter.

**User response:**

Correct the JCL and resubmit the job.

**ARY1217E** *task\_number* The XML target SSID/DBname/TSname control cards are missing.

**Explanation:**

Missing control cards in the Space(...) set.

**User response:**

Correct the JCL and resubmit the job.

**ARY1218E** *task\_number* The XML target SSID/DBname/TSname control cards are invalid.

**Explanation:**

Syntax error in control cards.

**User response:**

Correct the JCL and resubmit the job.

**ARY1219E** *task\_number* No references to subsystem *subsystem* could not be found in the JES SSCT.

**Explanation:**

The specified Db2 SSID is not defined to z/OS.

**User response:**

Ensure that the name is correct or contact IBM Software Support.

**ARY1220E** *task\_number* The sorted log file could not be allocated.

**Explanation:**

An allocation error has occurred.

**User response:**

Ensure that the proper authorization is granted and that the file is available to use.

**ARY1221E** *task\_number* The sorted log file could not be opened.

**Explanation:**

The file was allocated, but it could not be opened.

**User response:**

Verify that the proper authorization is granted. If unable to resolve the issue, contact IBM Software Support.

**ARY1222E** *task\_number* A log record page number exceeded the extent size boundary.

**Explanation:**

A Db2 internal error occurred. The page number encoded into the log record points beyond the number of allowable pages for a Db2 extent.

**User response:**

Send the dump and any table space or table creation details to IBM Software Support.

**ARY1224I** *task\_number* Object: DB: *database\_name* TS/IS: *space\_name* Part: *partition*.

**Explanation:**

This message accompanies other error messages.

**User response:**

No action is required.

**ARY1226I** *task\_number* The sort of the applicable log records was successful.

**Explanation:**

The sort of the applicable log records completed without errors.

**User response:**

No action is required.

---

**ARY1227E**      *task\_number* The SORT program does not support the use of tape devices for sort work data sets.

**Explanation:**

The SORT program that is installed does not support the use of tape devices for sort work data sets.

**User response:**

Change the type of device for sort work data sets.

---

**ARY1229E**      *task\_number* An invalid return code was detected from the SORT program.

**Explanation:**

The attempt to SORT returned an error.

**User response:**

Review the SORT program error messages. If unable to resolve the error, contact IBM Software Support.

---

**ARY1230E**      *task\_number* Invalid image copy DSN: *image\_copy\_dsn*.

**Explanation:**

An error occurred when attempting to process the image copy.

**User response:**

Ensure that the image copy that is specified in the message is available for use. If the problem persists, contact IBM Software Support.

---

**ARY1231I**      The following objects will not be added to the SYSCOPY Db2 table because a UNIFIED check failed, updates could not be found either in incremental image copies or the log(s), OBID translation took place on the image copy, or an error triggering a skip condition to be placed on the object:

**Explanation:**

The objects listed in the message will not be added to the SYSCOPY Db2 table. A UNIFIED check failed or updates could not be located.

**User response:**

No action is required.

---

**ARY1232I**      The following data set information was added to the SYSCOPY Db2 table:

**Explanation:**

This message indicates the data set information that was added to the SYSCOPY Db2 table.

**User response:**

No action is required.

---

**ARY1233I**      The following data set information would have been added to the

**SYSCOPY Db2 table but was not because of control card NO\_SYSCOPY\_ROW:**

**Explanation:**

You specified the NO\_SYSCOPY\_ROW in your Db2 Recovery Expert for z/OS JCL so the data set information that would have otherwise been added to the SYSCOPY Db2 table was not added.

**User response:**

No action is required.

---

**ARY1234I**      Object: DB: *database\_name* TS/IS: *space\_name* Part: *partition* LRSN/RBA: X'*lrsn/rba*'.

**Explanation:**

This message, in conjunction with other messages, displays the object that is impacted by the condition described in the associated messages.

**User response:**

No action is required.

---

**ARY1235I**      DSN: *data\_set* ICBBackup '[ |LB|RP|RB]'.

**Explanation:**

This message is a continuation of message ARY1234I.

**User response:**

No action is required.

---

**ARY1236I**      The following partial recovery information was added to the SYSCOPY Db2 table:

**Explanation:**

This message precedes an output of the partial recovery information that was added to the SYSCOPY Db2 table.

**User response:**

No action is required.

---

**ARY1237I**      Even though NO\_SYSCOPY\_ROW was specified for this run, the following partial recovery information was added to the SYSCOPY Db2 table:

**Explanation:**

This message precedes an output of the partial recovery information that was added to the SYSCOPY Db2 table.

**User response:**

No action is required.

---

**ARY1238I**      Object: Database *database\_name* Table space *space\_name* Partition *partition* PIT LRSN/RBA X'*lrsn/rba*' Starting LRSN/RBA X'*lrsn/rba*'.

**Explanation:**

This message displays the database, table space, partition, PIT LRSN/RBA, and starting LRSN/RBA information.

**User response:**

No action is required.

---

**ARY1239E**      **The following tape data set could not be cataloged: *data\_set\_name*.**

**Explanation:**

Normally, JCL end step disposition processing catalogs a data set, if desired. This message displays if Db2 Recovery Expert for z/OS failed to catalog a tape data set due to control card and dynamic allocation processing.

**User response:**

No action is required.

---

**ARY1240I**      **The following tape data set was cataloged: Unit: *devtype (X'device\_code')* DSN: *data\_set\_name* Sequence: *label#*.**

**Explanation:**

This message is displayed when a catalog attempt for a tape data set is successful. The unit is the actual 8-character device on which the data set was created. The *device\_code* is a 4-byte hexadecimal number that represents the internal MVS device designation. The *data\_set\_name* is the cataloged data set name. The *label#* is the file sequence number of the data set on the stacked tape. The volsers are reported by the tape management facility elsewhere in the job output.

**User response:**

No action is required.

---

**ARY1249E**      **The CELL64 service could not be initialized.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Software Support.

---

**ARY1250E**      **A get cell function call failed.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Software Support.

---

**ARY1257E**      **Fetching SYSIBM.SYSLGRNX data produced an error.**

**Explanation:**

Db2 Recovery Expert for z/OS encountered an error when attempting to fetch SYSIBM.SYSLGRNX data.

**User response:**

No action is required. The report utility's output is output after this message.

---

**ARY1258E**      **REPORT utility text follows: *text*.**

**Explanation:**

This message is the header line for the REPORT utility output that follows on the next line.

**User response:**

No action is required.

---

**ARY1259I**      **Skipping SYSIBM.SYSLGRNX processing.**

**Explanation:**

Db2 Recovery Expert for z/OS is not processing SYSIBM.SYSLGRNX because NO\_SYSLGRNX was specified.

**User response:**

No action is required.

---

**ARY1260E**      **Fetching SYSIBM.SYSLGRNX data by SQL produced an error.**

**Explanation:**

Db2 Recovery Expert for z/OS could not fetch object log ranges from the SYSIBM.SYSLGRNX directory table.

**User response:**

Verify that the supported Db2 version is installed. If unable to determine or resolve the problem, contact IBM Software Support

---

**ARY1261E**      **Control file values could not be read. Check for a user indicator mismatch. #nnn**

**Explanation:**

Db2 Recovery Expert for z/OS could not read the control file values.

**User response:**

Check for a user indicator mismatch.

---

**ARY1262W**      **Fetching SYSIBM.SYSLGRNX data by SQL produced a warning. GET DIAGNOSTIC output follows: ALL STATEMENT: *statement* ALL CONDITION: *condition*.**

**Explanation:**

A warning occurred while fetching data from SYSIBM.SYSLGRNX.

**User response:**

Review printed diagnostic information. If unable to determine or resolve the problem, contact IBM Software Support.

---

**ARY1263I**      **Fetching SYSIBM.SYSLGRNX data by SQL from LRSN/RBA X'*lrsn/rba*' to LRSN/RBA X'*lrsn/rba*'.**

**Explanation:**

The specified range is being fetched from SYSIBM.SYSLGRNX for further processing.

**User response:**

No action is required.

**ARY1264I**      **No SYSLGRNX data present for the objects.**

**Explanation:**

No SYSLGRNX data is present for the objects. Logs for the objects will not be processed.

**User response:**

Verify the specified end point value. If the value is correct, no action is required.

**ARY1265W**      **Trying to use REPORT utility.**

**Explanation:**

Db2 Recovery Expert for z/OS is attempting to use the REPORT utility.

**User response:**

No action is required.

**ARY1266E**      **The Db2 subsystem ID was not found in the control file.**

**Explanation:**

The control file does not have a Db2 subsystem ID.

**User response:**

Specify a Db2 subsystem ID in your control file.

**ARY1267E**      **The Db2 subsystem member member was not found in the control file.**

**Explanation:**

The Db2 subsystem member was not found in the control file.

**User response:**

Verify that the correct Db2 subsystem member is specified in the control file.

**ARY1268E**      **LOCAL\_SITE, RECOVERY\_SITE, and IMAGE\_COPY\_PREFERENCE are mutually exclusive.**

**Explanation:**

Your Db2 Recovery Expert syntax includes more than one of the following parameters: LOCAL\_SITE, RECOVERY\_SITE, or IMAGE\_COPY\_PREFERENCE. These parameters are mutually exclusive and only one can be defined.

**User response:**

Correct Db2 Recovery Expert for z/OS syntax.

**ARY1269E**      **DASD and tape allocation parameters cannot be specified together.**

**Explanation:**

You specified both DASD and TAPE allocation parameters.

**User response:**

Specify only DASD or TAPE allocation parameters but not both.

**ARY1270E**      **Five or more errors have been detected in the control cards.**

**Explanation:**

More than five errors have been identified in the control cards and Db2 Recovery Expert processing cannot proceed.

**User response:**

Verify the syntax of your Db2 Recovery Expert JCL and respecify as needed to correct syntax errors.

**ARY1271E**      **The RESTORE\_BEFORE RBA/LRSN value was already specified.**

**Explanation:**

You specified the RESTORE\_BEFORE parameter more than once.

**User response:**

Correct the JCL and resubmit the job.

**ARY1272E**      **Invalid TO QUIESCE(#nnn) control card syntax.**

**Explanation:**

The TO QUIESCE syntax contains an error.

**User response:**

Verify that you have properly defined the TO QUIESCE(#nnn) parameter.

**ARY1273E**      **Mini log particulars cannot be specified at both the GROUP and SPACE levels.**

**Explanation:**

Mini log control cards are valid for specification either at the GROUP or the SPACE level, not both.

**User response:**

Specify mini log parameters either at the GROUP or SPACE level but not both.

**ARY1275E**      **Use of the USE\_ABOVE\_THE\_BAR keyword requires z/OS V1.5 or above.**

**Explanation:**

Your z/OS version is not 1.5 or above, z/OS V1.5 or above is required for you to use the USE\_ABOVE\_THE\_BAR keyword.

**User response:**

Remove the USE\_ABOVE\_THE\_BAR keyword from your syntax.

**ARY1278W**      **Db2 Sort was called for but was not found in z/OS.**

**Explanation:**

The control file options set by the setup screens are calling for Db2 Sort. An attempt to load Db2 Sort failed.

**User response:**

Verify the STEPLIB for Db2 Sort.

**ARY1279W**      **Parallel log apply values greater than 1 ignored in minilog mode.**

**Explanation:**

If mini log processing is called for in multiple groups, the optimization process will be skipped.

**User response:**

No action is required.

**ARY1280W**      **If manual group configurations are used, parallel log apply value is ignored.**

**Explanation:**

If there are multiple GROUP(...) control card sets as input, that organization will be used for parallel task organization instead of any internal optimization of group structure based on the parallel log apply value.

**User response:**

No action is required.

**ARY1281E**      **task\_number A required incremental image copy could not be allocated.**

**Explanation:**

A required incremental image copy could not be allocated.

**User response:**

Verify that the image copy is available for use.

**ARY1282E**      **task\_number A required incremental image copy could not be opened.**

**Explanation:**

Db2 Recovery Expert for z/OS processing could not proceed because an incremental image copy could not be opened.

**User response:**

Ensure that all necessary incremental image copies are available for use.

**ARY1283E**      **task\_number An internal error occurred during input incremental tape stacking processing.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Software Support.

**ARY1284I**      **task\_number RECOVERY EXPERT will process the following incremental image copy file(s):**

**Explanation:**

Db2 Recovery Expert for z/OS will process the incremental image copy file(s) listed in the messages that follow.

**User response:**

No action is required.

**ARY1285I**      **task\_number For table space: database\_name.space\_name PART part.**

**Explanation:**

This message displays the space and partition that are related to other Db2 Recovery Expert for z/OS messages that have been issued.

**User response:**

No action is required.

**ARY1286E**      **task\_number A log record read service program could not be started.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Software Support.

**ARY1287E**      **task\_number The writer service returned an error, RC=X'return\_code'.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Software Support.

**ARY1288E**      **task\_number The reader service returned an error, RC=X'return\_code'.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Software Support.

**ARY1289I**      **The log apply process will begin at RBA=X'rsa' [and timestamp timestamp].**

**Explanation:**

The log apply process will start at the RBA that is listed in the message.

**User response:**

No action is required.

---

**ARY1290I**      **The log apply process will begin at LRSN: X'lrns' (timestamp).**

**Explanation:**

This message displays the LRSN value at which the log apply process will begin.

**User response:**

No action is required.

---

**ARY1291E**      **The Db2 command processor responded with a nonzero return code. RC = X'return\_code' RS='reason\_code'.**

**Explanation:**

An error was encountered when attempting to run a Db2 command.

**User response:**

Contact IBM Software Support.

---

**ARY1292I**      **Consistency value =X'rbalrns'.**

**Explanation:**

This message displays if a problem occurs with the UNIFIED or UNIFIED\_WARNING control cards. The message displays the consistency value taken from the first object in the group.

**User response:**

The values shown in ARY1292I and ARY1293E can be compared for diagnostic purposes. The value shown in ARY1292I is for the first object in the group, while the value shown in ARY1293E is the value for any object that does not match it. For example, if there are 10 objects in the group and three do not match the first, then one ARY1292I message displays with three ARY1293E messages (for each group).

---

**ARY1293E**      **Object's derived value =X'rbalrns'.**

**Explanation:**

This message displays if a problem occurs with the UNIFIED or UNIFIED\_WARNING control cards. The message displays the object's derived value for the first object in the group. This message displays any object that does not match the first object in the group (identified in ARY1292I).

**User response:**

The values shown in ARY1292I and ARY1293E can be compared for diagnostic purposes. The value shown in ARY1292I is for the first object in the group, while the value shown in ARY1293E is the value for any object that does not match it. For example, if there are 10 objects in the group and three do not match the first, then one ARY1292I message will display with three ARY1293E messages (for each group).

---

**ARY1294I**      **The log reader process will launch a total of nnn tasks.**

**Explanation:**

This message displays the total number of log reader tasks that will be launched.

**User response:**

No action is required.

---

**ARY1295I**      **The log reader will launch a total of 1 task per member.**

**Explanation:**

Processing of the log reader will launch a total of one task per member because PARALLEL has been set to 0.

**User response:**

No action is required.

---

**ARY1296I**      **The log reader process will start with PARALLEL tasks = nnn.**

**Explanation:**

The log reader process will start with the indicated maximum number of tasks.

**User response:**

No action is required.

---

**ARY1297I**      **task\_number The log reader task #task\_number finished.**

**Explanation:**

Processing of the log reader task completed.

**User response:**

No action is required.

---

**ARY1298E**      **task\_number The log reader task init failed. RC=X'return\_code'.**

**Explanation:**

Log apply processing failed to initialize a task that is required for reading logs. The return code is listed in the error message.

**User response:**

Contact IBM Software Support.

---

**ARY1299I**      **Checkpoint was created for db2\_subsystem\_name.**

**Explanation:**

A checkpoint was created for the specified Db2 subsystem.

**User response:**

No action is required.

---

**ARY1300I**      **The ENQs for the spaces were successful.**

**Explanation:**

The ENQs for the spaces completed successfully.

**User response:**

No action is required.



---

**ARY1301E**      **The ENQ for database *database\_name.space\_name* PART part was not successful.**

**Explanation:**

This message displays the database, space, and partition for which the ENQs did not complete successfully.

**User response:**

No action is required.

---

**ARY1308E**      **The XLAT\_DSN, DBID, PSID, and at least one OBID must be specified.**

**Explanation:**

When performing an OBIDXLAT, you must specify the XLAT\_DSN, DBID, PSID and at least one OBID in your Db2 Recovery Expert syntax.

**User response:**

Specify the XLAT\_DSN, DBID, PSID and at least one OBID in your Db2 Recovery Expert syntax.

---

**ARY1309E**      **OBIDXLAT input override parameters found without output parameters.**

**Explanation:**

The OBIDXLAT syntax is incomplete.

**User response:**

Use the OBIDXLAT keyword to specify object translation information (DBID / PSID / OBID) and enable recovery via WRITE\_TO\_VSAM of tables within an image copy to a different VSAM / table space than the one indicated in the generated logs. The variable dataset\_name is the fully qualified Db2 data set name of the target table space (the data set name that is going to contain the translated image copy), valid values are up to 44 bytes. When specifying the dbid, psid, and obid pairs, you must specify the pairs of source/target IDs in that order (DBID first, PSID second, followed by all applicable OBID pairs). All pairs should be space separated and the source ID is listed first with the target ID listed second. Each pair should be defined on a new line. Define multiple OBID pairs as necessary.

---

**ARY1310E**      **The INCR\_IN\_DSN and INCR\_IN\_LOGPOINT must be specified together.**

**Explanation:**

You must specify the INCR\_IN\_DSN and INCR\_IN\_LOGPOINT together.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1311E**      **The keyword was not found in the MVS catalog.**

**Explanation:**

The listed keyword value was not found in the MVS catalog.

**User response:**

Verify that the specified value is valid.

---

**ARY1312E**      **Using OBIDXLAT incremental image copies requires a starting full image copy.**

**Explanation:**

The OBIDXLAT syntax you specified is not valid.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1317E**      **The XLAT\_TARGET\_SSID/ XLAT\_DBNAME/XLAT\_TSNAME must be specified together.**

**Explanation:**

The XLAT\_TARGET\_SSID, XLAT\_DBNAME, and XLAT\_TSNAME parameters must be specified together.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1318E**      **The XML\_JOBS\_\* and XML\_TEMPLATE\_\* parameters must be specified together.**

**Explanation:**

The XML\_JOBS\_\* and XML\_TEMPLATE\_\* parameters must be specified together.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1319W**      **Incremental method SORT is obsolete. MERGE mode used instead.**

**Explanation:**

INCREMENTAL SORT is no longer supported (it is ignored). The internal method used instead is MERGE.

**User response:**

No action is required.

---

**ARY1320E**      **At least one SPACE() control card set is required.**

**Explanation:**

At least one SPACE() control card set is required, but no SPACE control card sets have been specified.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1321E**      **One of TO\_CURRENT, TO\_QUIESCE, END\_RBA, END\_LRSN, or TOLOGPOINT must be specified.**

**Explanation:**

You did not specify one of the listed required options in your JCL.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1322W**      **The NO\_REUSE keyword is not valid in the current job environment.**

**Explanation:**

The NO\_REUSE keyword was specified in a job type other than WRITE\_TO\_VSAM or WRITE\_TO\_BOTH.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1323E**      **The CHECK\_AFTER QUIESCE keyword specified without TO QUIESCE.**

**Explanation:**

The CHECK\_AFTER QUIESCE was specified but TO QUIESCE was not specified for space.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1324E**      **The CHECK\_AFTER QUIESCE keyword conflicts with UNIFIED check specified.**

**Explanation:**

The CHECK\_AFTER QUIESCE keyword conflicts with the UNIFIED keyword.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1325E**      **The CHECK\_AFTER QUIESCE keyword conflicts with NO\_SYSLGRNX keyword.**

**Explanation:**

The CHECK\_AFTER QUIESCE keyword was specified with the NO\_SYSLGRNX keyword. This is not valid.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1326E**      **Error token: *token* has an empty value. Space# *number***

**Explanation:**

The indicated token has an empty value.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1327E**      **Error token: *token* appears more than once. Space# *number*.**

**Explanation:**

The indicated token could not be specified more than once on current level.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1328E**      **Error token: *token* has an invalid value: *value*. Space# *number*.**

**Explanation:**

An invalid value was detected for *token*.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1329E**      **Error token: *token1* is unexpected with token: *token2*. Space# *number*.**

**Explanation:**

*token1* should not be specified with *token2*.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1330E**      **Error token: *token1* using require token: *token2*.**

**Explanation:**

*token1* could not be used without *token2* specified.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1332I**      **Issuing HRECALL for the image copy data set *data\_set\_name*.**

**Explanation:**

This message indicates that the image copy data set to process has been recalled from migration.

**User response:**

No action is required.

---

**ARY1333E**      **Could not obtain SSID, user indicator from input parameters.**

**Explanation:**

Db2 Recovery Expert for z/OS could not obtain the SSID and user indicator from the input parameters.

**User response:**

Verify that the correct SSID and user indicator values have been specified.

---

**ARY1334E**      **Invalid parameter format**

**Explanation:**

The parameter format you specified is not valid.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1335E**      **No SYSOUT DD was found.**

**Explanation:**

Db2 Recovery Expert for z/OS could not find the SYSOUT DD.

**User response:**

Verify that the SYSOUT DD is available.

---

**ARY1336E**      **Could not open SYSOUT DD.**

**Explanation:**

Db2 Recovery Expert for z/OS could not open the SYSOUT DD.

**User response:**

Verify that the SYSOUT DD is available.

---

**ARY1337E Invalid SYSOUT DD LRECL value.**

**Explanation:**

The SYSOUT DD LRECL is invalid.

**User response:**

Specify a valid SYSOUT DD LRECL value.

---

**ARY1338E No SYSIN DD was found.**

**Explanation:**

Db2 Recovery Expert for z/OS could not find the SYSIN DD.

**User response:**

Verify that the SYSIN DD is available.

---

**ARY1339E Could not open SYSIN DD.**

**Explanation:**

Db2 Recovery Expert for z/OS could not open the SYSIN DD.

**User response:**

Verify that the SYSIN DD is available.

---

**ARY1340E SYSPRINT DD is not found.**

**Explanation:**

Db2 Recovery Expert for z/OS could not find the SYSPRINT DD.

**User response:**

Verify that the SYSPRINT DD is available.

---

**ARY1341E Could not open the SYSPRINT data set for output.**

**Explanation:**

Db2 Recovery Expert for z/OS could not open the SYSPRINT DD.

**User response:**

Verify that the SYSPRINT DD is available.

---

**ARY1342E Invalid data in SYSIN. An expected line formats are: [DBNAME.PSNAME|DSNIN= data set name|DSNOUT= data set name].**

**Explanation:**

The SYSIN format is not as expected.

**User response:**

Correct the JCL and resubmit the job. If syntax is correct, contact IBM Software Support.

---

**ARY1343E An XML string IDs LOAD data set is needed, but DSNIN line is missing.**

**Explanation:**

XML spaces were specified for processing, but no DSNIN was specified for unloaded XML data from source Db2 subsystem.

**User response:**

Correct the JCL and resubmit the job. If syntax is correct, contact IBM Software Support.

---

**ARY1344E An XML string IDs UNLOAD data set is needed, but DSNOUT line is missing.**

**Explanation:**

XML spaces were specified for processing, but no DSNOUT was specified for XML string IDs translation table from the target Db2 subsystem.

**User response:**

Correct the JCL and resubmit the job. If syntax is correct, contact IBM Software Support.

---

**ARY1345E Invalid data set name. *dsn***

**Explanation:**

Data set name is incorrect.

**User response:**

Correct the JCL and resubmit the job. If syntax is correct, contact IBM Software Support.

---

**ARY1346E An error occurred during the execution of DSNUTILU procedure.**

**Explanation:**

Error has occurred during [LOAD|UNLOAD] utility execution.

**User response:**

Review the diagnostic information. If unable to determine or resolve the error, contact IBM Software Support.

---

**ARY1347E The ARY#DATA instream DD could not be opened.**

**Explanation:**

The DD could not be found in the job generated by Db2 Recovery Expert for z/OS

**User response:**

Ensure that the job generated by Db2 Recovery Expert for z/OS to run on this LPAR was not altered and the ARY#DATA DD exists in the generated job.

---

**ARY1348E The following XML SSID/DBname/ TSname control card is invalid:**

**Explanation:**

The control cards do not conform to expected syntax.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1349I *text***

**Explanation:**

This message follows ARY1348E.

**User response:**

No action is required.

---

**ARY1350E**      **An internal error occurred in program ARY#XMLD**

**Explanation:**

Internal error.

**User response:**

Contact IBM Software Support.

---

**ARY1351E**      **Could not obtain SSID and User Indicator from input parameters.**

**Explanation:**

The log apply job was unsuccessful in trying to connect to the specified subsystem when processing spaces with XML data.

**User response:**

Verify that the subsystem SSID specified in the job is accurate. Correct the JCL and resubmit the job. If the problem persists, contact IBM Software Support.

---

**ARY1352E**      **Could not open the SYSOUT DD.**

**Explanation:**

The log apply job could not open the SYSOUT DD.

**User response:**

Verify that the SYSOUT DD is specified in the job. Correct the JCL and resubmit the job. If the problem persists, contact IBM Software Support.

---

**ARY1353E**      **Invalid SYSOUT DD LRECL.**

**Explanation:**

The LRECL specified on the SYSOUT DD is incorrect.

**User response:**

Verify that the LRECL specified in the SYSOUT DD is accurate. Correct the JCL and resubmit the job. If the problem persists, contact IBM Software Support.

---

**ARY1354I**      **Object *database\_name.space\_name* required no action.**

**Explanation:**

The object was determined to require no action to make the object usable.

**User response:**

No action is required.

---

**ARY1355I**      **Object *database\_name.space\_name* had its sequence nbr increased by *rowcount*.**

**Explanation:**

Db2 Recovery Expert for z/OS updated the catalog to make the XML object usable.

**User response:**

No action is required.

---

**ARY1356I**      **With a source count=*num1* and a target count=*num2***

**Explanation:**

Db2 Recovery Expert for z/OS updated the catalog to make the XML object usable.

**User response:**

No action is required.

---

**ARY1357E**      **A log apply task could not be started.**

**Explanation:**

This is an internal error. A log apply task could not be started.

**User response:**

Contact IBM Software Support.

---

**ARY1358E**      **Log apply task returned an error, RC=X'*return\_code*'.**

**Explanation:**

The log apply component could not complete normally. An abnormal condition was detected.

**User response:**

Check the job output for other error messages that further explain the error. Make note of the return codes provided in the messages, and then contact IBM Software Support. Return code X'DC2000' indicates that the system has experienced a DC2 abend. This type of abend occurs when the amount of requested memory above the 64-bit address space limit (referred to as "above the bar" memory) cannot be allocated due to reaching the system's memory limit. To address this issue, it is suggested to verify that the memory limit for the job is configured correctly. You may refer to the 'MVS Programming: Extended Addressability Guide', 'Limiting the use of private memory objects' for more information.

---

**ARY1359W**      **The end point for *database\_name.space\_name* did not match the UNIFIED value.**

**Explanation:**

The end point for the space indicated in the message did not match the value specified for the UNIFIED value.

**User response:**

No action is required.

---

**ARY1360E**      **The initialization phase of Db2 Sort failed.**

**Explanation:**

The initialization phase of Db2 Sort failed.

**User response:**

Contact IBM Software Support.

---

**ARY1361E**      **The resource optimization phase [1|2] of Db2 Sort failed. RC='return\_code'.**

**Explanation:**

The initialization step of Db2 Sort failed. This step is necessary for optimization.

**User response:**

Contact IBM Software Support.

---

**ARY1362E**      **The terminate phase of Db2 Sort failed.**

**Explanation:**

The terminate phase of Db2 Sort failed.

**User response:**

Contact IBM Software Support.

---

**ARY1363E**      **There is not enough storage to perform the desired number of parallel sorts.**

**Explanation:**

There is not enough virtual storage space to perform the number of specified parallel sorts.

**User response:**

Decrease the number of parallel tasks specified or increase the amount of virtual memory available for the job. Then resubmit the job.

---

**ARY1364E**      **Insufficient total storage to perform the desired number of parallel sorts.**

**Explanation:**

The amount of storage available for a sort was insufficient.

**User response:**

Increase the region size or reduce the number of parallel tasks. Then resubmit the job.

---

**ARY1365E**      **The log apply tasks ended abnormally. Check messages.**

**Explanation:**

One or more of the log apply tasks failed to process.

**User response:**

Check the accompanying error messages.

---

**ARY1394E**      **An invalid return code was detected from the SORT program (\*).**

**Explanation:**

The SORT program ended with an error.

**User response:**

Contact IBM Software Support.

---

**ARY1395E**      **Sort program could not be started.**

**Explanation:**

The SORT program could not be started.

**User response:**

Contact IBM Software Support.

---

**ARY1397E**      **The [XLAT\_IN\_ICUNIT| INCR\_IN\_ICUNIT] have incorrect value. Only 'T' value supported.**

**Explanation:**

Invalid value was specified for [XLAT\_IN\_ICUNIT| INCR\_IN\_ICUNIT] keyword.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1398E**      **The [XLAT\_IN\_FILESEQNO|INCR\_IN\_FILESEQNO] have incorrect value.**

**Explanation:**

[XLAT\_IN\_FILESEQNO|INCR\_IN\_FILESEQNO] value is incorrect.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1399E**      **The control file contains duplicate BSDS dataset names.**

**Explanation:**

There are duplicate BSDS data set names specified in the control file.

**User response:**

Edit the control file to remove the duplicate BSDS data set names.

---

**ARY1400E**      **Error token: *token*, unexpected end of input stream.**

**Explanation:**

A syntax error was detected near *token*.

**User response:**

Verify the syntax structure of the control cards. If no syntax errors can be identified, contact IBM Software Support.

---

**ARY1401E**      **Error token: *token*, open or close parenthesis expected.**

**Explanation:**

A syntax error was detected near *token*.

**User response:**

Verify the syntax structure of the control cards. If no syntax errors can be identified, contact IBM Software Support.

---

**ARY1402E**      **Could not start log record writer.**

**Explanation:**

A z/OS attachment error occurred attempting to start a component of the load read phase process.

**User response:**

Ensure the product library is complete. Contact IBM Software Support.

---

**ARY1403I      The start timestamp is *timestamp*****Explanation:**

This message displays the start timestamp value for logs estimation.

**User response:**

No action is required.

---

**ARY1404I      Expected approximate number of log entries: *number*****Explanation:**

This message shows the approximation of log records' number that is expected to be processed.

**User response:**

No action is required.

---

**ARY1405W      There are no new log entries or no statistics for the selected objects.****Explanation:**

Logs' estimation processing did not find any data for estimation.

**User response:**

No action is required.

---

**ARY1406W      Query execution failed for space *database\_name.space\_name*****Explanation:**

An error has occurred while issuing query for logs' estimation processing.

**User response:**

Review diagnostic information. If unable to determine or resolve the error, contact IBM Software Support.

---

**ARY1407I      Expected number of log entries for [table space|index space] *database\_name.space\_name: number*****Explanation:**

This message shows the expected number of log entries to be processed for the space.

**User response:**

No action is required.

---

**ARY1408I      Expected number of log entries for group #*group\_num*: *number*****Explanation:**

This message shows the expected number of log entries to be processed for the group.

**User response:**

No action is required.

---

**ARY1409I      The statistics history not available. Estimating logs disabled.****Explanation:**

No statistic history was found in catalog. No logs' estimation will be performed.

**User response:**

No action is required.

---

**ARY1410E      The start timestamp not determined. Estimating logs disabled.****Explanation:**

Estimate logs timestamp has an empty value.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1411I      Estimating logs is not supported for Db2 version under 12.****Explanation:**

Logs estimation is not supported for Db2 versions earlier than 12. No estimation will be performed.

**User response:**

No action is required.

---

**ARY1417E      The TO\_TIMESTAMP value could not be converted. CONVTOD macro return code: *return\_code*. Space# *number*.****Explanation:**

An internal error occurred during the timestamp to RBA conversion process.

**User response:**

Contact IBM Software Support.

---

**ARY1418I      All start points and usable mini logs are Sharelevel Reference or a WRITE\_TO\_VSAM operation TO\_CURRENT is in progress. Checkpoint processing skipped.****Explanation:**

This message indicates that checkpoint processing has been skipped for one of the listed reasons.

**User response:**

No action is required.

---

**ARY1419E      [*task\_number*] A mismatch between passed ZPARM information and the JES SSCT was found.****Explanation:**

A mismatch between passed ZPARM information and the JES SSCT was found.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1420E**      **The TO\_TIMESTAMP value was already specified before END\_LRSN in a control group.**

**Explanation:**

The TO\_TIMESTAMP value was already specified before END\_LRSN in a control group.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1421E**      **[task\_number] An unexpected error occurred while trying to read the bootstrap data set.**

**Explanation:**

An unexpected error occurred while trying to read the bootstrap data set.

**User response:**

Contact IBM Software Support.

---

**ARY1423I**      **A maximum of *nnn* sorts will run when sorting log records.**

**Explanation:**

*nnn* sorts will be used to sort log records.

**User response:**

No action is required.

---

**ARY1427E**      **An unexpected EOF was encountered. Check for missing continuation.**

**Explanation:**

An end of control card stream was detected but the expression is incomplete.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1428E**      **Continuation was called for but EOF was encountered.**

**Explanation:**

The control card stream process was complete, but a continuation was found.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1429E**      **Unexpected EOF encountered while reading control cards.**

**Explanation:**

The control card context expected additional input but found the end of the file instead.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1430E**      **Unexpected EOF encountered while token *token* value expected.**

**Explanation:**

The control card context expected a value associated with the token but found the end of the file instead.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1442E**      **Could not determine RBA of TO\_TIMESTAMP point.**

**Explanation:**

The TO\_TIMESTAMP control card was used, but the RBA cannot be determined.

**User response:**

Specify a timestamp that has a valid RBA. If unable to resolve the problem, contact IBM Software Support.

---

**ARY1443E**      **Could not find log data set to determine RBA of TO\_TIMESTAMP point.**

**Explanation:**

The TO\_TIMESTAMP control card was used, but the specified timestamp cannot be correlated to any log data set in the bootstrap data set (BSDS). If the timestamp is no longer valid, it cannot be used.

**User response:**

Specify a timestamp that is within the boundaries of the logs that are recorded in the BSDS.

---

**ARY1446E**      **The DBID, PSID, and at least one OBID must be specified.**

**Explanation:**

On a load operation, translation was called for, but all required fields to perform the function were not specified. All of the required options that are needed to perform the translation operation were not specified.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1447E**      **When a segmented object is loaded, OBIDXLAT information must be specified.**

**Explanation:**

The process requires that OBIDXLAT information be specified when the underlying table space is segmented, even if there is only one table currently in the table space.

**User response:**

Specify the DBID/PSID/OBID number pairs for the object.

---

**ARY1448E**      **Keywords OBIDXLAT and OBIDXLAT\_CATALOG can not be specified at the same time.**

**Explanation:**

The specified options are mutually exclusive, and only one of the options can be specified in the syntax.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1459E**      **The XLAT\_DROPPED\_RECOVER keyword should be coded only with SOURCE=TARGET SSIDs.**

**Explanation:**

This keyword requires the source and target to be the same Db2 subsystem.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1460E**      **The XLAT\_DROPPED\_RECOVER keyword should be coded with DATA\_BASE keyword.**

**Explanation:**

XLAT\_DROPPED\_RECOVER requires you to use the DATA\_BASE keyword.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1461E**      **The XLAT\_DROPPED\_RECOVER keyword should be coded only with XLAT\_TARGET values.**

**Explanation:**

XLAT\_DROPPED\_RECOVER requires you to use XLAT\_TARGET\_\* keywords.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1462E**      **The XLAT\_DROPPED\_RECOVER keyword cannot be coded in TO\_CURRENT mode.**

**Explanation:**

XLAT\_DROPPED\_RECOVER cannot be used with the TO\_CURRENT end point.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1463E**      **The XLAT\_DROPPED\_RECOVER keyword should be coded with XLAT\_IN values.**

**Explanation:**

XLAT\_DROPPED\_RECOVER requires you to use one of the XLAT\_IN\_\* control cards.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1464I**      **The XLAT\_DROPPED\_RECOVER mode is on for database\_name.space\_name. RECOVERY EXPERT will fetch needed data from target object.**

**Explanation:**

The XLAT\_DROPPED\_RECOVER keyword has specified the database from which data will be fetched.

**User response:**

None required.

---

**ARY1466E**      **The START\_POINT keyword requires SPACE(...) set mini log DSN to be specified.**

**Explanation:**

The syntax that was specified is not correct. The START\_POINT keyword requires mini log data set specified on the SPACE(...) level.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1467E**      **The START\_POINT keyword is required for SPACE(...) set mini log ARY mode.**

**Explanation:**

The syntax that was specified is not correct. The START\_POINT keyword is required if mini log data set specified on the SPACE(...) level.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1468E**      **The number of partitions specified for database\_name.space\_name is not the same as the base object.**

**Explanation:**

The number of partitions specified in control cards for the object *database\_name.space\_name* does not match the number of partitions that the base object has in the catalog.

**User response:**

Specify all object partitions in control cards and resubmit the job.

---

**ARY1469E**      **The following dataset in the Db2 Loadlib concatenation is not APF authorized: dsn.**

**Explanation:**

The data set listed is not APF authorized.

**User response:**

APF-authorize the LOADLIB datasets specified for the Db2 SSID on the Db2 Recovery Expert for z/OS control file and run the job again.

---

**ARY1472E**      **task\_number The cellpool services get function returned an error.**

**Explanation:**

An internal error occurred during memory management operations.

**User response:**

Contact IBM Software Support.



---

**ARY1473E** *task\_number* The input image copy can only contain one table.

**Explanation:**

The input image copy you specified contains more than one table.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1474E** *task\_number* Error starting image copy reader.

**Explanation:**

The image copy reader component was not found in the LOADLIB concatenation.

**User response:**

Contact IBM Software Support.

---

**ARY1475E** *task\_number* An internal error determining object page size occurred.

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Software Support.

---

**ARY1476I** *task\_number* Processing universal table spaces.

**Explanation:**

Universal table spaces were found for processing.

**User response:**

No action is required.

---

**ARY1478I** No USER\_INDICATOR was specified. Using the default value ARY.

**Explanation:**

No USER\_INDICATOR was specified, so the default value of ARY is used for processing.

**User response:**

No action is required.

---

**ARY1479E** *task\_number* CHECK function detected an inconsistent page structure. Code: X'hexadecimal\_code' Page # X'page\_num'.

**Explanation:**

An internal error has occurred while applying the logs.

**User response:**

Contact IBM Software Support.

---

**ARY1480I** No checkpoint was taken for ssid because it is quiesced.

**Explanation:**

The product tried to issue checkpoint for subsystem ssid, but subsystem is quiesced.

**User response:**

No action is required.

---

**ARY1483E** *task\_number* Failed to [allocate|open] IDCAMS [input|output] DDNAME.

**Explanation:**

Db2 Recovery Expert for z/OS tried to dynamically allocate or open the DD name ARYxIDOU or ARYxIDIN, where x is an integer. The allocation or open is used for IDCAMS output or input when adding candidate volumes to the output target VSAM data set. The allocation or open failed with a reason code.

**User response:**

Verify that there are no name conflicts in the job. If unable to resolve the error, contact IBM Software Support.

---

**ARY1484E** *task\_number* IDCAMS call failed when processing ALTER volume functions.

**Explanation:**

IDCAMS failed to add candidate volumes to the target VSAM data sets.

**User response:**

Check the output and reason codes from IDCAMS. If unable to resolve the error, contact IBM Software Support.

---

**ARY1485E** *task\_number* The ATTACH XML string IDs update program failed.

**Explanation:**

Internal error has occurred.

**User response:**

Contact IBM Software Support.

---

**ARY1486E** *task\_number* The XML string IDs update program failed.

**Explanation:**

The error has occurred during XML string IDs processing.

**User response:**

Contact IBM Software Support.

---

**ARY1487E** *task\_number* The XML string IDs input DSN is missing.

**Explanation:**

XML\_IDS\_DSN value was not specified or is incorrect.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1488E** *task\_number* The XML string could not be found on current SSID.

**Explanation:**

Internal error has occurred during XML string ID processing.

**User response:**

No action is required.

---

**ARY1489E**      *task\_number* The XML string ID could not be found in XML string IDs import data set.

**Explanation:**

Internal error has occurred during XML string ID processing.

**User response:**

Contact IBM Software Support.

---

**ARY1490E**      *task\_number* The fetch of the Storclass definition from SMS failed.

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Software Support.

---

**ARY1495W**      *task\_number* The copy contains more partitions than object (more than *number\_of\_partitions\_in\_object*).

**Explanation:**

The image copy was taken when the PBG object had more partitions. To make the object consistent after Db2 Recovery Expert for z/OS processing, the image copy and the object should have the same number of partitions.

**User response:**

Add partitions to the object and resubmit the job. If data for the missing partition is not needed in the object, no action is required.

---

**ARY1496W**      *task\_number* The copy contains only *n* partition(s), but object has *m* partition(s).

**Explanation:**

The image copy was taken when the PBG object had fewer partitions. To make the object consistent after Db2 Recovery Expert for z/OS processing, the image copy and the object should have the same number of partitions.

**User response:**

To make it possible to work with extra object partitions after Db2 Recovery Expert for z/OS processing, ALTER and/or REORG the object to reduce the number of partitions. If ALTER and/or REORG cannot be run, perform LOAD REPLACE with DD DUMMY to clean up the entire object or its extra partitions (depending on the setup).

---

**ARY1497E**      *task\_number* RECOVERY EXPERT encryption key retrieving module returned rc = *return\_code*.

**Explanation:**

The specified error occurred during encryption key retrieval.

**User response:**

Contact IBM Software Support.

---

**ARY1498E**      *task\_number* The copy contains more partitions than object (more than *number\_of\_partitions\_in\_object*).

**Explanation:**

The image copy was taken when the PBR object had more partitions. To make the object consistent after Db2 Recovery Expert for z/OS processing, the image copy and the object should have the same number of partitions.

**User response:**

Add partitions to the object, alter LIMITKEYS if required, REORG the object if the ALTER placed it in advisory/pending REORG status, and resubmit the job. If data for the missing partition is not needed in the object, no action is required.

---

**ARY1499E**      *task\_number* The copy contains only *n* partition(s), but object has *m* partition(s).

**Explanation:**

The image copy was taken when the PBR object had fewer partitions. To make the object consistent after Db2 Recovery Expert for z/OS processing, the image copy and the object should have the same number of partitions.

**User response:**

The number of partitions in partition-by-range object cannot be reduced. To work with extra object partitions, perform LOAD REPLACE with DD DUMMY to clean up the entire object or its extra partitions (depending on the setup). If LIMITKEYS are different between the image copy and the object, ALTER and REORG the object to update LIMITKEYS or re-create the object with the same LIMITKEYS as in the image copy.

---

**ARY1500E**      *task\_number* The hash anchor X'*nnn*' was not found on the page X'*page\_number*'.

**Explanation:**

This message indicates an internal log processing error.

**User response:**

Contact IBM Software Support.

---

**ARY1501E**      *task\_number* The following log data set is required for processing but got an error:

**Explanation:**

An error occurred trying to read the archive log data set. The log data set name is specified in the message ARY1503I that follows.

**User response:**

Verify that the log data set is available to use.

---

**ARY1502E**      *task\_number* A gap was found in the logs needed for processing. Last usable log was:

**Explanation:**

A gap was found in the logs required for processing. Logs after the gap are not usable. Subsequent message ARY1503I indicates the log data set name of the last usable log.

**User response:**

No action is required.

---

**ARY1503I**      *task\_number archive\_log\_dsn.*

**Explanation:**

The specified *archive\_log\_dsn* produced an error. This message follows other error messages.

**User response:**

No action is required.

---

**ARY1504E**      [*task\_number*] A desired log range cannot be found in any active/archive log.

**Explanation:**

The log range is not available in any of the active or archive logs.

**User response:**

Contact IBM Software Support.

---

**ARY1505I**      *task\_number* Informational IDCAMS output. Output follows:

**Explanation:**

An IDCAMS system service request returned an error. The IDCAMS output and error messages follow.

**User response:**

Verify the IDCAMS output. If unable to resolve the error, contact IBM Software Support.

---

**ARY1506W**      *db2\_member\_name* The start point for log processing was not within any archive/active log range.

**Explanation**

Db2 Recovery Expert for z/OS could not find any log records to process for this member of the data sharing group. This does not mean that there are no

log records generated for the spaces being processed, but means that this particular member ID has no log records to participate in the merge process. The other members in the data sharing group may have log records. The member ID currently being processed is indicated in a prior ARY1515I message (ARY is now processing subsystem *xxxx*').

**Note:** The ARY1506W message always refers to the most recent ARY1515I message.

**User response:**

No action is required.

---

**ARY1507I**      *task\_number* The target data set is non-SMS managed. Add candidate volumes omitted.

**Explanation:**

The target data set is not SMS managed. No candidate volumes will be added.

**User response:**

No action is required.

---

**ARY1510I**      *task\_number* Error code #1: *code\_1* #2: *code\_2*.

**Explanation:**

This message accompanies the ARY1501E message.

**User response:**

Contact IBM Software Support.

---

**ARY1514E**      *task\_number* An error was detected during end log processing for subsystem *subsystem RC=return\_code*.

**Explanation:**

Db2 Recovery Expert encountered an internal error for the indicated subsystem.

**User response:**

Contact IBM Software Support.

---

**ARY1515I**      *task\_number* Log accumulate processing is beginning on subsystem *ssid*.

**Explanation:**

Log accumulate processing has started on the subsystem that is listed in the message.

**User response:**

No action is required.

---

**ARY1516E**      *task\_number* Above the bar storage exhausted.

**Explanation:**

The above the bar storage has been exhausted due to system or control card limits. The limit set by the maximum secondary allocation parameter has been met.

**User response:**

Use USE\_ABOVE\_THE\_BAR with larger values.

---

**ARY1518I**      *task\_number member\_name*  
**Reading [active | archive] log**  
*log\_dataset\_name.*

**Explanation:**

This message describes the active or archive log *log\_dataset\_name* that is about to be read.

**User response:**

No action is required.

---

**ARY1519W**      *task\_number member\_name* **Log**  
**reader operating in no consistency**  
**checking mode.**

**Explanation:**

Either mini logs are being written in SHARELEVEL CHANGE mode or a WRITE\_TO\_VSAM operation is taking place and all end points are TO\_CURRENT.

**User response:**

No action is required.

---

**ARY1520I**      *task\_number* **Task #nnn**  
**terminated.**

**Explanation:**

The task completed successfully.

**User response:**

No action is required.

---

**ARY1521I**      *task\_number* **Issuing HRECALL for**  
**log data set *data\_set\_name*.**

**Explanation:**

The log data set required for processing has been recalled from migration.

**User response:**

No action is required.

---

**ARY1528E**      **An XML update job is needed, but**  
**the XML output DSN is missing.**

**Explanation:**

The XML output DSN was not specified.

**User response:**

Specify an XML output DSN.

---

**ARY1529E**      **An XML update job is needed, but**  
**the XML output prefix is missing.**

**Explanation:**

The XML output prefix was not specified.

**User response:**

Specify the XML output prefix.

---

**ARY1530E**      **An XML update job is needed, but**  
**the XML template DSN is missing.**

**Explanation:**

The XML template DSN was not specified.

**User response:**

Specify an XML template DSN.

---

**ARY1531E**      **The XML template data set could**  
**not be allocated.**

**Explanation:**

Unable to allocate the needed DSN.

**User response:**

Make sure the DSN exists and is accessible.

---

**ARY1532E**      **Control file loadlib information**  
**could not be obtained for *ssid***

**Explanation:**

The control file is not up to date with this Db2 SSID.

**User response:**

Update the control file.

---

**ARY1533E**      **The XML template data set could**  
**not be opened.**

**Explanation:**

The data set was allocated but could not be opened.

**User response:**

Contact IBM Software Support.

---

**ARY1534E**      **The XML job output data set/**  
**member could not be allocated.**

**Explanation:**

The supplied data set could not be allocated.

**User response:**

Make sure authority exists to allocate.

---

**ARY1535E**      **The XML job output data set/**  
**member could not be opened.**

**Explanation:**

The data set was allocated but could not be opened.

**User response:**

Check for proper access authority.

---

**ARY1536E**      **The XML template does not**  
**conform to the automatically**  
**generated guidelines.**

**Explanation:**

The XML template generated by Db2 Recovery Expert for z/OS has been altered to the point that it does not conform to expected design.

**User response:**

Regenerate the XML template.

---

**ARY1537I**      **XML update job created for**  
**SSID=*ssid*.**

**Explanation:**

The job has been created.

**User response:**

No action is required.

---

**ARY1538E      The XML template member does not exist in the PDS.****Explanation:**

The template name specified does not exist.

**User response:**

Verify the PDS member names and data set names involved.

---

**ARY1539E      The XML job generation failed.****Explanation:**

There were some problems during the XML job generation step.

**User response:**

Analyze error messages in the output. If unable to determine the problem, contact IBM Software Support.

---

**ARY1540E      Could not obtain SSID, user indicator from input parameters.****Explanation:**

Db2 Recovery Expert for z/OS could not obtain the SSID and user indicator from the input parameters.

**User response:**

Verify that the correct SSID and user indicator values have been specified.

---

**ARY1541E      Invalid parameter format****Explanation:**

The parameter format you specified is not valid.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1542E      No SYSOUT DD was found.****Explanation:**

Db2 Recovery Expert for z/OS could not find the SYSOUT DD.

**User response:**

Verify that the SYSOUT DD is available.

---

**ARY1543E      Could not open SYSOUT DD.****Explanation:**

Db2 Recovery Expert for z/OS could not open the SYSOUT DD.

**User response:**

Verify that the SYSOUT DD is available.

---

**ARY1544E      Invalid SYSOUT DD LRECL value.****Explanation:**

The SYSOUT DD LRECL is invalid.

**User response:**

Specify a valid SYSOUT DD LRECL value.

---

**ARY1545E      No SYSIN DD is not found.****Explanation:**

Db2 Recovery Expert for z/OS could not find the SYSIN DD.

**User response:**

Verify that the SYSIN DD is available.

---

**ARY1546E      Could not open SYSIN data set for input.****Explanation:**

Db2 Recovery Expert for z/OS could not open the SYSIN DD.

**User response:**

Verify that the SYSIN DD is available.

---

**ARY1547E      Invalid data in SYSIN. Valid data set name is expected.****Explanation:**

Data set name that was specified is not valid.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1548E      *task\_number* Unrecognized function symbol *symbol*.****Explanation:**

An internal error occurred.

**User response:**

Contact IBM Software Support.

---

**ARY1549E      *task\_number* Failed to get the number of physical fragments. The MMGR driver call finished with MMGR\_EXTENT\_COUNT\_NA return value.****Explanation:**

An internal error occurred when calculating the number of extents for a VSAM data set.

**User response:**

Contact IBM Software Support.

---

**ARY1550E      *task\_number* Incorrect input: SpaceType = char *char* hex *hex*.****Explanation:**

An invalid value was specified for space type.

**User response:**

Contact IBM Software Support.

---

**ARY1551E      *task\_number* Incorrect input: DSSIZE = *dssize*.****Explanation:**

An invalid data set size was specified.

**User response:**

Contact IBM Software Support.

---

**ARY1552E      *task\_number* Incorrect input: PageSize = *pagesize*.**

**Explanation:**

An invalid page size was specified.

**User response:**

Contact IBM Software Support.

---

**ARY1559E** *task\_number* The data set *data\_set\_name* has reached the maximum size *size* GB. There is no more space available.

**Explanation:**

The data set is too small to hold all of the data.

**User response:**

Re-create the object with a larger data set size.

---

**ARY1560E** *task\_number* Failed to open data set *data\_set\_name*. The MMGR driver RC = *return\_code*.

**Explanation:**

An error occurred when opening the data set for an object.

**User response:**

Contact IBM Software Support.

---

**ARY1561E** *task\_number* Failed to write data in data set *data\_set\_name*. RC = *return\_code*, RSN = *reason\_code*, MMGR RC = *return\_code*, MMGR RSN = *reason\_code*.

**Explanation:**

An internal error occurred when attempting to write data to the indicated data set.

**User response:**

Contact IBM Software Support.

---

**ARY1562E** *task\_number* Failed to close data set *data\_set\_name*. RC = *return\_code*.

**Explanation:**

The indicated data set could not be closed.

**User response:**

Contact IBM Software Support.

---

**ARY1563E** *task\_number* The connection pointer is NULL before read from data set.

**Explanation:**

This message indicates an incorrect connection pointer initialization value.

**User response:**

Contact IBM Software Support.

---

**ARY1564E** *task\_number* The read/write buffer size is 0 before read from data set.

**Explanation:**

There is no allocated memory.

**User response:**

Contact IBM Software Support.

---

**ARY1565E** *task\_number* The buffering area size *size* bytes is not enough to store read/write buffer size *size* bytes.

**Explanation:**

The buffering area is insufficient to store all of the data.

**User response:**

Contact IBM Software Support.

---

**ARY1566E** *task\_number* The read/write buffer pointer is NULL.

**Explanation:**

The pointer to the allocated buffer area is corrupted.

**User response:**

Contact IBM Software Support.

---

**ARY1567E** *task\_number* Failed to read data from data set *data\_set\_name*. RC = *return\_code*, RSN = *reason\_code*, MMGR RC = *return\_code*, MMGR RSN = *reason\_code*.

**Explanation:**

An error occurred while reading data from the data set.

**User response:**

Contact IBM Software Support.

---

**ARY1568W** *task\_number* EOF reached at read from data set *data\_set\_name*. Number of bytes read *data\_size*.

**Explanation:**

An error occurred during the read process. The end of data set was reached while reading data.

**User response:**

Contact IBM Software Support.

---

**ARY1569E** *task\_number* The connection pointer is NULL before write to data set.

**Explanation:**

The connection pointer initialization value is invalid.

**User response:**

Contact IBM Software Support.

---

**ARY1570E** *task\_number* The read/write buffer size is 0 before write to data set.

**Explanation:**

The buffering area was not correctly initialized.

**User response:**

Contact IBM Software Support.

---

**ARY1571E** *task\_number* Failed to write data to data set *data\_set\_name*. RC = *return\_code*, RSN = *reason\_code*, MMGR RC = *return\_code*, MMGR RSN = *reason\_code*.

**Explanation:**

An error occurred while writing data to the data set.

**User response:**

Contact IBM Software Support.

---

**ARY1572E** *task\_number* Current state of data set *data\_set*. H-A-RBA=*HARBA\_bytes(HARBA\_CI)*, H-U-RBA (CAT) = *HURBA\_bytes(HURBA\_CI)*, H-U-RBA (CUR) = *HURBA\_bytes(HURBA\_CI)*, CI = *CI\_size*, W.Offset/Size=*data\_offset/buffer\_size*.

**Explanation:**

This message accompanies message ARY1571E.

**User response:**

Contact IBM Software Support.

---

**ARY1573E** *task\_number* Failed to extend data set *data\_set*. DSSIZE=*dssize\_gb(dssize\_CI)*, Requested (CIs) = *CIs*, Extents = *physical\_extent\_count*.

**Explanation:**

An error occurred while extending a data set.

**User response:**

Contact IBM Software Support.

---

**ARY1574E** *task\_number* No more extents available for VSAM data set *data\_set*.

**Explanation:**

No more physical extents available for data set *data\_set*.

**User response:**

Contact IBM Software Support.

---

**ARY1575E** *task\_number* Failed to generate ACB to open data set *data\_set\_name*.

**Explanation:**

ACB generation for the data set *data\_set\_name* failed.

**User response:**

Contact IBM Software Support.

---

**ARY1576E** *task\_number* Failed to sequentially open VSAM data set

*data\_set\_name*. RC = *return\_code*, RSN = *reason\_code*.

**Explanation:**

The data set *data\_set\_name* failed to open.

**User response:**

Review the corresponding error messages to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY1577E** *task\_number* Failed to sequentially close VSAM data set *data\_set\_name*. RC = *return\_code*, RSN = *reason\_code*.

**Explanation:**

The data set *data\_set\_name* failed to close.

**User response:**

Review the corresponding error messages to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY1578W** The number of records to sort cannot be estimated - RC=*return\_code*.

**Explanation:**

The number of records to sort in the image copy data sets cannot be estimated. The default value will be used to initialize the sort program.

**User response:**

No action is required.

---

**ARY1579E** The XLAT\_IN\_COPYPAGESF cannot be specified without XLAT\_IN\_DSN.

**Explanation:**

The XLAT\_IN\_COPYPAGESF was specified but XLAT\_IN\_DSN was not specified for space.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY1580E** The SYSINARY DD card has invalid LRECL. LRECL must not be greater than 80.

**Explanation:**

LRECL of the input stream DD should not be bigger than 80.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY\_COM\_INT** Invalid message id: *message\_id*  
**ERNAL\_ERROR**

**Explanation:**

This is an internal error for message processing.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0000** Invalid DD name length, value  
**E** *dd\_name*

**Explanation:**

This is an internal processing error. DD name *dd\_name* is not valid.

**User response:**

Correct the JCL and resubmit the job.

---

**ARY\_COM0001** Allocation error, data set *data\_set*,  
**E** DD name *dd\_name*

**Explanation:**

Allocation of *data\_set* data set has failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0002** Successful allocation, DD name  
**I** *dd\_name*

**Explanation:**

DD *dd\_name* was allocated successfully.

**User response:**

No action is required.

---

**ARY\_COM0003** Failed to generate ACB to open  
**E** data set DD *dd\_name*

**Explanation:**

ACB generation for DD *dd\_name* has failed.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0004** Successful reset, LDS data set DD  
**I** name *dd\_name*

**Explanation:**

Data set for DD *dd\_name* was reset successfully.

**User response:**

No action is required.

---

**ARY\_COM0005** MMGR Open error,  
**E** *rc=rc*, MMGR *rc=mmgr\_rc*,  
*rsn=hex\_reason\_code*, DD  
name=*dd\_name*

**Explanation:**

Media Manager open of DD *dd\_name* failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0006** Successful open, LDS data set DD  
**I** name *dd\_name*

**Explanation:**

Data set for DD *dd\_name* was opened successfully.

**User response:**

No action is required.

---

**ARY\_COM0007** MMGR write error, *rc=rc*, MMGR  
**E** *rc=mmgr\_rc*, *rsn=hex\_reason\_code*

**Explanation:**

Media Manager write to DD failed.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0008** Successful write to LDS  
**I**

**Explanation:**

Write to object data set was successful.

**User response:**

No action is required.

---

**ARY\_COM0009** MMGR read error, *rc=rc*, MMGR  
**E** *rc=mmgr\_rc*, *rsn=hex\_reason\_code*

**Explanation:**

Media Manager read from DD failed.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0010** Successful read from LDS  
**I**

**Explanation:**

Read from object data set was successful.

**User response:**

No action is required.

---

**ARY\_COM0011** Close error, DD *dd\_name*,  
**E** *rc=rc*, MMGR *rc=mmgr\_rc*,  
*rsn=hex\_reason\_code*

**Explanation:**

Media Manager close of DD *dd\_name* failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0012** Successful close, LDS data set DD  
**I** name *dd\_name*

**Explanation:**

Data set for DD *dd\_name* was closed successfully.

**User response:**

No action is required.

---

**ARY\_COM0013** Free error, DD name *dd\_name*  
**E**

**Explanation:**

Freeing of DD *dd\_name* has failed.

**User response:**



Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0014**    **Successful free, data set DD name**  
**I**                    **dd\_name**

**Explanation:**

DD *dd\_name* was successfully freed.

**User response:**

No action is required.

---

**ARY\_COM0015**    **Invalid page size value in page,**  
**E**                    **page\_size\_value\_in\_hex**

**Explanation:**

During page processing page size value *page\_size\_value\_in\_hex* was extracted from page and it is not valid.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0016**    **Invalid data set size value in page,**  
**E**                    **data\_set\_size\_value\_in\_hex**

**Explanation:**

During page processing data set size value *data\_set\_size\_value\_in\_hex* was extracted from page and it is not valid.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0017**    **Invalid partition number value in**  
**E**                    **page set, partition\_number\_in\_hex**

**Explanation:**

During page processing partition number value *partition\_number\_in\_hex* was extracted from page and it is not valid.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0018**    **ID in page set value\_in\_page\_set**  
**E**                    **differs with user-specified value**  
                         **user\_specified\_value**

**Explanation:**

The source value specified in OBID translation parameter (*user\_specified\_value*) is not the same that was found in page set (*value\_in\_page\_set*).

**User response:**

If incorrect OBID translation values were specified, correct the input and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0019**    **DD name dd\_name will be used for**  
**I**                    **data set data\_set**

**Explanation:**

DD name *dd\_name* was generated to allocate data set *data\_set*.

**User response:**

No action is required.

---

**ARY\_COM0020**    **Translate field 'field\_name' from**  
**I**                    **src\_value to trg\_value**

**Explanation:**

*field\_name* field is translated from *src\_value* to *trg\_value* in the currently processed page.

**User response:**

No action is required.

---

**ARY\_COM0021**    **OBID translation list does not**  
**E**                    **contain field\_name value found in**  
                         **page set, value**

**Explanation:**

XMLID translate source values do not contain *value*, that was found in page set.

**User response:**

Contact IBM Software Support. Provide the output of ARYS4XSI program, and the output of the job that contains this message.

---

**ARY\_COM0022**    **OBIDRECsuffix is present**  
**I**

**Explanation:**

During page processing OBIDRECsuffix was found set in page.

**User response:**

No action is required.

---

**ARY\_COM0023**    **OBIDREC fragment is too small**  
**I**

**Explanation:**

Page processing diagnosis informational message.

**User response:**

No action is required.

---

**ARY\_COM0024**    **PARM string = 'parm\_string\_value'**  
**I**

**Explanation:**

JCL PARM value specified for this run.

**User response:**

No action is required.

---

**ARY\_COM0025**    **Token 'token\_value' is too**  
**E**                    **long, max allowed length is**  
                         **allowed\_length**

**Explanation:**

Token value *token\_value* length is longer than length allowed for this parameter value.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0026 Invalid data set name, 'data\_set'**  
**E****Explanation:**

Data set *data\_set* name is not valid.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0027 Invalid value 'token\_string\_value' for token 'token\_name'**  
**E****Explanation:**

String value *token\_string\_value* is invalid for the parameter *token\_name*.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0028 Invalid value 'token\_decimal\_value' for token 'token\_name'**  
**E****Explanation:**

Decimal value *token\_decimal\_value* is invalid for the parameter *token\_name*.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0029 Unknown token token\_value**  
**E****Explanation:**

The unrecognizable parameter was specified.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0030 Token 'token\_name' is required, but was not specified**  
**E****Explanation:**

The syntax of executing program requires token *token\_name* to be specified, but it was not found.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0031 Incorrect format for OBID translation: ID value cannot be parsed or passed value is zero**  
**E****Explanation:**

OBID translation parameter format is not correct, one of the values is either not specified or equals to zero.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0032 Cannot find DD dd\_name**  
**E****Explanation:**

Either required DD *dd\_name* is not specified in input JCL, or internal error has occurred.

**User response:**

If required DD is missing, Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0034 No token was found**  
**E****Explanation:**

Token with a parameter or parameter's value was expected, but no token was found in input.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0035 Token 'token\_value' was found**  
**I****Explanation:**

Token *token\_value* was found in input DD.

**User response:**

No action is required.

---

**ARY\_COM0036 ID map entry the record belongs to is not found on the page**  
**E****Explanation:**

Internal log processing error.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0037 Unexpected token was found: token\_value. Possible tokens are: valid\_token\_values**  
**E****Explanation:**

One of *valid\_token\_values* was expected instead of *token\_value*.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0038 token\_name must be specified only once**  
**E****Explanation:**

Only one occurrence of the token *token\_name* is allowed in program input.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0039** *token\_name* is specified without  
**E** a value or the specified value is  
invalid. Valid value is required

**Explanation:**

Value for token *token\_name* is missing or is incorrect.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0040** QSAM open failed, DD name  
**E** *dd\_name*

**Explanation:**

Open of QSAM for DD *dd\_name* failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0041** QSAM was successfully opened,  
**I** DD name *dd\_name*

**Explanation:**

Data set for DD *dd\_name* was opened successfully.

**User response:**

No action is required.

---

**ARY\_COM0042** QSAM was successfully closed, DD  
**I** name *dd\_name*

**Explanation:**

Data set for DD *dd\_name* was closed successfully.

**User response:**

No action is required.

---

**ARY\_COM0043** Error has occurred during parser  
**E** initialization

**Explanation:**

This is an internal error.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0044** No input data was specified  
**E**

**Explanation:**

Input for the program is empty.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0045** Error has occurred during freeing  
**E** of object in DLL Node

**Explanation:**

This is an internal error.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0046** Service must be run as APF-  
**S** authorized program

**Explanation:**

One or more of the load libraries allocated for the program execution is not APF authorized.

**User response:**

Program requires load libraries to be authorized, they should be added to the APF-authorized list.

---

**ARY\_COM0047** COM0047E Cannot locate data set  
**E** *data\_set*

**Explanation:**

Data set *data\_set* cannot be located on the current system.

**User response:**

Verify that data set exists and cataloged. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0048** Page to be written is *page\_type*  
**I** page

**Explanation:**

Page of *page\_type* type is to be written.

**User response:**

No action is required.

---

**ARY\_COM0049** Unable to determine data set  
**E** number from its name, data set  
*data\_set*

**Explanation:**

May be internal error. Cannot parse data set number from its name.

**User response:**

Verify that data set exists and cataloged. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0050** Empty PARM string, there is  
**E** nothing to parse

**Explanation:**

PARM parameter for the program step was specified with empty value.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0051** Unexpected PARM token was  
**E** found: *token\_value*. Possible  
tokens are: *valid\_token\_values*

**Explanation:**

Value *token\_value* specified in PARM parameter for the program step is not recognizable.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0052** Parameter *parm\_name\_1* requires parameter *parm\_name\_2* to be specified  
**E**

**Explanation:**

Parameters *parm\_name\_1* and *parm\_name\_2* should be specified together.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0053** Invalid *volser\_value*, maximum allowed length is *maximum\_allowed\_length*  
**E**

**Explanation:**

Value *volser\_value* is not valid *volser* name.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0054** Dynaloc function finished with error, *rc = rc*, info *rs = info\_rs*, error *rs = error\_rs*  
**E**

**Explanation:**

Problem has occurred during dynaloc function execution.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0055** The type of read page was not recognized  
**E**

**Explanation:**

Page processor cannot recognize type of the page that was read.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0056** Cannot parse input XML STRINGID file, data format error  
**E**

**Explanation:**

The format of data in XMLSTRINGID file is incorrect and cannot be parsed.

**User response:**

If XMLSTRINGID file was manually modified, the changes should be rolled back. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0057** *module\_name* module LOAD failed  
**E**

**Explanation:**

LOAD of module *module\_name* was not successful.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0058** Error (action *action*, code *rc*, reason *rs*) occurred during connect to Db2 subsystem *subsystem\_name*  
**E**

**Explanation:**

The action *action* for Db2 subsystem *subsystem\_name* failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0059** Successfully connected to Db2 subsystem *subsystem\_name*  
**I**

**Explanation:**

Connection to *subsystem\_name* subsystem was established successfully.

**User response:**

No action is required.

---

**ARY\_COM0060** Error (code *rc*, reason *rs*) occurred during disconnect from Db2 subsystem *subsystem\_name*  
**E**

**Explanation:**

Error has occurred during disconnect from Db2 subsystem *subsystem\_name*.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0061** Successfully disconnected from Db2 subsystem *subsystem\_name*  
**I**

**Explanation:**

Connection to *subsystem\_name* subsystem was closed successfully.

**User response:**

No action is required.

---

**ARY\_COM0062** Db2 version *version.mod\_level* is not supported  
**E**

**Explanation:**

The program does not support version *version.mod\_level*.

**User response:**

Specify the subsystem of the supported Db2 version.

---

**ARY\_COM0063** *db2\_tiar\_message\_text*  
**I**

**Explanation:**

Message from Db2 DSNTIAR.

**User response:**

No action is required.

---

**ARY\_COM0064** **SQL warning occurred, warning  
W text to follow**

**Explanation:**

During query execution the warning has occurred. Text of the warning follows this message.

**User response:**

If warning affects the results of the program, contact IBM Software Support.

---

**ARY\_COM0065** **SQL error occurred, error text to  
E follow**

**Explanation:**

During query execution the warning has occurred. Text of the warning follows this message.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0066** **SQLERRM *sqlca\_error\_condition*  
I**

**Explanation:**

Impossible to print Db2 messages, because DSNTIAR was not found. Continue working.

**User response:**

No action is required.

---

**ARY\_COM0067** **Db2 version *version*, Db2  
I effective version *effective\_version*,  
modification level *mod\_level*, SQL  
modification level *sql\_mod\_level*,  
catalog modification level  
*catalog\_mod\_level*, decimal  
separator *separator***

**Explanation:**

Information about Db2 subsystem the program is connected to.

**User response:**

No action is required.

---

**ARY\_COM0068** **Db2 command failed, RC *rc*, RS *rs*,  
E command: *command\_text***

**Explanation:**

Db2 command execution failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0069** **Db2 command failed, diag  
E RC *diag\_rc*, diag RS *diag\_rs*,  
command: *command\_text***

**Explanation:**

Db2 command execution failed, diagnosis information was returned.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0070** ***db2\_command\_message\_text*  
I**

**Explanation:**

Message from Db2 Command execution output.

**User response:**

No action is required.

---

**ARY\_COM0071** **Metal C environment initialization  
E has failed**

**Explanation:**

The program was unable to initialize Metal C environment.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0072** **New string with id  
I *stringid\_value* was added to  
SYSIBM.SYSXMLSTRINGS table**

**Explanation:**

The new string was added to SYSIBM.SYSXMLSTRINGS, and it has id *stringid\_value*.

**User response:**

No action is required.

---

**ARY\_COM0073** **The value of sequence  
I *sequence\_name* was increased by  
*value***

**Explanation:**

The *sequence\_name* DOCID sequence was update by value *value*.

**User response:**

No action is required.

---

**ARY\_COM0074** **Cannot detect STEPLIB and  
E JOBLIB in TIOT**

**Explanation:**

While trying to get the list of load libs, the program was unable to find STEPLIB or JOBLIB DD in TIOT.

**User response:**

Correct the JCL and resubmit the job. If JCL is correct, contact IBM Software Support.

---

**ARY\_COM0075** **Decimal *function\_name* processing  
E error, code *rc***

**Explanation:**

Internal error during processing of decimal values.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0076** Unexpected end of command  
**E** response, cannot parse  
*value\_to\_parse*

**Explanation:**

During parsing of command response, expected keyword or its value (*value\_to\_parse*) was not found.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0077** Log record number  
**I** '*record\_number*' contains data of  
*data\_type*

**Explanation:**

Log record contains data of *data\_type* type.

**User response:**

No action is required.

---

**ARY\_COM0078** Log record number  
**E** '*record\_number*' is an unsupported  
log record type

**Explanation:**

Input log data set contains record of the type that the program does not support.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0079** Low Level Space Map page  
**I** update: pages in the page list are  
deallocated

**Explanation:**

Informational message from log processing about Low Level Space Map page update.

**User response:**

No action is required.

---

**ARY\_COM0080** Low Level Space Map page update:  
**I** pages in the page list are allocated

**Explanation:**

Informational message from log processing about Low Level Space Map page update.

**User response:**

No action is required.

---

**ARY\_COM0081** Holes removal was called, the  
**I** record length *rec\_length*, the offset  
*offset\_value*, and the number of  
free bytes in the contiguous free  
area *bytes\_num*

**Explanation:**

Diagnosis information from log processing regarding holes removal on page.

**User response:**

No action is required.

---

**ARY\_COM0082** Record overflow: record length  
**E** *rec\_length*, number of free bytes in  
contiguous free area *bytes\_num\_1*,  
number of free bytes *bytes\_num\_2*

**Explanation:**

Internal log processing error.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0083** Hash anchor *anchor\_value* was not  
**E** found on the page

**Explanation:**

Internal log processing error.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0084** Insert log record, ID of the record  
**I** *rec\_id*, number of ID map entries  
in use *number\_of\_entries*

**Explanation:**

Informational message from log processing about insert log record.

**User response:**

No action is required.

---

**ARY\_COM0085** Record to be inserted is not  
**E** marked as deleted

**Explanation:**

Internal log processing error.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0086** Record will be inserted into  
**I** pseudo-deleted record

**Explanation:**

Informational message from log processing about insert log record.

**User response:**

No action is required.

---

**ARY\_COM0087** Delete log record, ID of the record  
**I** *rec\_id*, number of ID map entries  
in use *number\_of\_entries*

**Explanation:**

Informational message from log processing about delete log record.

**User response:**

No action is required.

---

**ARY\_COM0088** Record to be deleted already  
**E** marked as deleted

**Explanation:**

Internal log processing error.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0089 E Record to be updated already has been deleted**

**Explanation:**

Internal log processing error.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0090 E Offset to the changed data is too small**

**Explanation:**

Internal log processing error.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0091 I In place update, variation number *variation\_number*, ID of the record to be updated '*rec\_id*'**

**Explanation:**

Informational message from log processing about update log record.

**User response:**

No action is required.

---

**ARY\_COM0092 I Non in place update, ID of the record to be updated '*rec\_id*'**

**Explanation:**

Informational message from log processing about update log record.

**User response:**

No action is required.

---

**ARY\_COM0093 E The length of the record to be updated *rec\_length* does not match the old record length from the log record *log\_rec\_length***

**Explanation:**

Internal log processing error.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0094 I Length of the updated record became bigger: old *old\_length*, new *new\_length***

**Explanation:**

Informational message from log processing about update log record.

**User response:**

No action is required.

---

**ARY\_COM0095 I Length of the updated record became smaller: old *old\_length*, new *new\_length***

**Explanation:**

Informational message from log processing about update log record.

**User response:**

No action is required.

---

**ARY\_COM0096 E Unknown update type of the data page update log record**

**Explanation:**

Input log data set contains record of the update type that the program does not recognize.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0097 I The log record is an undo type log record that is not yet supported**

**Explanation:**

The program does not support UNDO log records.

**User response:**

No action is required.

---

**ARY\_COM0098 I The log record contains update to hash anchor**

**Explanation:**

Informational message from log processing about update log record.

**User response:**

No action is required.

---

**ARY\_COM0099 E Unknown data page update log record.**

**Explanation:**

Input log data set contains update record that the program cannot recognize.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0100 E Unknown hole type, *pgsflags* = *pgsflags\_value*, offset to the hole = *offset\_value***

**Explanation:**

Page processor cannot recognize the hole type.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0101 I Previous offset to contiguous free are *old\_offset\_value*, new offset *new\_offset\_value***

**Explanation:**

Page processor diagnosis message.

**User response:**

No action is required.

---

**ARY\_COM0102 E *qualifier\_type* qualifier was not found in data set name *data\_set***

**Explanation:**

Qualifier was not found in data set name.

**User response:**

Correct the data set name in the input parameters and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0103** Failed to get the number of physical fragments. The MMGR driver call finished with MMGR\_EXTENT\_COUNT\_NA return value  
**E**

**Explanation:**

An internal error occurred when calculating the number of extents for VSAM data set.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0104** The dataset *data\_set* has reached the maximum size *max\_size\_in\_GB* GB. There is no more space available.  
**E**

**Explanation:**

It is impossible to extent data set *data\_set* due to reaching its maximum size.

**User response:**

Try to add additional volumes to the data set that need to be extended and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0105** Failed to extend dataset *data\_set*, DSSIZE=*dssize\_in\_GB(dssize\_in\_CI)*, Requested (Cyls/Cis) = *cylinders/CI*, P.Extents = *extents\_count*, L.Extents = *next\_extent\_number*  
**E**

**Explanation:**

Extension of the data set failed, diagnosis information about extension parameters is in the message text.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0106** Failed to sequentially open data set DD *dd\_name*, rc=*return\_code*, rsn= *reason\_code*  
**E**

**Explanation:**

Open of DD *dd\_name* has failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0107** Failed to sequentially close data set DD *dd\_name*, rc=*return\_code*, rsn= *reason\_code*  
**E**

**Explanation:**

Close of DD *dd\_name* has failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0108** Program version is *APAR\_release\_number*  
**I**

**Explanation:**

This informational message indicates which version of the product (or in some cases, a product component) is running.

**User response:**

No action is required. If you need assistance locating information about the APAR, contact IBM Software Support.

---

**ARY\_COM0109** CSI call has failed, rc=*return\_code*  
**E**

**Explanation:**

Catalog Search Interface call has failed with the return code *return\_code*.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0110** CSI call completed successfully  
**I**

**Explanation:**

This informational message indicates that Catalog Search Interface call completed successfully.

**User response:**

No action is required.

---

**ARY\_COM0111** CSI Return Work Area error, code=*processing\_code*  
**E**

**Explanation:**

There were issues during Catalog Search Interface Return Area processing.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0112** CSI requested data set was not found, code=*return\_code*, dsn = *data\_set\_name*  
**E**

**Explanation:**

Data set *data\_set\_name* that was specified for Catalog Search Interface call was not found.

**User response:**

Verify that data set is available. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0113** Allocation error, DD name *dd\_name*  
**E**

**Explanation:**



Allocation of DD *dd\_name* has failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_COM0114 Successful free, DD name**  
**I dd\_name**

**Explanation:**

DD *dd\_name* was successfully freed.

**User response:**

No action is required.

---

**ARY\_COM0116 Cannot initialize IDCAMS**  
**E**

**Explanation:**

An internal error has occurred during IDCAMS initialization.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0117 Cannot initialize Catalog Search**  
**E Interface**

**Explanation:**

An internal error has occurred during Catalog Search Interface initialization.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0118 number\_of\_volumes candidate**  
**I volumes were added to data set**  
**data\_set\_name**

**Explanation:**

This informational message indicates how many candidate volumes were added to data set *data\_set\_name* successfully.

**User response:**

No action is required.

---

**ARY\_COM0119 number\_of\_volumes candidate**  
**I volumes were removed from data**  
**set data\_set\_name**

**Explanation:**

This informational message indicates how many candidate volumes were removed from data set *data\_set\_name* successfully.

**User response:**

No action is required.

---

**ARY\_COM0120 Error has occurred during**  
**E processing of object in DLL Node**

**Explanation:**

An internal error has occurred during doubly linked list node processing.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0121 Cannot get the static symbol table**  
**E**

**Explanation:**

The issue occurred when trying to read static system symbols.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0122 No entries in the static symbol**  
**E table were found**

**Explanation:**

There are no static system symbols, no symbols can be resolved.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0123 No entries in the static symbol**  
**E table were found for symbol**  
**symbol\_name**

**Explanation:**

The symbol *symbol\_name* was not found in the static system symbols list.

**User response:**

Contact IBM Software Support.

---

**ARY\_COM0124 No more extents available for**  
**E VSAM data set data\_set\_name**

**Explanation:**

No physical extents available for the data set *data\_set\_name*, no more space cannot be added to the data set.

**User response:**

Contact IBM Software Support.

---

**ARY\_ICA0000I Image Copy Applying Service has**  
**started**

**Explanation:**

The program execution has started.

**User response:**

No action is required.

---

**ARY\_ICA0001I XML String ID translation will be**  
**performed**

**Explanation:**

During the program execution translation of XML STRINGIDs will be performed.

**User response:**

No action is required.

---

**ARY\_ICA0002E Image Copy Applying Service**  
**initialization failure**

**Explanation:**

The program initialization process failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_ICA0003I Image Copy Applying Service initialization has completed successfully**

**Explanation:**

The program initialization completed successfully.

**User response:**

No action is required.

---

**ARY\_ICA0004E Error has occurred during program execution.**

**Explanation:**

The program execution has started.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_ICA0005E Error has occurred during Image Copy Applying Service clean up**

**Explanation:**

The program cleaning up process failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_ICA0006I Image Copy Applying Service has successfully finished**

**Explanation:**

The program execution completed successfully.

**User response:**

No action is required.

---

**ARY\_ICA0007E Empty output data set *data\_set***

**Explanation:**

Output LDS data set is empty.

**User response:**

Verify that list of output data sets for the program is correct and data sets are valid. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_ICA0008E The output data set number *ds\_num* is higher than the maximum possible number of extents (32)**

**Explanation:**

Segmented table space is processed, but the list of output data sets contains data set with the number

bigger than maximum possible number of extent data set.

**User response:**

Verify the input information and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_ICA0009I Number of the output data sets is *number\_of\_output\_ds***

**Explanation:**

Informational message with number of processed output data sets.

**User response:**

No action is required.

---

**ARY\_ICA0010E The input data set is empty**

**Explanation:**

Input image copy data set is empty.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_ICA0011E Invalid record length for input data set, *record\_len***

**Explanation:**

Input image copy data set has invalid record length.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_ICA0012E First page in input image copy is not a header page**

**Explanation:**

Input image copy data set is invalid; the first page is not a header page.

**User response:**

Verify that image copy data set is valid. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_ICA0013E Unexpected end of file occurred while reading input data set**

**Explanation:**

Input image copy data set has ended unexpectedly.

**User response:**

Verify that image copy data set is valid. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_ICA0014E Specified partition number *specified\_part* and partition number from page set *data\_set\_part* are not the same**

**Explanation:**

Partition number specified in PARTNUM parameter and the value from page set are not the same.

**User response:**

Verify that input information is correct. If unable to resolve the problem, contact IBM Software Support.

**ARY\_ICA0015I Single output data set will be used****Explanation:**

One output data set was specified and will be processed.

**User response:**

No action is required.

**ARY\_ICA0016I Segmented object is processed****Explanation:**

The object to be processed is segmented.

**User response:**

No action is required.

**ARY\_ICA0017I Partitioned object is processed****Explanation:**

The object to be processed is partitioned.

**User response:**

No action is required.

**ARY\_ICA0018I Total partitions number: *number*****Explanation:**

Partition number specified in PARTNUM parameter.

**User response:**

No action is required.

**ARY\_ICA0019I Object is using relative page numbering****Explanation:**

Object to be processed is using relative page numbering.

**User response:**

No action is required.

**ARY\_ICA0020I Object is using absolute page numbering****Explanation:**

Object to be processed is using absolute page numbering.

**User response:**

No action is required.

**ARY\_ICA0021I Partition shift count for the object: *shift\_count*****Explanation:**

Page processing diagnosis informational message.

**User response:**

No action is required.

**ARY\_ICA0022I Data set size of the object in bytes: *dssize\_in\_bytes*****Explanation:**

Data set size of object to be processed.

**User response:**

No action is required.

**ARY\_ICA0023I Page size of the object: *object\_pgsz*****Explanation:**

Page size of object to be processed.

**User response:**

No action is required.

**ARY\_ICA0024I OBID translation will be performed****Explanation:**

During the program execution translation of object IDs will be performed.

**User response:**

No action is required.

**ARY\_ICA0025I Object is the Universal table space****Explanation:**

Object to be processed is the Universal table space.

**User response:**

No action is required.

**ARY\_ICA0026I Object uses extended RBA/LRSN format****Explanation:**

Object to be processed uses extended RBA/LRSN format.

**User response:**

No action is required.

**ARY\_ICA0027I Page number '*page\_num*' was skipped****Explanation:**

Page was skipped during page processing.

**User response:**

No action is required.

**ARY\_ICA0028I Page '*page\_num*' was skipped, data set number from page set: '*data\_set\_num*'****Explanation:**

Page was skipped during page processing.

**User response:**

No action is required.

**ARY\_ICA0029I Page '*page\_num*' was skipped because it belongs to the extent LDS****Explanation:**

Segmented object is processed and page for extent data set was found during main data set processing.

**User response:**

No action is required.

---

**ARY\_ICA0030E** Calculated write position *position\_value* is bigger than data set size *dssize*

**Explanation:**

Possible internal error. The program calculated writing position that is bigger than data set size.

**User response:**

Contact IBM Software Support.

---

**ARY\_ICA0031I** Page '*page\_num*', write position: *write\_position*

**Explanation:**

Informational message with the current number of processed page and write position.

**User response:**

No action is required.

---

**ARY\_ICA0032E** Data set number *data\_set\_num* from the input image copy is higher than the total number of data sets, *total\_num\_of\_ds*

**Explanation:**

Data set number in the input image copy page is higher than number of data sets available for processing. Possibly internal error.

**User response:**

Contact IBM Software Support.

---

**ARY\_ICA0033I** Data set number *data\_set\_num*, page '*page\_num*', write position: *write\_position*

**Explanation:**

Informational message with the current number of data set, number of its processed page and write position.

**User response:**

No action is required.

---

**ARY\_ICA0034I** Number of pages successfully written to the output VSAM dataset(s): *number\_of\_pages*

**Explanation:**

Informational message with the total number of pages written to output data set(s).

**User response:**

No action is required.

---

**ARY\_ICA0035I** Incremental image copy is processed

**Explanation:**

Input image copy to be processed is incremental image copy.

**User response:**

No action is required.

---

**ARY\_IDT0000I** ID Translation Service has started

**Explanation:**

The program execution has started.

**User response:**

No action is required.

---

**ARY\_IDT0001E** ID Translation Service initialization failure

**Explanation:**

The program initialization process failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_IDT0002I** ID Translation Service initialization has completed successfully

**Explanation:**

The program initialization completed successfully.

**User response:**

No action is required.

---

**ARY\_IDT0003E** Error has occurred during ID translation

**Explanation:**

Error has occurred during program execution.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_IDT0004E** Error has occurred during ID Translation Service clean up

**Explanation:**

The program cleaning up process failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_IDT0005I** ID Translation Service has successfully finished

**Explanation:**

The program execution completed successfully.

**User response:**

No action is required.

---

**ARY\_IDT0006I** Page number '*page\_num*' was skipped

**Explanation:**

Page was skipped during page processing.

**User response:**

No action is required.

**ARY\_IDT0007E First page in input data set is not a header page****Explanation:**

Input LDS data set is invalid; the first page is not a header page.

**User response:**

Verify that LDS data set is valid. If unable to resolve the problem, contact IBM Software Support.

**ARY\_IDT0008I Page size of the object: *pgsize*****Explanation:**

Page size of object to be processed.

**User response:**

No action is required.

**ARY\_IDT0009I Object uses extended RBA/LRSN format****Explanation:**

Object to be processed uses extended RBA/LRSN format.

**User response:**

No action is required.

**ARY\_IDT0010I Object is the Universal table space****Explanation:**

Object to be processed is the Universal table space.

**User response:**

No action is required.

**ARY\_IDT0011I ID translation was skipped****Explanation:**

Parameters for OBID translation, specified in the program input, allow to skip the translation.

**User response:**

No action is required.

**ARY\_IDT0012I Page number '*page\_num*', write position: *write\_position*****Explanation:**

Informational message with the current number of processed page and write position.

**User response:**

No action is required.

**ARY\_IDT0013E The input data set is empty****Explanation:**

Input LDS data set is empty.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

**ARY\_IDT0014E Unexpected end of file occurred while reading input data set****Explanation:**

Input LDS data set has ended unexpectedly.

**User response:**

Verify that LDS data set is valid. If unable to resolve the problem, contact IBM Software Support.

**ARY\_IDT0015I Number of pages successfully updated in the input VSAM dataset(s): *number\_of\_pages*****Explanation:**

Informational message with the total number of pages updated in input data set(s).

**User response:**

No action is required.

**ARY\_IDT0016I RBA/LRSN will be reset****Explanation:**

During page processing in the program RBA/LRSN in pages will be reset.

**User response:**

No action is required.

**ARY\_IDT0017I OBID translation will be performed****Explanation:**

During the program execution translation of object IDs will be performed.

**User response:**

No action is required.

**ARY\_IDT0018I XML String ID translation will be performed****Explanation:**

During the program execution translation of XML STRINGIDs will be performed.

**User response:**

No action is required.

**ARY\_LGA0000I Log Apply Service has started****Explanation:**

The program execution has started.

**User response:**

No action is required.

**ARY\_LGA0001E Log Apply Service initialization failure****Explanation:**

The program initialization process failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_LGA0002I Log Apply Service initialization has completed successfully**

**Explanation:**

The program initialization completed successfully.

**User response:**

No action is required.

---

**ARY\_LGA0003I OBID translation will be performed**

**Explanation:**

During the program execution translation of object IDs will be performed.

**User response:**

No action is required.

---

**ARY\_LGA0004 E Error has occurred during Log Apply Service clean up**

**Explanation:**

The program cleaning up process failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_LGA0005I Log Apply Service has successfully finished**

**Explanation:**

The program execution completed successfully.

**User response:**

No action is required.

---

**ARY\_LGA0006 E Empty output data set *data\_set***

**Explanation:**

Output LDS data set is empty.

**User response:**

Verify that list of output data sets for the program is correct and data sets are valid. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_LGA0007 E Specified partition number *specified\_part* and partition number from page set *data\_set\_part* are not the same**

**Explanation:**

Partition number specified in PARTNUM parameter and the value from page set are not the same.

**User response:**

Verify that input information is correct. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_LGA0008 E The output data set number *ds\_num* is higher than the maximum possible number of extents (32)**

**Explanation:**

Segmented table space is processed, but the list of output data sets contains data set with the number bigger than maximum possible number of extent data set.

**User response:**

Verify the input information and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_LGA0009 E First page in output data set is not a header page**

**Explanation:**

Output LDS data set is invalid; the first page is not a header page.

**User response:**

Verify that LDS data set is valid. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_LGA0010I Number of the output data sets is *number\_of\_output\_ds***

**Explanation:**

Informational message with number of processed output data sets.

**User response:**

No action is required.

---

**ARY\_LGA0011I Single output data set will be used**

**Explanation:**

One output data set was specified and will be processed.

**User response:**

No action is required.

---

**ARY\_LGA0012I Segmented object is processed**

**Explanation:**

The object to be processed is segmented.

**User response:**

No action is required.

---

**ARY\_LGA0013I Partitioned object is processed**

**Explanation:**

The object to be processed is partitioned.

**User response:**

No action is required.

---

**ARY\_LGA0014I Total partitions number: *number***

**Explanation:**

Partition number specified in PARTNUM parameter.

**User response:**

No action is required.

---

**ARY\_LGA0015I** Object is using relative page numbering

**Explanation:**

Object to be processed is using relative page numbering.

**User response:**

No action is required.

---

**ARY\_LGA0016I** Object is using absolute page numbering

**Explanation:**

Object to be processed is using absolute page numbering.

**User response:**

No action is required.

---

**ARY\_LGA0017I** Partition shift count for the object: *shift\_count*

**Explanation:**

Page processing diagnosis informational message.

**User response:**

No action is required.

---

**ARY\_LGA0018I** Data set size of the object in bytes: *dssize\_in\_bytes*

**Explanation:**

Data set size of object to be processed.

**User response:**

No action is required.

---

**ARY\_LGA0019I** Page size of the object: *pgsize*

**Explanation:**

Page size of object to be processed.

**User response:**

No action is required.

---

**ARY\_LGA0020 E** Error has occurred during log apply process

**Explanation:**

Error has occurred during program execution.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_LGA0021I** Number of successfully applied records to the output VSAM dataset(s): *number\_of\_records*

**Explanation:**

Informational message with the total number of records applied to output data set(s).

**User response:**

No action is required.

---

**ARY\_LGA0022I** XML String ID translation will be performed

**Explanation:**

During the program execution translation of XML STRINGIDs will be performed.

**User response:**

No action is required.

---

**ARY\_LGA0023 E** Data set number *ds\_num* from the input log record is higher than the total number of data sets, *total\_num\_of\_ds*

**Explanation:**

Data set number in the input log record is higher than number of data sets available for processing. Possibly internal error.

**User response:**

Contact IBM Software Support.

---

**ARY\_LGA0024I** Record number '*rec\_id*' was skipped because it is non-redo record

**Explanation:**

The program supports REDO records only. The other types of records are skipped.

**User response:**

No action is required.

---

**ARY\_LGA0025I** Log record '*log\_rec\_page\_num*' was skipped, page number '*pageset\_page\_num*', data set number from the record: '*data\_set\_num*'

**Explanation:**

Log record is skipped because output data set for it was not specified in the program input, or at this point data set for different partition is processed.

**User response:**

No action is required.

---

**ARY\_LGA0026I** Data set number *data\_set\_num*, page '*page\_num*', write position: *write\_position*

**Explanation:**

Informational message with the current number of data set, number of its processed page and write position.

**User response:**

No action is required.

---

**ARY\_LGA0027I** Record '*rec\_id*' was skipped because it belongs to the extent

**LDS, page number for the record:  
'page\_num'**

**Explanation:**

Segmented object is processed and record for the page for extent data set was found during main data set processing.

**User response:**

No action is required.

---

**ARY\_LGA0028** **Calculated write position  
E write\_position is bigger than data  
set size dssize**

**Explanation:**

Possible internal error. The program calculated writing position that is bigger than data set size.

**User response:**

Contact IBM Software Support.

---

**ARY\_LGA0029I** **Page 'page\_num', write position:  
write\_position**

**Explanation:**

Informational message with the current number of processed page and write position.

**User response:**

No action is required.

---

**ARY\_LGA0030** **The input log data set is empty  
W**

**Explanation:**

Input log data set is empty.

**User response:**

If there are no logs for the object, no action is required. Otherwise, verify that the correct log data set is specified. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_LGA0031I** **Object uses extended RBA/LRSN  
format**

**Explanation:**

Object to be processed uses extended RBA/LRSN format.

**User response:**

No action is required.

---

**ARY\_LGA0032I** **Log records were collected on data  
sharing environment**

**Explanation:**

Input log data set contains records collected on data sharing environment.

**User response:**

No action is required.

---

**ARY\_LGA0033** **The type of read log record was  
E not recognized**

**Explanation:**

Input log data set contains record which type the program cannot recognize.

**User response:**

Contact IBM Software Support.

---

**ARY\_LGA0034I** **Data set number data\_set\_num,  
page 'page\_num', read position:  
read\_position**

**Explanation:**

Informational message with the current number of data set, number of its processed page and read position.

**User response:**

No action is required.

---

**ARY\_LGA0035I** **Page 'page\_num', read position:  
read\_position**

**Explanation:**

Informational message with the current number of processed page and read position.

**User response:**

No action is required.

---

**ARY\_LGA0036I** **Record 'rec\_id' was skipped  
because RBA/LRSN in page set  
is higher than RBA/LRSN in log  
record**

**Explanation:**

Record is not applied, because its RBA/LRSN is lower than RBA/LRSN in page.

**User response:**

No action is required.

---

**ARY\_XDI0000I** **XML DOCID Processing Service  
has started**

**Explanation:**

The program execution has started.

**User response:**

No action is required.

---

**ARY\_XDI0001E** **XML DOCID Processing Service  
initialization failure**

**Explanation:**

The program initialization process failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_XDI0002I** **XML DOCID Processing Service  
initialization has completed  
successfully**

**Explanation:**

The program initialization completed successfully.



**User response:**

No action is required.

---

**ARY\_XDI0003E Error has occurred during XML DOCID processing**

**Explanation:**

Error has occurred during program execution.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_XDI0004E Error has occurred during XML DOCID Processing Service clean up**

**Explanation:**

The program cleaning up process failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_XDI0005I XML DOCID Processing Service has successfully finished**

**Explanation:**

The program execution completed successfully.

**User response:**

No action is required.

---

**ARY\_XDI0006I XML DOCID value for source table *tb\_creator.tb\_name* is NULL, update is not required**

**Explanation:**

Sequence value for the source table is NULL, target sequence value does not require an update.

**User response:**

No action is required.

---

**ARY\_XDI0007I Member *ds\_member\_name* was written to *data\_set\_name***

**Explanation:**

Member *ds\_member\_name* was written to *data\_set\_name* and should be run to update DOCID sequence(s) on target data sharing member.

**User response:**

No action is required.

---

**ARY\_XDI0008I XML DOCID value for target table *tb\_creator.tb\_name* is NULL, only current data sharing member sequence value will be updated, update for other members of data sharing group is not required**

**Explanation:**

Target data sharing members, that the program is not connected to, do not require DOCID sequence(s) update, if current target table sequence value is NULL.

**User response:**

No action is required.

---

**ARY\_XDU0000 I XML DOCID Update Service has started**

**Explanation:**

The program execution has started.

**User response:**

No action is required.

---

**ARY\_XDU0001 E XML DOCID Update Service initialization failure**

**Explanation:**

The program initialization process failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_XDU0002 I XML DOCID Update Service initialization has completed successfully**

**Explanation:**

The program initialization completed successfully.

**User response:**

No action is required.

---

**ARY\_XDU0003 E Error has occurred during XML DOCID processing**

**Explanation:**

Error has occurred during program execution.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_XDU0004 E Error has occurred during XML DOCID Update Service clean up**

**Explanation:**

The program cleaning up process failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_XDU0005 I XML DOCID Update Service has successfully finished**

**Explanation:**

The program execution completed successfully.

**User response:**

No action is required.

---

**ARY\_XSI0000I XMLSTRINGID Pairing Service has started****Explanation:**

The program execution has started.

**User response:**

No action is required.

---

**ARY\_XSI0001E XMLSTRINGID Pairing Service initialization failure****Explanation:**

The program initialization process failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_XSI0002I XMLSTRINGID Pairing Service initialization has completed successfully****Explanation:**

The program initialization completed successfully.

**User response:**

No action is required.

---

**ARY\_XSI0003E Error has occurred during XMLSTRINGID pairing****Explanation:**

Error has occurred during program execution.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_XSI0004E Error has occurred during XMLSTRINGID Pairing Service clean up****Explanation:**

The program cleaning up process failed.

**User response:**

Study corresponding error messages to try to determine the problem. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_XSI0005I XMLSTRINGID Pairing Service has successfully finished****Explanation:**

The program execution completed successfully.

**User response:**

No action is required.

---

**ARY\_XSI0006E XMLSTRINGID Pairing Service requires dd\_name DD to be specified****Explanation:**

DD *dd\_name* is required for XML STRINGID pairing results writing.

**User response:**

Correct the JCL and resubmit the job. If unable to resolve the problem, contact IBM Software Support.

---

**ARY\_XSI0007I dd\_name DD found****Explanation:**

DD *dd\_name* was found for XML STRINGID pairing results writing.

**User response:**

No action is required.

---

**ARY\_XSI0008I Number of strings added to SYSIBM.SYSXMLSTRINGS table is num\_of\_added\_strings****Explanation:**

Number of strings, added to target system SYSIBM.SYSXMLSTRINGS table.

**User response:**

No action is required.

---

**ARYA002E Unsuccessful OPEN of ISPSLIB member ARYIN1****Explanation**

An OPEN request failed for the specified member.

**User response**

Verify that the member exists.

---

**ARYA003E Unsuccessful OPEN of temp file filename****Explanation**

The temporary JCL file could not be opened.

**User response**

Verify the validity of the data set name for your site.

---

**ARYA005E ISPSLIB member ARYIN1 bad record starting recid****Explanation**

A bad record was found in the specified member.

**User response**

Use the record identifier to locate the bad record and correct the entry.

---

**ARYA006E Bad date format or value**

## Explanation

A date format or value incorrect.

## User response

Use the specified formats and/or verify the correctness of YYYYMMDD values.

---

**ARYA007E**      **Bad time format or value**

## Explanation

A time format or value incorrect.

## User response

Use the specified formats and/or verify the correctness of HHMMSS values.

---

**ARYA008E**      **End date cannot be less than start date**

## Explanation

The end date must be greater than the start date for log analysis.

## User response

Correct and retry.

---

**ARYA009E**      **End time must be greater than start time when dates are equal**

## Explanation

The end time must be greater than the start time for log analysis, given that the start and end dates are equal.

## User response

Correct and retry.

---

**ARYA011E**      **No RBAs found in BSDS for the requested log range**

## Explanation

The log range specified was outside the range of the contents of the bootstrap data set (BSDS).

## User response

Verify the specified log ranges. If the log ranges look correct, the possible reasons for this error are:

1. The ranges specified were greater than the highest ranges for the currently active log.

2. Date gaps might exist in the BSDS for the Db2 logs.

If 1 above, archive the log and retry. Otherwise, check the BSDS log ranges. The Db2 supplied utility DSNJU004 may be run against the BSDS to determine the log ranges and logs known to Db2.

---

**ARYA012E**      **The BSDS start date for logs was > the requested end date**

## Explanation

The BSDS contains no information for the Db2 logs in the date range specified. The BSDS keeps only a certain amount of data for the logs based on installation settings. Once the BSDS reaches its logging maximum, the most recent archive data wraps around, thereby overlaying older log data.

## User response

The Db2 supplied utility DSNJU004 may be run against the BSDS to determine the dates and logs known to Db2.

---

**ARYA013E**      **Time conversion routine found date lower than 1990/01/01**

## Explanation

A date was found while processing the log analysis request which was earlier than 1990/01/01. This is the low date limit of the Db2 Batch Undo. This is only a limit on Db2 log dates, not on Db2 data dates.

## User response

If it seems unlikely that this date would be encountered in the logs, an internal error may have occurred; contact IBM Customer Support.

---

**ARYA014E**      **Primary space allocation not valid number.**

## Explanation

The specification for the primary allocation for the VSAM file is not valid. It must be a number between 1-99999 only.

## User response

Correct and retry.

---

**ARYA015E**      **Secondary space allocation not valid number.**

## Explanation

The specification for the secondary allocation for the VSAM file is not valid. It must be a number between 1-99999 only.

## User response

Correct and retry.

---

**ARYA016E** Filter input bad record: *recid*.

## Explanation

The filter input (DD DATAIN) contained a bad record. It is most likely that this would only occur if the user edited the input records. The offending record is shown (the first 20 characters of it).

## User response

Correct and retry.

---

**ARYA018E** OPEN failure on DATAIN input dataset

## Explanation

An OPEN request failed for the specified ddname.

## User response

Verify that the ddname exists in the JCL.

---

**ARYA019E** DATAIN input file has bad record starting with: *recid*

## Explanation

A bad record was encountered while processing the specified data set.

## User response

Use the record identifier to locate and correct the record.

---

**ARYA021E** Error occurred during error processing: Ret: *code*

## Explanation

An error occurred while error processing was in effect. The return code values are listed below:

- 14 -missing a quote in the ISPMLIB member message.
- 16/28 -OPEN failed/abended.

For 28, a bad message ID may have been entered.

- 20 -dynamic allocation failure for ISPMLIB.
- 24 -dynamic de-allocation failure for ISPMLIB.

## User response

Contact IBM Customer Support.

---

**ARYA022E** OPEN failure for GENSPT output file

## Explanation

An OPEN request for the specified data set failed.

## User response

Verify the existence of the ddname in the JCL.

---

**ARYA023E** BSDS VSAM OPEN error: Ret: *code*, Res: *code*

## Explanation

An OPEN failure occurred while attempting to access the bootstrap data set.

## User response

The return and reason codes can be found in the IBM document *DFSMS Macro Instructions For Data Sets*. Correct and retry.

---

**ARYA024E** BSDS VSAM GET error: Ret: *code*, Res: *code*

## Explanation

A GET failure occurred while attempting to access the bootstrap data set.

## User response

The return and reason codes can be found in the IBM document *DFSMS Macro Instructions For Data Sets*. Correct and retry.

---

**ARYA025E** "Misc Flags = H" requires "Generate Details = Y".

## Explanation

The high speed option requires a combined general and detail report run. The reasons for this are that high speed processing does not allow further filtering at the detail report level, and it also adds overhead during the general report run (the savings occur during the detail report only).

## User response

Correct and retry.

---

**ARYA026E**      **Table owner: *userid*, Table: *tablename*; not found in Db2**

## Explanation

The specified table owner and name was not found in Db2. Either the table has been dropped, or it never existed.

## User response

Change the table owner and name and retry.

---

**ARYA027E**      **DBname: *name*, TSname: *name*; not found in Db2**

## Explanation

The specified database/table space was not found in Db2. Either the table space has been dropped, or it never existed.

## User response

Change the database/ table space name and retry.

---

**ARYA028E**      **Any set of log range values requires both start and end values.**

## Explanation

To request either an RBA or LRSN log range, both the start and end values must both be present.

## User response

Correct and retry.

---

**ARYA029E**      **Start log range not less than end log range value.**

## Explanation

To request either an RBA or LRSN log range, the start value must be less than the end value.

## User response

Correct and retry.

---

**ARYA032E**      **No point-in-time conversion was found.**

## Explanation

An interface request was made to convert between a date/time, LRSN, or RBA values. However, no conversion was possible. This is most likely due to bad input values. For example, if the requested input value was a date/time value that is beyond the current date/time, this error would occur.

## User response

Validate your input and retry.

---

**ARYA033E**      **No SSID found for details report**

## Explanation

No SSID was found which may mean that no database activity report (general) was run prior to running the detail report.

## User response

Verify that the general report was run.

---

**ARYA034E**      **The specified end date/time is greater than the current date/time**

## Explanation

The end date/time specified is later than the current date/time, which is not allowed.

## User response

Correct the end date/time to specify a date/time less than the current date/time.

---

**ARYA035E**      **The field is invalid**

## Explanation:

Character fields must start with a valid character. Wildcards are not currently supported in any fields.

## User response:

Make sure the field conforms to the specified format, if one is provided. Correct the input and retry.

---

**ARYA036E**      **The requested filter object *object* was not found.**

## Explanation

The object was not found in Db2 and may have been either typed incorrectly or dropped from Db2. Dropped objects cannot be used as filters for the log analysis. If a wildcard is present, that means no matching objects were found and this is considered an invalid filter.

## User response

Verify the correctness of the object name and its existence in the specified Db2 subsystem.

---

**ARYA037E**      **Process halted, memory exhausted for name.**

## Explanation

An internal storage area was filled beyond capacity and the processing was halted at that point.

## User response

Narrow your filter ranges and retry. If this occurs frequently, contact your product administrator to alert vendor.

---

**ARYA038E**      **Unsuccessful OPEN of the REFILE.**

## Explanation

The REFILE could not be opened.

## User response

Verify the existence of the DD named REFILE in your JCL. Also, verify the correctness of the associated data set name.

---

**ARYA039E**      **Unsuccessful OPEN for DD ROWDATA, reason code: code.**

## Explanation

The VSAM file associated with the ROWDATA DD statement could not be opened. The reason code is a standard OS/390® VSAM error code.

## User response

Verify the existence of the ROWDATA DD statement in your JCL and the associated data set name.

---

**ARYA040E**      **Unsuccessful PUT for ROWDATA DD, reason code: code.**

## Explanation

The VSAM file associated with the ROWDATA DD statement could not be written to.

## User response

Check the reason code included with the message in the IBM document *DFSMS Macro Instructions For Data Sets*.

---

**ARYA041E**      **CATFILE lookup error: code**

## Explanation

The CATFILE holds Db2 catalog information generated during the general report creation for the log analysis. This CATFILE can only be used with the REFILE generated in the same batch run. This message may indicate a mismatch between the files. It is also possible that a filter was used in the detail report that did not exist in the general report (for example, TABLE X was requested, but it was not present in the results of the general report). The variable information may be either a table name, database and table space name, DBID/PSID/OBID, or DBID/OBID, depending on the format.

## User response

Contact IBM Customer Support.

---

**ARYA042E**      **An unknown type of log record was found. It is dumped below.**

## Explanation

A log record was read but the program could not decipher its type based on known log record mappings. The first 70 bytes of the offending log record are dumped out with this message.

## User response

Notify your product administrator.

---

**ARYA043E**      **GENCB for ACB failed in ARYPGR: return code: code.**

## Explanation

The GENCB statement failed in the specified program.

## User response

Check the IBM document *DFSMS Macro Instructions For Data Sets* for return code explanations.

---

**ARYA044E**      **GENCB for RPL failed in ARYPGR: return code: code.**

## Explanation

The GENCB statement failed in the specified program.

## User response

Check the IBM document *DFSMS Macro Instructions For Data Sets* for return code explanations.

---

**ARYA045E**      **OPEN err DSN: name, res cde: code.**

## Explanation

The OPEN request failed for the named data set.

## User response

Verify validity of the data set name. Check the IBM document *DFSMS Macro Instructions For Data Sets* for reason code explanations.

---

**ARYA046E GET err DSN: name, res cde: code.**

## Explanation

The GET request failed for the named data set.

## User response

Check the IBM document *DFSMS Macro Instructions For Data Sets* for reason code explanations.

---

**ARYA047E CAF error: Unable to CONNECT to SSID: ssid.**

## Explanation

The Call Attach Facility was unable to CONNECT to the named subsystem.

## User response

Verify that the subsystem name is correct and that is up and running.

---

**ARYA048E CAF error: Unable to OPEN plan: name.**

## Explanation

The Call Attach Facility was unable to OPEN the named PLAN.

## User response

Verify that the PLAN name is correct and that it has been bound.

---

**ARYA049E OPEN failed for PLOGD DD dataset.**

## Explanation

The OPEN request for the PLOGD DD failed.

## User response

This should not occur; contact IBM Customer Support.

---

**ARYA050E OPEN err for ROWDATA, res cde: code.**

## Explanation

The VSAM file associated with the ROWDATA DD statement could not be opened.

## User response

Check the reason code included with the message in the IBM document *DFSMS Macro Instructions For Data Sets* for descriptions of VSAM OPEN errors.

---

**ARYA051E GET err for ROWDATA, res cde: code.**

## Explanation

The VSAM file associated with the ROWDATA DD statement could not be written to.

## User response

Check the reason code included with the message in the IBM document *DFSMS Macro Instructions For Data Sets* for descriptions of VSAM GET errors.

---

**ARYA052E PUT err for ROWDATA, res cde: code.**

## Explanation

The VSAM file associated with the ROWDATA DD statement could not be written to.

## User response

Check the reason code included with the message in the IBM document *DFSMS Macro Instructions For Data Sets* for descriptions of VSAM PUT errors.

---

**ARYA053E OPEN error for DD FRMTFILE.**

## Explanation

An OPEN attempt failed for this DD statement.

## User response

This should not occur; contact IBM Customer Support.

---

**ARYA054E OPEN error for DD CATFILE.**

## Explanation

An OPEN attempt failed for this DD statement.

## User response

This should not occur; contact IBM Customer Support.

---

**ARYA055E OPEN error for DD REPORT.**

## Explanation

An OPEN attempt failed for this DD statement. This should not occur; contact your product administrator to notify the vendor.

## User response

This should not occur; contact IBM Customer Support.

---

**ARYA057I**      **There is no data to process for the details report. Job stops.**

## Explanation

This message will occur if a detail report is being run but the general report generated no data. It will also occur if the filters for the detail report filtered out all the data so there is nothing to process. This is not an error condition but rather an indication of end of processing as no detail report can be generated.

## User response

None required.

---

**ARYA058W**      **Not authorized to view this table: *name***

## Explanation

This warning message occurs if a table is found while processing the details report which the user is not authorized to SELECT from. The table will not be included in the details report and no more processing is done for this table.

## User response

None required.

---

**ARYA059W**      **The Db2 dataset is not found: *name***

## Explanation

This warning message occurs if the named Db2 VSAM data set cannot be allocated because it cannot be found. This would occur if the VSAM data set was deleted outside of Db2's knowledge but the object was not dropped in Db2. The table will not be included in the details report and no more processing is done for this table.

## User response

None required.

---

**ARYA060E**      **No records written to ROWDATA DD. Job stops.**

## Explanation

The vsam file associated with the ROWDATA DD statement had no records written to it. This can occur only if there were also warnings generated for the detail report run. Processing stops here because there is no data to further process and hence, no detail report can be generated.

## User response

Check the job for messages in the WARNINGS DD.

---

**ARYA061W**      **Log RID mismatch with page RID; *variable1 - variable5***

## Explanation

When reading the data page associated with a log record modification, it was determined that the data page row ID did not match the log page row ID. This causes processing to shut down for this particular table space. The table is identified by the variables in the message, listed as such: page number, row ID, DBID, PSID, and OBID. These values are all from the log record. This can occur for many reasons, such as if a table was REORGed, was recreated, or the log record data is still in the Db2 buffer pool.

## User response

If this latter case is likely, retry after a QUIESCE on the database. Otherwise, use a log-forward mode process.

---

**ARYA063W**      **OPEN failed for auth: *name***

## Explanation

While attempting to open the Db2 VSAM data set, an authorization failure occurred. You are not authorized to OPEN this data set. This table/table space will not be included in the final details report.

## User response

None required.

---

**ARYA064E**      **Dyn alloc err: DDname: *name*, Ret: *code*, Res: *code***

## Explanation

An internal dynamic allocation attempt failed for the specified ddname. The return code and reason codes are SVC 99 standard codes and can be found in the IBM manual "Authorized Assembler Services Guide" in the chapter "Requesting Dynamic Allocation Functions". The most common codes likely to be encountered are:



- 0210/0410 - ddname unavailable or in use by another user.
- 0420 - ddname associated with an already opened data set.
- 1708 - data set associated with ddname not found.

### User response

Contact IBM Customer Support.

---

**ARYA065E      Unsuccessful OPEN of *name***

### Explanation

An unsuccessful OPEN was issued for the specified ddname. The data set may not be allocated or already open.

### User response

Logging off TSO may resolve this problem.

---

**ARYA066E      Db2PARMS file bad for *ssid*,  
missing configuration information.**

### Explanation

For the SSID specified on the message, there is missing common configuration information.

### User response

Verify with your product administrator that all the necessary configuration information has been supplied for the SSID.

---

**ARYA067E      Db2PARMS file does not have  
requested SSID: *ssid***

### Explanation

The configuration file has no entry for the specified subsystem.

### User response

Edit the configuration file to add the specified subsystem.

---

**ARYA068E      DYN:DSName: *name, code, code***

### Explanation

An internal dynamic allocation attempt failed for the specified dsname. The reason code and info codes follow after the DSName field. These codes are SVC 99 standard codes and can be found in the IBM manual "Authorized Assembler Services Guide" in the chapter

"Requesting Dynamic Allocation Functions". The most common codes likely to be encountered are:

- 0210/0410 - ddname unavailable or in use by another user
- 0420 - ddname associated with an already opened data set
- 1708 - dsname not found

### User response

Contact IBM Customer Support.

---

**ARYA069E      Db2PARMS file bad for *ssid*,  
missing the log analysis parm  
data.**

### Explanation

For the SSID specified on the message, there is missing configuration data.

### User response

Verify that the log analysis has been properly configured by your product administrator and that all needed parameters were provided for the failing subsystem.

---

**ARYA070W      Uncommitted URID found and  
bypassed; *variable1 - variable4***

### Explanation

An uncommitted URID was found that matched the filter criteria. This URID is not included in the report, as it cannot be determined at this time if the work will be committed or aborted. The variables listed are for the URID and the DBID, PSID, and OBID of the table affected, respectively.

### User response

Re-running the job at a later time will resolve the warning as the URID will eventually be either committed or rolled back.

---

**ARYA072E      Edit proc error: name: *name*;  
retcde:*code*; rescde:*code***

### Explanation

The named edit procedure returned an error while attempting to decode the row. The named edit procedure returned the listed return and reason codes. Processing halts.

## User response

Contact IBM Customer Support.

---

**ARYA073W** Dictionary mismatch: *variable1 - variable4*

## Explanation

A row was found that needed to be decompressed, but the current dictionary was created after the row was written to the log. The dictionary cannot be used to decompress the row. The variables listed show the DBID, PSID, page number and URID for the row. This row is bypassed for the details report.

## User response

None required.

---

**ARYA074E** OPEN error for DD WARNINGS

## Explanation

An OPEN attempt failed for this DD statement.

## User response

Check for the inclusion of this DD statement in your JCL step and for correct specification of the associated data set.

---

**ARYA075E** Field proc error: name: *name*;  
retcde:*code*; rescde:*code*

## Explanation

The named field procedure returned an error while attempting to decode the column. The named field procedure returned the listed return and reason codes. The values shown are hexadecimal displays of return/reason codes provided by the field procedure as Db2 allows anything in these fields. Processing halts.

## User response

Contact IBM Customer Support.

---

**ARYA076E** OPEN failure on TEMPIC ddname for output

## Explanation

The OPEN failed for the ddname.

## User response

Verify that the DD statement for TEMPIC is defined and valid in the JCL step.

---

**ARYA077E** OPEN failure on TEMPIC ddname for update

## Explanation

The OPEN failed for the ddname.

## User response

Verify that the DD statement for TEMPIC is defined and valid in the JCL step.

---

**ARYA078E** Incremental IC merge err: *name*

## Explanation

While attempting to merge the named incremental image copy into the full image copy, a page mismatch occurred. The full image copy data set (TEMPIC) hit an end-of-file condition while trying to match the current incremental page number.

## User response

Verify the incremental image copy name is a valid and expected data set for the current process.

---

**ARYA079E** OPEN failure on TEMPIC ddname for input

## Explanation

The OPEN failed for the ddname.

## User response

Verify that the DD statement for TEMPIC is defined and valid in the JCL step for the current process.

---

**ARYA080E** OPEN failure on full image copy: *name*

## Explanation

The OPEN failed for the dsname.

## User response

Verify that the data set name is valid and that you are authorized to browse this data set.

---

**ARYA081E** OPEN failure on incremental image copy: *name*

## Explanation

The OPEN failed for the dsname.

## User response

Verify that the data set name is valid and that you are authorized to browse this data set.

---

**ARYA082W**      **OPEN failed for auth: *name***

## Explanation

While attempting to open the image copy data set, an authorization failure occurred. You are not authorized to OPEN this data set. The associated table space will not be included in the final details report.

## User response

None required.

---

**ARYA083E**      **OPEN failure on dsname: &V1 during mode file conversion**

### Explanation:

The OPEN failed for the dsname. The dsname should not exist before conversion and the user should have permission to create the data set. The dsname is built internally based upon the values found in the mode file that is converted.

### User response:

Verify that the data set name does not exist and that you are authorized to create this data set.

---

**ARYA084E**      **No full image copy found: *variable1 - variable4***

## Explanation

A full image copy was not found with a RBA less than or equal to the RBA shown in the message. The product cannot continue processing. These values are all from ties for this table space. The variables shown are DBNAME, TSNAME, DSNUM, and RBA of log record.

## User response

Verify the validity of the shown RBA and then check your SYSIBM.SYSCOPY table to verify the state of your image copy, database name, table space name.

---

**ARYA085E**      **UNDO and REDO SQL mutually exclusive. Set only one to Y.**

## Explanation

A request was made to generate a details report generating both UNDO and REDO SQL. This is not permitted. Select only one of these options.

## User response

Correct and retry.

---

**ARYA086E**      **Bad commit scope value. Enter value between 000 to 999 only.**

## Explanation

The value entered for commit scope must be between 000 and 999 only.

## User response

Correct and retry.

---

**ARYA088W**      **SQL bypassed, LOB data found on: *variable1.variable2***

## Explanation

A LOB column was found in a table modified during the specified log range. LOBs are not currently supported and therefore, any log activity found for this table will not be generated into SQL. Variable1 represents the table owner, and variable2 is the table name.

## User response

None required.

---

**ARYA089W**      **SQL bypassed, catalog table(s) present.**

## Explanation

SQL cannot update catalog tables, and therefore, SQL generation is bypassed for all the catalog tables reported on by the detail report. Non-catalog tables will still be included in the generated SQL, if any.

## User response

None required.

---

**ARYA091E**      **Error in reading SYSLGRNX, return code: *code***

## Explanation

An error occurred while attempting to read the SYSLGRNX directory table. See your job log output for additional diagnostics relating to this error (look for possible text in job log output of "FEC#REPO").

## User response

Report this error to your product administrator.

---

**ARYA093E**      **LOBs not currently supported in load format.**

## Explanation

A LOB type column was found in the table while generating load cards. LOBs are not currently supported, so the load generation process fails.

## User response

None required.

---

### ARYA094E      LOADFILE OPEN failure

#### Explanation:

An error occurred while attempting to open the DD LOADFILE.

#### User response:

Verify the existence of the DD statement LOADFILE in either the DD CFIL or hardcoded in your JCL.

---

### ARYA095E      DDLFILE OPEN failure

#### Explanation:

An error occurred while attempting to open the DD DDLFILE.

#### User response:

Verify the existence of the DD statement DDLFILE in either the DD CFIL or hardcoded in your JCL.

---

### ARYA096E      LOADCARD OPEN failure

#### Explanation:

An error occurred while attempting to open the DD LOADCARD.

#### User response:

Verify the existence of the DD statement LOADCARD in either the DD CFIL or hardcoded in your JCL.

---

### ARYA097E      Job run identifier must start with alphanumeric

## Explanation

The job run identifier will be appended to a data set name as a low level qualifier. It must start with a character between A-Z.

## User response

Correct and retry.

---

### ARYA098E      Object list filter value too long: value.

## Explanation

An object list filter value was found to be too long. The bad filter value is shown in the error message for a length long enough to indicate the error (for example, 9 characters on a database name). The maximum

lengths of these filters (including the trailing wildcard, if present) are listed below:

- Table Creator : 128 characters (only use 8 for pre-Db2 V8).
- Table Name : 128 characters (only use 18 for pre-Db2 V8).
- Database Name : 8 characters
- table space Name: 8 characters

## User response

Correct and retry.

---

### ARYA101E      EDICT DD OPEN failure

## Explanation

The EDICT DD failed to open.

## User response

This should not occur; contact IBM Customer Support.

---

### ARYA102W      Log-forward required for detail report

## Explanation

Data was found during the general report process that requires a log-forward process for generating the detail report. Such data could be reorg, load, or mass-delete log record(s).

## User response

Re-run as a log-forward process.

---

### ARYA103E      Page column value on line indicated is invalid.

#### Explanation:

The page field value is invalid. Enter either a space, a "Y" (yes), or "N" only.

#### User response:

Correct the input and retry.

---

### ARYA104E      Error during sort. See SORTMSG DD for more information.

## Explanation

An error occurred while sorting the inline image copy. More information is available by examining the SORTMSG DD statement in the JCL output.

## User response

Contact IBM Customer Support.

---

**ARYA105E**      **ISPSLIB member ARYIN4 bad record starting *name***

### Explanation

A bad record was found in the specified member.

### User response

Use the record identifier to locate the bad record and correct the entry.

---

**ARYA106E**      **TICSPECS DD OPEN failure.**

### Explanation

An inline image copy was found, but while attempting to read the TICSPECS DD, an OPEN failure occurred.

### User response

Verify the existence of this DD in the JCL.

---

**ARYA107E**      **No useable image copy found for tablespace *name***

### Explanation

A full image copy was not found for the specified table space. An image copy must exist prior to the time of your earliest log records. If none can be found earlier than that time, no useable image copy exists. For example, if you INSERT many records and subsequently take an image copy of the table space, that image copy is not useable for the INSERTs because it occurred after them.

### User response

Verify that a full image copy is available prior to the time of your earliest log record actions for the table space.

---

**ARYA109E**      **Disk primary and secondary space values must be numeric.**

### Explanation

The primary and secondary space values must be between 0000 and 9999 only, without any non-numeric characters. This field is only validated if "Device Type" is not equal to "T".

### User response

Correct and retry.

---

**ARYA110E**      **No temporary image copy data found.**

### Explanation

An attempt was made to run a detail report in log-forward mode. However, it was found that required data was missing. This is an internal error as proper and required parameters have not been passed to Log Analysis Tool for the temporary image copy allocation.

### User response

This should not occur; contact IBM Customer Support.

---

**ARYA113E**      **Object type can be "T" for table, or "S" for table space only.**

### Explanation:

The specified object type value was incorrect. If one of the above value is not used, the entire line must be left blank.

### User response:

Correct the input and retry.

---

**ARYA114E**      **OPEN error for DD SFMTFILE**

### Explanation

An OPEN attempt failed for this DD statement.

### User response

This should not occur; contact IBM Customer Support.

---

**ARYA115E**      **OPEN error for DD CHFILE**

### Explanation:

An OPEN attempt failed for this DD statement.

### User response:

Check for the inclusion of the DD CHFILE in either your hardcoded JCL or in the DD CFILES output.

---

**ARYA116E**      **OPEN error for DD HVFILE**

### Explanation:

An OPEN attempt failed for this DD statement.

### User response:

Check for the inclusion of the DD HVFILE in either your hardcoded JCL or in the DD CFILES output.

---

**ARYA117E**      **Table owner: *userid*, table: *name*; not found in Db2**

### Explanation

The specified table owner and name was not found in Db2. The table may have been dropped.

### User response

None required.

---

**ARYA118E**      **OPEN error for DD SQLIN**

## Explanation

An OPEN attempt failed for this DD statement.

## User response

This should not occur; contact IBM Customer Support.

---

**ARYA119E      OPEN error for DD SQLTIN**

## Explanation

An OPEN attempt failed for this DD statement.

## User response

This should not occur; contact IBM Customer Support.

---

**ARYA120E      OPEN error for DD SQLOUT.**

## Explanation

An OPEN attempt failed for this DD statement.

## User response

This should not occur; contact IBM Customer Support.

---

**ARYA121E      Processing stops due to bad table list.**

### Explanation:

A table was requested for the static program generation, but the table was not found in the input. Therefore, there is no data to further process.

### User response:

Verify the correctness of the table specification in the TABLE DD statement and verify that there is data in the input data set. (The input data set here refers to the SQLOUT file from the details report, which if empty, will result in this message.)

---

**ARYA122E      DBID is blank, but PSID and/or OBID are not; invalid.**

## Explanation

DBID must be entered if PSID and/or OBID are entered.

## User response

Validate the JCL and that the required ID values conform to the above rules.

---

**ARYA123E      DBID is nonblank, but PSID is blank; invalid.**

## Explanation

If DBID is not blank, there must minimally be a value entered for PSID. OBID does not have to be specified if only a table space is being filtered. If OBID is not a blank, PSID must also not be a blank.

## User response

Validate the JCL and that the required ID values conform to the above rules.

---

**ARYA126E      Contiguous group values must be either all blank or all numeric**

## Explanation

You specified a non-blank contiguous group value for at least one log entry, therefore all entries must have a value. That is, the logs are either all contiguous, or they are not. If they are not, each log entry must have a non-blank value.

## User response

Validate that your JCL conforms to these rules.

---

**ARYA127E      No log data sets were specified, you must enter at least one.**

### Explanation:

You hit "ENTER" to accept the list of specified log data sets, but none were found. If you want to bypass use of the list, hit "PF3", otherwise enter at least one log data set name. A line of spaces (from top to bottom) in the log data set column stops the list, so be sure the first line is not spaces.

### User response:

Correct the input and retry.

---

**ARYA130E      IDCAMS job failure. See WTO messages in job output.**

## Explanation

The job failed while processing IDCAMS for the active log. The output from SYSPRINT has been written to your joblog in the form of WTO messages.

## User response

See these messages for help on the cause of the failure.

---

**ARYA131E      Existence of old IDs requires both old and current/new OBID.**

## Explanation

You requested old IDs but omitted the old OBID and/or the current/new OBID. This is not permitted. When requesting old IDs, all objects must be fully qualified with the current/new full set of DBID/PSID/OBID and old DBID/PSID/OBID.

## User response

Validate the correctness of these rules in your JCL.

---

**ARYA132E**      **Object name fields cannot be spaces**

### Explanation:

The line has an object type = "T" or "S", and therefore object names representing either a table or a database/table space must not be left blank.

### User response:

Either set the entire line to spaces, or fill in these names.

---

**ARYA133E**      **Object type is blank, therefore entire line must be blank.**

### Explanation:

The line has an object type which is blank (or spaces), and therefore the entire line must be left blank.

### User response:

Correct the input and retry.

---

**ARYA134W**      **Warning: At least one utility record found.**

## Explanation

The detail report found the existence of a utility record(s). These records are identified by an "X" in the general report. They have been bypassed because only a log-forward process can handle these types of records and you have requested a log-backward process. If the "X" type record was the first record shown for a specific table/table space, running log-backward can yield good results.

## User response

Evaluate and retry if necessary.

---

**ARYA135W**      **Warning: A BSDS member could not be found.**

## Explanation

While processing the named BSDS for the group, another BSDS was found which could not be allocated. This data set does not exist as the allocation attempt failed on a "1708" reason code. You likely have old and outdated BSDS names in your configured BSDS. This

is treated as a warning only and the name of any such BSDS is written to your joblog in the form of a WTO message.

## User response

Confirm that the named BSDS is not needed for the run.

---

**ARYA136W**      **Unsupported column type found: type**

## Explanation

The current function found a column type that is not currently supported. Processing cannot continue.

## User response

None required.

---

**ARYA137E**      **Bad partition value. Enter a valid number between 0-4096.**

## Explanation

The value entered for the partition must be between 0 and 4096. Spaces are also permissible, and equate to a value of 0.

## User response

Validate the correctness of the above rules in your JCL.

---

**ARYA138E**      **A database/tablespace filter is required with a partition filter.**

## Explanation

A non-zero value was specified for the partition filter, but no database and table space filter was specified and/or a table filter was also specified.

## User response

Validate the correctness of the above rules in your JCL.

---

**ARYA139E**      **Table filters are not permitted with a partition filter.**

## Explanation

A non-zero value was specified for the partition filter, but a table filter was also requested. This is not allowed. When using a partition filter, specify only a single database/table space filter to be associated with the requested partition filter.

## User response

Validate the correctness of the above rules in your JCL.

---

**ARYA141E**      **Bad contiguous group specification. Must be 00-99 only.**

## Explanation

You specified a bad value for a contiguous group field. The only allowable values are from 00 to 99.

## User response

Validate the correctness of the above rules in your JCL for the log specification option.

---

**ARYA142E**      **Valid operator values are EQ, NE, GT, GE, LT, LE, LK, NL, IC, XC, CH, NC.**

### Explanation:

You specified an invalid operator field. The field can be only one of those listed above.

### User response:

Correct the input and retry.

---

**ARYA143E**      **"Cond" field can only contain A, O, ), (, or blank.**

### Explanation:

You specified an invalid "Cond" field. The field can either be "A" (AND), "O" (OR), or spaces to indicate there are no more conditions. If the field is not spaces, then there must be another conditional on the next line. Additionally, you may choose to nest your conditionals using up to 3 levels of parentheses. That is, any single line can contain from 1 to 3 left parentheses or right parentheses, and the total number of left and right parentheses must match.

### User response:

Correct the input and retry.

---

**ARYA144E**      **Bad advanced filter record: *recid***

## Explanation

You specified an invalid advance filter record.

## User response

If you edited the JCL, it was done incorrectly. Regenerate the JCL and do not edit it. If you did not edit the JCL, contact your product administrator to notify the vendor.

---

**ARYA146E**      **Use of ARCHLOG1 only and ARCHLOG2 only are mutually exclusive**

## Explanation

You requested use of both ARCHLOG1 and ARCHLOG2 only, which is not permitted. Only one of these can be requested exclusively.

## User response

If you wish to use either, that is the default behavior of the product and both should be set to "N".

---

**ARYA147E**      **Unsuccessful OPEN of *name***

## Explanation

An unsuccessful OPEN was issued for the specified dsname. Processing halts. This message will occur only if all logs (active and archive) with the same RBA range failed.

## User response

None required.

---

**ARYA148E**      **Unsuccessful LOCATE of *name***

## Explanation

An unsuccessful LOCATE occurred while trying to resolve the dsname. This message can occur while the product attempts to resolve the DATA component name of an active log. It can also occur during internal file allocation processing time.

## User response

Verify the correctness of the dsname in the message. If you are unable to determine the cause of the problem, contact the vendor.

---

**ARYA150E**      **Valid values are "Y", "N", or "O" only for field.**

## Explanation

For the "Show Rollbacks" field, please specify only the following values: "Y" to include rollbacks in the output; "N" to exclude rollbacks from the output; "O" to show only rollbacks in the output.

## User response

None required.

---

**ARYA151E**      **Optional old IDs must have related new IDs.**



## Explanation

You specified a group of optional old IDs in the object list, but there were no IDs on the same line for the new IDs. This is not acceptable input. Old IDs must always correspond directly to new IDs.

## User response

Validate the correctness of the JCL regards the above rules.

---

**ARYA152E**      **Mismatch found between old and new IDs.**

## Explanation

You specified a line of both old and new IDs, but the IDs do not directly match. When specifying the optional new IDs, all IDs must be specified for both old and new. That is, the old DBID, PSID, and OBID must all be stated, as well as the new DBID, PSID, and OBID.

## User response

Validate the correctness of the JCL regards the above rules.

---

**ARYA153E**      **Object IDs list requested but no entries found.**

### Explanation:

You requested use of object IDs, and hit ENTER to use the list, but no object IDs were found. If you wish to bypass the list, hit PF3, or enter at least one valid line of IDs.

### User response:

Correct the input and retry.

---

**ARYA154E**      **Old object IDs detected in REFILE; must use log-forward mode.**

## Explanation

While running in log-backward mode, old object IDs were detected in the REFILE. These occur only when old object IDs were included in the general report.

## User response

You must run this detail report in log-forward mode, as log-backward mode does not support handling of previously dropped objects.

---

**ARYA155E**      **Old object IDs on one line require them on all lines.**

## Explanation

You specified the optional old IDs on at least one line, so they must be present on all lines. Running with old IDs is considered running in dropped-object mode. Running without old IDs is considered standard mode. You cannot mix these two modes.

## User response

Validate the correctness of the JCL regards the above rules.

---

**ARYA156I**      *message\_text*

## Explanation

All debug messages will be displayed in this form. These messages are always activated to prevent unnecessary and potentially expensive re-runs in order to activate them. Unless a component of this product refers to such a message, disregard it. There is generally no useful user information here and this information is intended primarily for internal use as necessary.

## User response

None required.

---

**ARYA157E**      **Internal array in ARYBSDS exhausted, processing halts.**

## Explanation

You have exceeded the maximum number of stored archive and active logs allowed. The maximum allowable number is approximately 2788, and is deemed excessive. This will likely only occur in a detail report run where one of the following situations has occurred: log-backward mode and the associated general report timeframe was very long ago or log-forward mode and the earliest image copy needed was created long before the associated general report timeframe.

## User response

Analyze your situation and take appropriate actions such as changing time frames or detail report modes (for example, change log-backward mode to log-forward).

---

**ARYA158E**      **Partition filter not allowed with wildcards.**

## Explanation

You have requested a partition filter, but also used a wildcard in the database or table space name field. This is not permitted. A partition filter can only be applied to a single table space.

## User response

Remove either the partition filter or the wildcard and retry.

---

**ARYA159E**      **An invalid ID was found on the line. Enter only decimal numbers.**

## Explanation

You have specified an invalid ID value. Only decimal values are permitted and these can only be between 0 and 99999. No alphanumeric or hexadecimal values are allowed.

## User response

Validate the correctness of the JCL regards the above rules.

---

**ARYA160E**      **Required fields from the general report panel have not been set.**

## Explanation

You are attempting to generate detail report JCL, but some required information is missing, and this information comes from your general report settings. You may be attempting to generate detail report JCL without ever having created general report JCL. This is not allowed. The detail report JCL uses output from the general report, so you cannot run a detail report without first running a general report.

## User response

Contact IBM Customer Support.

---

**ARYA170E**      **Both table owner and name must be filled in, or both left spaces.**

## Explanation

You requested a table owner or name, but not both. Either leave these fields both blank, or fill them both in. The table name must be fully qualified.

## User response

Validate the correctness of the above rules in your JCL.

---

**ARYA171E**      **Invalid number of hex digits in DD FILTERS input: &V1.**

## Explanation:

When using hexadecimal values in the advanced filters, there must be at least two digits. If there are more than two digits the total number of digits must be even.

## User response:

Correct the input in your JCL and retry.

---

**ARYA172E**      **SQL stmt not valid due to: WHERE clause could not be generated.**

## Explanation

The WHERE clause could not be generated, and therefore no SQL statement could be produced. This is an internal error.

## User response

Contact IBM Customer Support.

---

**ARYA173E**      **Invalid or unbalanced quotes in DD FILTERS input: &V1.**

## Explanation:

When using hexadecimal values in the advanced filters, the string entered must start with X followed by a single quote, valid hexadecimal digits, and end with a single quote. If you are attempting to use the LK or NL operator then put the % after the final single quote not inside the quotes.

## User response:

Correct the input in your JCL and retry.

---

**ARYA175E**      **Unable to LOAD Db2 module DSNHDECP**

## Explanation

A LOAD was issued against module DSNHDECP which was unsuccessful.

## User response

Verify that the "Setup" options for this subsystem correctly identify a Db2 load library containing this module. Typically this module would reside in \*.SDSNLOAD or \*.SDSNEXIT type libraries.

---

**ARYA176E**      **OPEN error for DD DECLFILE**

## Explanation:

An OPEN attempt failed for this DD statement.

## User response:

Check for the inclusion of this DD statement in either your DD CFILERS or hardcoded in your JCL step and for correct specification of the associated data set.

---

**ARYA177E**      **Table owner/name fields must both be specified or both left blank.**

**Explanation:**

: Either a table owner field is spaces and the name is not spaces, or a table owner is not spaces and the name is spaces. These are invalid specifications. Either specify both the owner and name, or leave both blank.

**User response:**

Correct the input and retry.

---

**ARYA178E**      **Invalid hexadecimal character found in DD FILTERS input: &V1.**

**Explanation:**

When using hexadecimal values in the advanced filters, the string entered must start with X followed by a single quote, valid hexadecimal digits (012345678ABCDEF), and end with a single quote. If you are attempting to use the LK or NL operator, then put the % after the final single quote, not inside the quotes.

**User response:**

Correct the input in your JCL and retry.

---

**ARYA190E**      **Dictionary data missing in: name**

**Explanation**

Either some or all of the needed dictionary was not found for the identified object (format is DBID/PSID/partition number). This should only occur if a "REPAIR SET TABLESPACE .. NOCOPYPEND" or "START(db) ACC(FORCE)" was run. Running such an action invalidates all types of Db2 recovery scenarios, as well as using this tool to report on the object.

**User response**

If you have not run either Db2 action, contact your product administrator. A log-backward detail report can be attempted to bypass this situation, but in some cases, only a log-forward detail report can be used (and log-forward is only case where this situation can occur). Filtering out the identified object is also a remedy.

---

**ARYA191E**      **No data to process, job processing stops.**

**Explanation**

Either all of the data was filtered out because of column data filters, or there was no data to process from the results of the detail report.

**User response**

Verify the possibility of each condition, and either change your column data filters, or re-run the general/detail reports and verify the existence of reported data (at least one line of log record activity data).

---

**ARYA192I**      **No SQL was executed; the table filter/restart file might be the cause.**

**Explanation:**

A table filter may have prevented any SQL from being executed. If the SQL did not include the named table, all SQL would have been bypassed. Another possible cause is that a restart was requested, and the SQL statement number to restart on is incorrect.

**User response:**

Verify you actually needed to restart here, and that the previous failing run generated the restart file you are using here.

---

**ARYA195E**      **A Mass Delete type record was found, must use log-forward mode only.**

**Explanation**

A mass delete record was found in the REFILE (input file generated in the general report process). The only way to resolve such a record is to use a log-forward detail report ("Apply log forward = Y" on detail report panel).

**User response**

Either run the detail report in log-forward mode, or eliminate the related segmented table from your detail report by filtering on other specific objects. For example, filter only on table X when table Y had the mass delete action.

---

**ARYA196E**      **IC,XC column data operators are mutually exclusive.**

**Explanation:**

While generating column data filters, you used both IC (include) and XC (exclude) on the same table. This is not permitted. Either name all the columns you wish to include, or name all the columns you wish to exclude, but do not mix these operators. It is implicit that if you are naming columns to be included that any columns not specified will be excluded. It is also implicit that if you are naming columns to be excluded, any columns not specified will be included.

**User response:**

Correct the input and retry.

---

**ARYA197E**      **Invalid or unbalanced quotes in DD FILTERS input: &V1**

**Explanation:**

When using column filters if you have a beginning quote you need to end the string with an ending quote.

**User response:**

Correct the input in your JCL and retry.

---

**ARYA224E**      **INTERFACE: SQL DSN is too long; max 44 characters (non PDS).**

**Explanation**

A requested data set name was too long. The SQL DSN data set can only be a maximum of 44 characters long, and no member specification is allowed.

**User response**

Correct and retry.

---

**ARYA227E**      **INTERFACE: SQL DSN cannot be a PDS, only flat files valid.**

**Explanation**

The requested SQL data set name contained a member name, indicating it was a PDS. Only sequential flat files are allowed.

**User response**

Specify the SQL DSN as a flat file and retry.

---

**ARYA228E**      **INTERFACE: JCL DSN requested but not found.**

**Explanation**

The requested JCL data set name could not be found. The use of this data set requires that it exists.

**User response**

Either remove the JCL DSN specification, or create it prior to invocation.

---

**ARYA233E**      **INTERFACE: No REDO/UNDO SQL requested, but "SQL DSN" requested.**

**Explanation**

The interface file requested no SQL generation, but specified a data set name to contain generated SQL.

**User response**

Either remove the "SQL DSN" specification, or request generation of either REDO or UNDO SQL.

---

**ARYA301E**      **Invalid value, specify only one the listed values.**

**Explanation**

The filter type specified was incorrect. This is an internal error as incorrect values have been passed to Log Analysis Tool.

**User response**

Contact IBM Customer Support.

---

**ARYA302E**      **Filter type and name must both be specified, or neither.**

**Explanation**

Enter both a filter type and a filter name as specified on the panel. It is invalid to enter only a filter type or only a filter name without the other value. This is an internal error as incorrect values have been passed to Log Analysis Tool.

**User response**

Contact IBM Customer Support.

---

**ARYA303E**      **SYSCOLUMNS entry not found for table: *table\_name***

**Explanation**

An SQLCODE = +100 was found immediately when querying for column data for the named table. The log record data cannot be parsed out without this information, so processing stops.

**User response**

Examine your catalog for possible reasons for this condition (SYSIBM.SYSCOLUMNS catalog table where TBcreator/TBNAME equals the named table.)

---

**ARYA304W**      **No Db2 logs were read.**

**Explanation**

The general report will yield no report data because no logs were read. This can occur for many reasons. The use of SYSLGRNX with your filters may have eliminated all logs from processing. This cause of the message should be considered for your information only, and is not a problem. Other causes may indicate a problem which you might rectify. For example, if your BSDS options in the control file are set to use ARCHLOG2 only, and none were available on the subsystem, no logs can be processed. Other BSDS problems can also cause this warning.

## User response

Evaluate your settings and BSDS for the Db2 subsystem. Check the BSDS data as it relates to the time range requested.

---

**ARYA305W**      **Referential integrity records detected. SQL has been modified.**

## Explanation

Log record activity contained actions resulting from referential constraints. For REDO, all such records are ignored because it is implied that the originating action (that which caused the RI actions) will also be re-done, triggering again the RI actions. For UNDO, only the order of the SQL is changed. IMPORTANT: if all tables involved in the RI constraints were not present in your results (that is, they were filtered out), the generated SQL can omit any such RI records as proper execution requires all such tables. This can lead to an empty SQLOUT DD data set, which contains all the SQL.

## User response

Examine the SQL and your filters closely before executing any such generated SQL.

---

**ARYA316E**      **"Object filters = A" requires "Generate Details = Y".**

## Explanation

When using advanced filters, the detail level report must be generated at the same time as the general report. This is because advanced filters must operate on both general and detail level data. The advanced filters specified will automatically be carried through to both levels of reporting.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA317E**      **Using current filters is mutually exclusive with saving filters.**

## Explanation:

You can either use the current advanced filters that have been previously saved to the named file, or you edit and save a new set of advanced filters, but not both.

## User response:

Set one of these flags to "N" and retry.

---

**ARYA318E**      **If using or saving filters within a file, file name cannot be blank.**

## Explanation:

If you set either flag on this panel to "Y" to use advanced filters from a file, or save advanced filters to a file, a file name must therefore be provided.

## User response:

Correct the input and retry.

---

**ARYA319E**      **Unable to OPEN file for DD ARYAFN for output.**

## Explanation

This represents an internal error and should not occur.

## User response

Contact IBM Customer Support.

---

**ARYA320E**      **Bad input sequence on column data filters: record**

## Explanation

The identified record above represents the beginning on an input record that is likely out of sequence. This should only occur if you have manually edited the DD FILTERS input records in the generated JCL.

## User response

Use the identified record to pinpoint the location of the failing record and determine why it is considered out of sequence. Contact IBM Customer Support for assistance, if necessary.

---

**ARYA321E**      **Bad conditional value in DD FILTERS input: conditional\_value**

## Explanation

The identified conditional above is incorrect. The conditional value may be incorrect, or it could be an "AND" condition as the last condition. An "AND" condition cannot logically be the last condition. The only acceptable values for conditionals are spaces, "A", "O", or one of those values preceded by left or right parentheses. For example, ")A" or "(O" are correct, but ")A" or "A((" or "()" are all invalid.

## User response

Correct and retry. Contact IBM Customer Support, if necessary.

---

**ARYA322E**      **Bad operator value in DD FILTERS input: operator**

## Explanation

The identified operator above is incorrect.

## User response

Contact IBM Customer Support.

---

**ARYA323E Both INCLUDE (IC) and EXCLUDE (XC) operators found for table.**

## Explanation

For any given table, there can only be INCLUDE or EXCLUDE type column specifications, not both. They are mutually exclusive.

## User response

Either specify all the columns to include, or specify all the columns to exclude, but do not mix these operators. Contact IBM Customer Support, if necessary.

---

**ARYA325E SQL stmt not valid due to: SET clause could not be generated.**

## Explanation

The SET clause could not be generated, and therefore no SQL was produced. This is an internal error.

## User response

Contact IBM Customer Support.

---

**ARYA326E "Advanced filters" mutually exclusive with object list/IDs.**

## Explanation

Specifying "Y" to "Advanced filters" means all objects (table space/table) will be specified there only. No other object lists or IDs are allowed when using this option.

## User response

Either set this field to "N", or set object IDs and object lists flags to "N". Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA327E Exclude flag can be "Y" (yes) or "N" (no) or spaces (no).**

## Explanation

The exclude flag can be left blank, set to "Y" to exclude the object, or set to "N", which is the same as being left blank.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA328E All columns excluded for table: *table\_name***

## Explanation

Column data filters excluded all columns of a single table. This is not allowed, as no data can be generated for that table.

## User response

Correct the exclude filters to leave at least one column of the table included.

---

**ARYA330E Unable to OPEN file for DD ARYAFN for input.**

## Explanation

This represents an internal error.

## User response

This should not occur; contact IBM Customer Support.

---

**ARYA332E Log range values date-time, RBA, and LRSN are mutually exclusive.**

## Explanation

Log range values can be specified as date-time, RBAs, or LRSNs, but not a combination of any of these. Each is mutually exclusive with the other.

## User response

Specify a single set of log range start/end values and retry. Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA333E At least one set of log range values must be provided.**

## Explanation

Log range values can be specified as date-time, RBAs, or LRSNs, and one of these range values must be set. It is invalid to omit all of these ranges, and it is invalid to provide more than one as well.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA335E**      **Conditional value can be "A" (AND) or "O" (OR) only.**

**Explanation**

The conditional value specified was neither "A" nor "O". These are the only allowable values.

**User response**

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA336E**      **OPEN failure on DD MODEFILE.**

**Explanation**

The OPEN failed for DD MODEFILE.

**User response**

This should not occur; contact IBM Customer Support.

---

**ARYA339E**      **OPEN failure for MODERPT output file**

**Explanation:**

An OPEN request for the specified data set failed.

**User response:**

Verify the existence of the ddname in the JCL.

---

**ARYA340E**      **Filter file name must exist if usage is not = "N".**

**Explanation:**

The filter file field was left blank, but the filter file usage field was not = "N". This is an invalid combination. The filter file field identifies the name of the file used in filter file saving, and must not be left blank unless the filter file usage field is set to "N".

**User response:**

Either change the usage field to "N", or specify a filter file name.

---

**ARYA341**      **IBM\* Rocket\*\* + Licensed Materials - Property of IBM 5697-H74 + (c) Copyright IBM Corp. 2001, 2005 All Rights Reserved. + (c) Copyright Rocket Software, Inc. 2001 - 2005 All Rights Reserved. + \*Trademark of International Business Machines+ \*\*Trademark of Rocket Software, Inc.**

**Explanation**

Informational message.

**User response**

None required.

---

**ARYA342E**      **Fastpath option not allowed with Object filters-Advanced.**

**Explanation:**

The fastpath method of a combined general and detail report is mutually exclusive with advanced object filters ("Object Filters = A"). This is due to the nature of fastpath processing, which will likely result in non-full row images, and therefore, column level data is unobtainable.

**User response:**

Either set this field to a value other than "P", or change your "Object Filters" setting to something other than "A".

---

**ARYA343E**      **"Uniq" value of LUWID filter must be exactly 12 characters.**

**Explanation**

The "Uniq" value (uniqueness value) of the LUWID must be entered as a 12 character hexadecimal display value, such as B91FF0CA0034. No characters can be omitted.

**User response**

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA344E**      **Commit value of LUWID filter must be exactly 4 characters.**

**Explanation**

The Commit value (commit count) of the LUWID must be entered as a 4 character hexadecimal display value, such as 000A. No characters can be omitted.

**User response**

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA345W**      **Seclabels found during FASTPATH mode. DBID:&V1 PSID:&V2 OBID:&V3**

**Explanation:**

The fastpath method should not be used when tables that have security labels are being processed. This is due to the nature of fastpath processing, which will likely result in non-full row images, and therefore, the security label is unobtainable. The activity on this table cannot be reported.

**User response:**

Either change the log reading mode to a value other than "P" or change your filters to not include tables with security labels.

---

**ARYA346W**      **Row(s) removed during MLS processing DBID:&V1 PSID:&V2 OBID:&V3**

**Explanation:**

Multilevel security is in place and prevented row(s) from being processed.

**User response:**

None.

---

**ARYA347E**      **RBA log range request in data sharing system prohibited.**

**Explanation**

The general report run specified RBAs as the log range type, but it was determine the requested subsystem is part of a data sharing group. This combination is invalid. Only date/time or LRSN log ranges are allowable in a data sharing system.

**User response**

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA348E**      **Filter file is PDS, but no member specified.**

**Explanation:**

You specified a PDS (library) to be used as the filter file, but did not provide a member name. This is not valid.

**User response:**

Either specify a sequential file or a PDS with a member name.

---

**ARYA349E**      **Filter file usage is "Edit" or "Use", but file/member does not exist.**

**Explanation:**

All references to "file/member" below refer to either a sequential file or a member within a partitioned data set (PDS or library). You specified a usage type of "Edit" or "Use", but no filter file/member was found. "Edit" infers that you are editing a previously saved file/member. "Use" infers that you are using a previously saved file/member.

**User response:**

Either of these options requires the file/member to pre-exist and have saved filters in it. You must first save filter data off to the named file/member before you can edit or use it. See help on filter file usage.

---

**ARYA351E**      **Page filter IDs have no matching object IDs filter.**

**Explanation:**

The page filter is associated with a DBID/PSID/OBID. However, when attempting to match this set of IDs to an object filter set of IDs, no match was found. This could only happen if you edited the filter file incorrectly, as the panel-driven input would not allow such a mismatch. Page filters IDs are not permitted as standalone filters; they must be associated with a defined object ID filter. In other words, two object ID filter lines must be present to request page-level filters: one for the object itself (dbid,psid,obid), and the second for the associated page level filters (dbid,psid,obid=pages).

**User response:**

Correct the input and retry, or use only the panel-driven process.

---

**ARYA352E**      **General SORT failure...see SYSOUT output for step.**

**Explanation**

A program invoked SORT failed. The SYSOUT output for the failing job step will contain needed diagnostics.

**User response**

Attempt to resolve and retry.

---

**ARYA353E**      **CONCURRENT image copies not supported.**

**Explanation**

An image copy was found and determined needed, but it is a CONCURRENT image copy, which is not supported (STYPE="C" from SYSIBM.SYSCOPY). Processing stops.

**User response**

Attempt to resolve and retry.

---

**ARYA354E**      **Input invalid for field.**

**Explanation**

A field value was entered that is not valid.

**User response**

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA355E**      **Quiet time report invalid with detail report.**



## Explanation

A quiet time report cannot be run with a detail report. The quiet time report does not generate the proper input for a detail report.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA356E**      **Quiet time report must have start date/time input only.**

## Explanation

A quiet time report cannot be run with any log range values except start date and time.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA357E**      **Quiet time threshold value bad**

## Explanation

The specified value is incorrect. The quiet time threshold must be in the format specified, with the following restrictions: HH >= 00 and HH < 24 MM >= 00 and MM <= 59 SS >= 00 and SS <= 59

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA358E**      **ALTER COLUMN DATA TYPE found for object ID: *variable1* - *variable3***

## Explanation

An unsupported condition was found for the object (DBID PSID OBID). Db2 provides very limited support for tracking column data type alterations, and therefore most attempts to materialize full row images across such an alteration cannot currently be provided.

## User response

If possible, remove the identified table from the result set and rerun your general report creating new input for this detail report without the named table. This product can only process such an altered table if the following conditions are true: a REORG has been done after the last alter, and no needed log activity occurred prior to that REORG.

---

**ARYA359E**      **Filter file member specified, but data set is not a PDS.**

## Explanation:

A filter file was specified for use, but it included a member name and is not a PDS (library). Either remove the member name or specify a different file entirely.

## User response:

Correct the input and retry.

---

**ARYA400E**      **Storage obtain failure for MMTAB.**

## Explanation

A request for storage failed for area MMTAB.

## User response

If possible, increase your region size, otherwise contact IBM Customer Support.

---

**ARYA401E**      **Storage obtain failure for MMSP.**

## Explanation

A request for storage failed for area MMSP.

## User response

If possible, increase your region size, otherwise contact IBM Customer Support.

---

**ARYA402E**      **Storage obtain failure for MMIB.**

## Explanation

A request for storage failed for area MMIB.

## User response

If possible, increase your region size, otherwise contact IBM Customer Support.

---

**ARYA403E**      **Storage obtain failure for MRE.**

## Explanation

A request for storage failed for area MRE.

## User response

If possible, increase your region size, otherwise contact IBM Customer Support.

---

**ARYA404E**      **Storage obtain failure for MM buffers.**

## Explanation

A request for storage failed for the MM buffers.

## User response

If possible, increase your region size, otherwise contact IBM Customer Support.

---

**ARYA405W**      **No SQL generated, may be due to filters/rollbacks/other options.**

## Explanation

No SQL was generated for this run. This can occur because of your filters (for example, advanced filters at the column-level filtered out all rows), rollbacks, only catalog tables present in your output (no SQL is generated for catalog tables), or the fastpath option did not materialize full rows and therefore no SQL could be generated.

## User response

Check for these possibilities as well as any possible warnings that may have been generated during the run.

---

**ARYA406E**      **Bad input, field must start with value between A-Z.**

## Explanation

The archive fields for table creator, name, and data set suffix must all start with characters from A-Z, with no other special characters.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA408E**      **Catalog data for LOB object not found.**

### Explanation:

You requested data for a LOB column, but either the base table IDs are incorrectly specified, or the LOB column name is not valid. This can mean the LOB column name is typed incorrectly, or is a valid column of the table, but is not a LOB column.

### User response:

Verify the correctness of your input if materializing LOB column data. If this message occurs during SQL generation, contact the vendor.

---

**ARYA411E**      **MASS DELETE found during log-backward process: value.**

## Explanation

A MASS DELETE matching record was found during log-backward processing. This condition can only be determined while reading the logs (if the MASS

DELETE record was not part of the general report output). Processing must stop, and only a log-forward approach is allowed. Whenever running against segmented tables, there is a possibility of mass delete records (that is, DELETE FROM table with no WHERE clause).

## User response

If this possibility exists at your site, always run in log-forward mode to prevent unnecessary job stoppage such as this. DATA CAPTURE CHANGES will also prevent mass delete type records. The value shown is the DBID/PSID/OBID identifying the table where the MASS DELETE occurred.

---

**ARYA412E**      **Partition or page filters not allowed w/LOAD REPLACE log action.**

## Explanation

A "Load Replace" type utility was found during the general report run. The action-type for this record is "P", indicating "Load Replace". This type of action is not currently permitted with filters below the table level. That is, partition or page level filters are not permitted. Use of only table space or table level filters is permitted when processing a "Load Replace" type log record.

## User response

Change your filters (remove any partition or page level filters for the table space identified in the "P" action-type record in your general report output) and retry. These filters are not allowed in either the general or detail report runs when LOAD REPLACE actions exist.

---

**ARYA414E**      **RBA or LRSN value specified is not proper hexadecimal value.**

## Explanation

You requested use of either RBAs or LRSNs, but the value(s) entered are not valid hexadecimal specifications. An RBA or LRSN must only contain hexadecimal values, which can be 0-9 and A-F only. For example, a value of 00012FE560BBC is valid, but a value of 0012WXXX0345 is not.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA415E**      **Db2 log with needed starting logpoint unavailable. Processing stops.**

## Explanation

The general or detail report run required a starting logpoint (RBA/LRSN) which was lower than any available Db2 log logpoint in the BSDS. Therefore, processing must stop. This would likely only occur in situations where the date/time specified was so old that the relevant archive logs are no longer in the BSDS. It could also occur on test systems where archive logs are not available after a very short time, or at all. This product cannot function without these needed resources (logs).

## User response

Correct and retry.

---

**ARYA419I** Char conversions ended: Ret cde: *code*, Res cde: *code*, *variable1* - *variable3*

## Explanation

The product failed during character conversion from Unicode or ASCII to EBCDIC. The "Support For Unicode" product was called to do the conversion, but it failed with the shown return code and reason code. The last three variables displayed are the source CCSID, the target SBCS CCSID, and the target MBCS CCSID used in the conversion call.

## User response

Verify these CCSIDs are defined to the "Support For Unicode" product.

---

**ARYA420E** Invalid starting/ending RBA/LRSN value(s) provided.

## Explanation

You must request one and only one of the following values: -a starting RBA, a starting LRSN, an ending RBA, or an ending LRSN. You cannot provide more than one of these values (they are all mutually exclusive).

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA422E** Invalid input dataset type; must be "T","I","O" only.

## Explanation

You requested an invalid data set type. The value must be one of those listed in the error message. A space is invalid here.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA426E** Bad dataset line; invalid volume serial specification.

## Explanation

You requested an invalid set of volume serial numbers. Each volume specified must be exactly 6 characters long, and separated only by commas. For example, "XT0123,XT0234,SPD001" is valid. Invalid specifications might be: "XT0,SPD001" or "XT0123XT0234" or "XT0123 XT0234 SPD001".

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA437E** Misc flags can only be spaces, "X", "P", or "H" values.

## Explanation

The possible values for miscellaneous flags are spaces, "X" (bypass SYSLGRNX), "P" (ignore partial recovery logpoints), or "H" (allow high speed option).

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA438E** Extract file (DD EXTFILE) is missing; processing stops.

## Explanation

The DD named EXTFILE was not found in your report JCL. This file must be present.

## User response

If you edited the product-generated JCL, you may have omitted this DD. Re-generate the JCL and retry. If the file is still missing from the JCL, contact your product administrator.

---

**ARYA439E** Temp extract file (DD TEMPEXTF) is missing; processing stops.

## Explanation

The DD named TEMPEXTF was not found in your report JCL. This is an internal error.

## User response

This should not occur; contact IBM Customer Support.

---

**ARYA440E      ROWDATA validation error: value**

## Explanation

An error was detected while validating the results of full row materialization. The value listed in the message identifies the first 19 bytes of the record in the ROWDATA DD file where the error was detected. This error can occur for the following reasons:

- -for an INSERT: no post-insert row image found/pre-insert row image found
- -for a DELETE: no pre-delete row image found/post-delete row image found
- -for an UPDATE: no post-update row image found/no pre-update row image found
- -for an UPDATE: no change in pre-update and post-update row images found

## User response

Contact IBM Customer Support.

---

**ARYA442W      No keys found for table: &V1.**

## Explanation:

You requested current row images on the identified table (DBID,PSID,OBID) but no key columns were found for it. Only uniquely keyed tables are available for this type of current row materialization. An index on expression cannot be used as a unique key here. The identified table will not have current row images displayed based on its key. That is, if a log-backward method is being utilized, the current row images based on page/rid values will be kept. If a log-forward method is being utilized, no current row image is available.

## User response:

None required.

---

**ARYA443E      Current row image process found  
LOB column in table: table**

## Explanation

You requested current row images on the identified table (DBID,PSID,OBID) but a LOB column exists on that table. This is not valid. Therefore, if a log-backward method is being utilized, the current row images based on page/rid values will be kept. If a

log-forward method is being utilized, no current row images are available for the table.

## User response

None required.

---

**ARYA444E      Cannot get current rows due to  
CCSID translation: table**

## Explanation

You requested current row images on the identified table (DBID,PSID,OBID) but it required CCSID translation which failed. See joblog output for additional diagnostics (ARYA56I messages). This table will not have current row images based on key values. If a log-forward method is being utilized, no current row images are available for the table.

## User response

None required.

---

**ARYA445E      Job Identifier invalid; not  
previously used or currently in-  
use.**

## Explanation

You specified a job identifier that was not previously used in a general report, or was used, but is currently in-use. For the first case, you must run a general report prior to running any detail report, and the detail report must reflect a job identifier that was previously specified for a general report run. For the second case, you are trying to use a job identifier that is currently in-use. This means a job is running using that same job identifier, and you cannot use it now. The job identifier distinguishes files between different runs of different jobs, and these files must exist and not be in-use while generating report JCL.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA446E      Filter value too long for filter type;  
see HELP for panel.**

## Explanation

You specified a filter value which is too long for the filter type. For example, you specified a filter type = A (authid), but the filter value provided is greater than 8 characters.

## User response

If you edited the JCL, regenerate it and do not edit it again. Otherwise, invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA447E      ROWDATA update validation error:  
record**

## Explanation

An error was detected while validating during the merge phase. An update to a record was needed at a certain offset (>0) into the row, but there was no current data on that row. This is a fatal error. The value listed in the message identifies the first 19 bytes of the record in the ROWDATA DD file where the error was detected.

## User response

Contact IBM Customer Support to report the problem. The support team will need to see the contents of the PLOGDS DD file.

---

**ARYA451E      SYSLGRNX storage failure**

## Explanation

A failure occurred during storage obtains for the SYSLGRNX reading process. Too many table spaces were provided as input and not enough region is available for the request.

## User response

Either bypass SYSLGRNX processing, or increase your region size. If region is currently at the maximum setting for your batch jobs, you must either reduce the number of table spaces requested or bypass SYSLGRNX utilization.

---

**ARYA452E      Invalid parallelism/concurrency  
value; must be between 01-16  
only**

## Explanation

The value entered for this field is incorrect.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA453E      Quiet time report mutually  
exclusive with all others.**

## Explanation

When requesting a quiet time report, only a value of "Q" can be entered for the "Output flags" field. This setting is mutually exclusive with all other output types.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA454E      Quiet time report preceded detail  
report; invalid.**

## Explanation

A quiet time report does not generate the appropriate input necessary to run a detail report. The MODEFILE indicates the last general report run was a quiet time report, and therefore, it is not possible to now run a detail report.

## User response

You must run a general report without the quiet time option prior to running a detail report.

---

**ARYA455E      Bypassing all reports mutually  
exclusive with requesting reports.**

## Explanation

You requested a bypass of all report types ("Output flags = B"), but added at least one other specification. This is not allowed. A value of "B" must be the only value in this field, or it must be removed to specify other report output types.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA456E      Filters found to be in error;  
probable user-editing error.**

## Explanation

The end-of-file was found while reading your filter list, but a filter group was still in-progress. Each group of filters must end with either an INC/EXC card, or a COND card. These are referred to as "terminating records" and must be present as the last record in every filter group. See tutorial on filter file handling. Check your filters for such an omission and correct and retry. This could occur on object name filters, advanced filters, or miscellaneous filters only.

## User response

If you did not edit the JCL, invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA457E**      **Filter record invalid within grouping: record**

## Explanation

The identified record is in error, and probably due to user-edit error. Verify your filters. This would occur most likely from duplication of a record within a filter group or if you omitted a required record from the group. Regards the latter, if the terminating record in the group is found before all other required records, that terminating record will be displayed here (for example, COND= and INC/EXC= are terminating records). There are no optional records in any group; they must all be present, and in the specified order.

## User response

If you did not edit the JCL, invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA458E**      **ATTACH failure during parallelism for log reads.**

## Explanation

An attempt was made to attach a subtask for parallelism during Db2 log reading. The ATTACH failed.

## User response

Check the joblog for more error messages from the operating system. It may be that too many subtasks were requested so check your "Log read parallelism maximum" value on the "Defaults" panel. Try lowering the value and retry. If it is not a matter of excessive subtasking, contact IBM Customer Support.

---

**ARYA459E**      **OPEN failure on a DD during subtask (parallelism) processing.**

## Explanation

An attempt was made to OPEN a DD during subtask processing for Db2 log reading parallelism. This OPEN failed.

## User response

Check the joblog for system messages (IEC130I) indicating a missing DD statement. If the problem persists, contact IBM Customer Support.

---

**ARYA460E**      **Fatal error during subtask processing. Check joblog for messages.**

## Explanation

An error was detected by the main calling task invoking subtasks for Db2 log read parallelism.

## User response

Check your joblog for other system messages or a dump pertaining to this failure. Resolve the failure if possible and retry, or contact IBM Customer Support.

---

**ARYA461E**      **SORTIN DD statement missing**

## Explanation:

The DD for the SORTIN statement is missing from the JCL step. This could likely only happen if the JCL has been incorrectly edited or improper JCL is used across different releases of the product.

## User response:

Regenerate your JCL from the ISPF front-end to include the SORTIN DD.

---

**ARYA462E**      **SORTOUT DD statement missing**

## Explanation:

The DD for the SORTOUT statement is missing from the JCL step. This could likely only happen if the JCL has been incorrectly edited or improper JCL is used across different releases of the product.

## User response:

Regenerate your JCL from the ISPF front-end to include the SORTOUT DD.

---

**ARYA463I**      **There is no data to report.**

## Explanation

The general report found no data. This could occur for many reasons, such as due to filters, time specifications, and so on. This is an informational message only.

## User response

None required.

---

**ARYA472E**      **Impact report requires date/time log range only.**

## Explanation

You cannot request an impact report ("Output Mode" includes value of "I") without also specifying a log range based on start and end date/time. Log ranges of start and end RBA or LRSN are not allowed with an impact report.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA474E**      **OPEN error for DD: name.**

## Explanation

OPEN failed for the identified DD name. Either the DD is missing from the JCL, or dynamic allocation for the DD failed, but was not properly identified by the product.

## User response

If the identified DD name was hardcoded in the failing JCL step, verify the correctness of the statement and data set name. If the DD name was not provided in the JCL, contact IBM Customer Support.

---

**ARYA475E**      **Incorrect value for volume serial number.**

## Explanation

VSAM volume serial number must be one of the following only:

- All spaces (no volume serial number specifically requested)
- A single volume serial number (6 characters; for example, VSM101)
- Up to 3 comma-separated volume serial numbers (for example, VSM101,VSM204,VSR341)

Any other format is not acceptable.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA476E**      **MODE file does not have all needed records.**

## Explanation

The MODE file acts as the primary resource of communications between all programs within the product. This file is uniquely identified by the value of the "Job Identifier" internal field.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA477I**      **Error occurred during error processing.**

## Explanation

Some problem occurred that prevented the normal processing of an error condition. This may be an expected or unexpected situation. For example, some errors can occur before enough information about the environment is available to properly handle message processing (expected situation). Other errors can occur because the environment has not been properly setup (unexpected situation). In either case, the true error message is displayed below this message.

## User response

None required.

---

**ARYA478E**      **"Specify Logs=Y" mutually exclusive with impact report.**

## Explanation

You requested an impact report ("Output Flags" includes value of "I"), and also requested "Specify Logs = Y". This is not a valid combination. An impact report requires all logs to the current time, and this would require use of active logs. Active logs are not allowed within the context of specifying logs and, therefore, these two options are mutually exclusive.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA479E**      **MODE file is in an invalid state; must re-run general report.**

## Explanation

The start of the detail report determined the mode file was not in the proper state. The mode file is used as a means of communication between the general and detail report runs. You must always precede a detail report run with a general report run. You must also not re-generate any general report JCL in between running the general and detail reports. Such a re-generation changes the contents of the mode file.

## User response

Invalid values have been passed to Log Analysis Tool; contact IBM Customer Support.

---

**ARYA480E**      **Including LOB data is mutually exclusive with High Speed Mode.**

## Explanation:

: LOB data cannot be accessed in high speed mode. The overhead involved in processing LOB data prevents such efficiencies.

**User response:**

Remove either the inclusion of LOB data, or remove "H" from your miscellaneous flags setting.

---

**ARYA481E**      **LOB log record of type DELETE/UPDATE invalid in log-backward mode.**

**Explanation:**

You forced a log-backward mode for detail reporting, but LOB data was found of type DELETE or UPDATE, and these types of LOB log records cannot be processed in log-backward mode.

**User response:**

Change to log-forward processing "Log reading mode = F" and retry. If you set "Log reading mode= A", the product will automatically select log-forward mode.

---

**ARYA482E**      **Invalid number of hex digits found in hex filter.**

**Explanation:**

When using hexadecimal values in the advanced filters, there must be at least two digits. If there are more than two digits the total number of digits must be even.

**User response:**

Correct the input and retry.

---

**ARYA483E**      **Invalid or unbalanced quotes found in hex filter.**

**Explanation:**

When using hexadecimal values in the advanced filters, the string entered must start with X followed by a single quote, valid hexadecimal NL digits, and end with a single quote. If you are attempting to use the LK or operator, then put the % after the final single quote not inside the quotes.

**User response:**

Correct the input and retry.

---

**ARYA484E**      **Invalid hexadecimal character found in hex filter.**

**Explanation:**

When using hexadecimal values in the advanced filters, the string entered must start with X followed by a single quote, valid hexadecimal digits (012345678ABCDEF), and end with a single quote. If you are attempting to use the LK or NL operator, then put the % after the final single quote not inside the quotes.

**User response:**

Correct the input and retry.

---

**ARYA485E**      **Invalid or unbalanced quotes found in filter value.**

**Explanation:**

When using column filters if you have a beginning quote you need to end the string with an ending quote.

**User response:**

Correct the input and retry.

---

**ARYA486E**      **Versioning data not available for table: &V1.**

**Explanation:**

This message indicates versioning information was required to format row data, but was not found in the DD TVFILE. Versioning information is required because a table's column was altered by data type, and therefore this data is needed to correlate different row formats. The message indicates the table ID (DBID,PSID,OBID) and the version number missing is the last value.

**User response:**

See the tutorial section on "Table Versioning support" for more information on how to proceed.

---

**ARYA487E**      **Error occurred writing informational messages to file**

**Explanation:**

This message indicates a fatal error occurred while trying to write out informational messages to the DD INFOM. This can be avoided by setting the "Send informational messages to file" field on the "User settings" panel to "N".

**User response:**

Try to determine the cause of the failure by looking in the job log for any system-generated messages related to this failure and file DD INFOM. If unable to detect and correct the error, contact your product administrator to notify the vendor.

---

**ARYA490E**      **Error occurred during DSPSERV CREATE services: &V1, &V2.**

**Explanation:**

An error was generated during DSPSERV CREATE services while processing LOB data. The variables in the message reflect the return code and reason code associated with the error.

**User response:**

Check the return and reason codes in the IBM manual *Authorized Assembler Services Reference* for macro DSPSERV. If resolution cannot be determined, contact your product administrator to notify the vendor.

---

**ARYA491E**      **Error occurred during ALESERV ADD services: &V1, &V2.**

**Explanation:**

An error was generated during ALESERV ADD services while processing LOB data. The variables in the message reflect the return code and reason code associated with the error.



**User response:**

Check the return and reason codes in the IBM manual "Authorized Assembler Services Reference" for macro ALESERV. If resolution cannot be determined contact your product administrator to notify the vendor.

---

**ARYA492E      LOB file does not exist or is currently in-use.**
**Explanation:**

You requested to browse the current LOB file, but it is either in-use, or does not yet exist.

**User response:**

If you just submitted the batch job to materialize LOB data, please wait for that job to end. In this case, the file is still in-use. If you did not materialize any LOB data yet for viewing, then you must first do so before you can browse the LOB data. In this case, the file does not yet exist.

---

**ARYA493E      Conversion services failed for LOB materialization.**
**Explanation:**

The LOB contained non-EBCDIC data, and conversion services to EBCDIC failed for the LOB.

**User response:**

See your job log (or INFOM DD) messages for more information on why the conversion process failed. The LOB cannot be materialized due to this failure.

---

**ARYA494E      No point-in-time conversion could be performed.**
**Explanation:**

A conversion from one type of log point to another type was requested, but no conversion could be performed. For example, you requested that a LRSN be converted to a RBA, but the returned RBA value was all zeros. This service is only available via the product interface mechanism.

**User response:**

Confirm that your input is valid and relative. The input must not be beyond the current limits of any accepted values. For example, if a date/time was provided that is beyond the current date/time, this will occur. Correct your input and retry.

---

**ARYA495E      Number of log records tracked excessive; storage exhausted.**
**Explanation:**

An attempt was made to store over 60 million log records. This is considered excessive, and no more storage will be obtained.

**User response:**

Reduce the number of tracked log records in a single run by narrowing your time range or reducing the number of filtered objects. If you did not provide any

filters, do so now, as running against all objects in your subsystem will likely lead to such an error.

---

**ARYA496E      DDLFILE > 32k SQL limit after whitespace compression.**
**Explanation:**

The DDLFILE created by this product contains DDL to create the target table(s) for the LOAD process. After whitespace was compressed, this DDL is still greater than 32K, a Db2 limit.

**User response:**

Reduce the number of tables to create or the number of columns if in audit mode.

---

**ARYA500E      GETMAIN failure...Return code: &V1, Length: &V2.**
**Explanation:**

An error was generated during GETMAIN services. The return code and length of the failing GETMAIN are displayed in the message.

**User response:**

Check the return code in the IBM manual "Authorized Assembler Services Reference" for macro GETMAIN. It is most likely that storage has been completely exhausted, and a smaller run is required (i.e., shorter time frame and/or more filters to further limit the result set).

---

**ARYA501E      IARV64 Failure**
**Explanation**

An error was generated during IARV64 services. The return code and the reason code of the failing IARV64 are displayed in the message. The most common reason codes likely to be encountered are

- 4A0016200 - Memory limit exceeded
- 4A0017200 - Insufficient free space to satisfy request
- 4A0021200 - MEMLIMIT was zero

**System action:**

Program processing halts and an error message is used.

**User response:**

Check the return/reason code in the IBM manual "Authorized Assemblers Service Reference" for macro IARV64. It may be that storage has been completely exhausted, and a smaller run is required (i.e. shorter time frame and/or more filters to further limit the result set).

---

**ARYA504E      "Include LOB/XML" mutually exclusive with one-phase mode**
**Explanation:**

The "User settings" panel has field "Use 64 bit storage" set to "Y", or field "Use work files" set to "Y". These fields put you in one-phase mode. One-phase mode cannot be used when including LOB/XML data.

**User response:**

Either set "Include LOB/XML" to "N", or go to the "User Settings" panel and set both one-phase mode fields to "N", and then retry.

---

**ARYA505E "Use 64-bit storage" mutually exclusive with "Use work files"**

**Explanation:**

The "User settings" panel has field "Use 64-bit storage" set to "Y", and the "Use work files" field also set to "Y". These fields are mutually exclusive.

**User response:**

Set at least one of these fields to "N" and retry. See the tutorial topic on one-phase mode for more information.

---

**ARYA506E Base/Clone tables not supported: &V1, &V2**

**Explanation:**

A table was found in the result set that is either a base table of a base/clone pair, or the clone table itself. Neither is supported.

**User response:**

Either remove the base/clone tables from your filter list, or explicitly exclude them from your filter list, and retry. The DBID and OBID of the failing table is included in the message (in decimal).

---

**ARYA507E LOB PDS name must be specified**

**Explanation:**

You requested to include LOB/XML data and to generate either UNDO or REDO SQL. This combination requires specification of a LOB PDS name.

**User response:**

Specify a valid PDS name to contain your LOB/XML data, or do not include LOB/XML data, or do not request any type of SQL. See the tutorial topic on LOB/XML data for more information.

---

**ARYA508E Cannot use LOAD option while in one-phase mode**

**Explanation:**

You requested to go to the LOAD data into Db2 option, but are also currently using one-phase mode. These options are mutually exclusive. You cannot use the separate LOAD detail data into Db2 panel after running a one-phase job.

**User response:**

Either run a job including LOAD options in one-phase mode, or turn off one-phase mode (via User Settings panel) and run a job in two-phase mode. Once a two-

phase mode job runs, you can then use the LOAD panel separately. See tutorial topic on one-phase mode for more information.

---

**ARYA510E LOB data present and SQL requested using pre-V9 Db2: &V1, &V2**

**Explanation:**

LOB data was found in the result set, and SQL was requested, but the release of Db2 is not greater than or equal to V9. Support for LOB data in SQL requires Db2 V9 or higher. The owning LOB table is identified in the message.

**User response:**

Remove the identified table using the appropriate filters, or do not request SQL generation for this run.

---

**ARYA511E XML data present and SQL requested: &V1, &V2**

**Explanation:**

XML data was found in the result set, and SQL was requested, and XML is not supported for SQL at this time. The owning XML table is identified in the message.

**User response:**

Remove the identified table using the appropriate filters, or do not request SQL generation for this run.

---

**ARYA512E LOB data present and using pre-V7 Db2: &V1, &V2**

**Explanation:**

LOB data was found in the result set, but the release of Db2 is not greater than or equal to V7. Support for LOB data in SQL/LOAD requires Db2 V7 or higher. The owning LOB table ID identified in the message as DBID/OBID (in decimal).

**User response:**

Remove the identified table using the appropriate filters, or do not request LOAD processes for this run.

---

**ARYA515E Maximum of 500 Db2 logs to read has been exceeded.**

**Explanation:**

The requested time frame results in more than 500 logs to be read. This is considered excessive, and the product cannot continue processing.

**User response:**

Shorten the time frame requested and retry. You can also use workfiles instead of 64-bit memory, to avoid the 500-log limit: In the **Recovery Options** window, under **General Options**, specify Use workfiles for undo/redo SQL = Y. Using workfiles may impact performance and should only be selected when scanning more than 500 Db2 logs for activity.

---

**ARYA516E**      **Required SYSCOPY records not found for DBID and PSID: &V1, &V2**

**Explanation:**

A page format log record was found, but no SYSCOPY records were found to resolve the original action causing the page format. The DBID and PSID are included in the message to identify the table space for which this occurred.

**User response:**

It is likely the database/table space was dropped for the identified object, and Db2 therefore deleted the rows from SYSCOPY. This object cannot be processed because the required resources (SYSCOPY data) have been eliminated.

---

**ARYA517E**      **Utility type record found, but log-backward was forced.**

**Explanation:**

While processing the output from the general report (REFILE records), a record was found indicating a utility type action, such as a LOAD record. Such records can only be processed in log-forward mode.

**User response:**

Most likely, log-backward mode was forced, but cannot be used here. Either change "Log reading mode" to a value of "F" (forward) or "A" (product will automatically determine proper mode, which will be log-forward here).

---

**ARYA518E**      **"Current row by key" and LOB inclusion are mutually exclusive.**

**Explanation:**

You requested current row by key, and also have requested inclusion of LOB type columns. The two are mutually exclusive. Current row values cannot be accessed by key when LOB columns are present.

**User response:**

Either turn off inclusion of LOB columns, or turn off the current row by key fields (i.e., set either/both of them to 'N'), and retry. The LOB inclusion field is on the general reports panel.

---

**ARYA520E**      **LOB/XML data present with LOAD or Mass Delete, not supported**

**Explanation:**

LOB/XML data was found in conjunction with an action such as LOAD, LOAD REPLACE, or a Mass Delete. This combination is not currently supported.

**User response:**

Examine the general/summary reports to determine which objects had these types of actions, and remove them from the run using filters.

---

**ARYA521E**      **Dyn alloc err: Dsname: &V1, Ret: &V2, Res: &V3**

**Explanation**

Dynamic allocation attempt failed for the specified ddname. The return code and reason codes are SVC 99 standard codes and can be found in the IBM manual "Authorized Assembler Services Guide" in the chapter "Requesting Dynamic Allocation Functions". The most common codes likely to be encountered are:

- ddname unavailable or in use by another user
- ddname associated with an already opened data set
- data set associated with ddname not found

**User response:**

If the return and reason codes provide enough information, correct the error and retry. Otherwise, contact the vendor.

---

**ARYA522E**      **Override product dynamic allocation=N requires a disk unit name.**

**Explanation:**

You set "Override product dynamic allocation=N", but left "Disk unit name for dynamic allocations" field blank. This is an invalid combination.

**User response:**

Set "Disk unit name for dynamic allocations" to a valid value if you want to use the products dynamic allocation feature. Otherwise, set "Override product dynamic allocation=Y".

---

**ARYA523E**      **Invalid number was entered. Enter only decimal numbers.**

**Explanation:**

You have entered an invalid number. Only decimal values are permitted. No alphanumeric or hexadecimal values are allowed.

**User response:**

Correct the input and retry.

---

**ARYA524E**      **At least one line of version information is needed.**

**Explanation:**

You have not entered any information to be added to the table version file. Please enter the necessary fields for at least one line.

**User response:**

Enter the versioning information.

---

**ARYA525E**      **OPEN failure on dsname: &V1 during table version processing**

**Explanation:**

The OPEN failed for the dsname. The dsname should exist before starting this process. The dsname is built

internally based on the default values found in User Settings and on the value found in the job identifier field in the Table Version Support panel.

**User response:**

Verify that the data set name does exist and that you are authorized to edit this data set.

---

**ARYA526I      Versioning information has been added to &V1. Enter more or exit.**

**Explanation:**

The versioning information entered has been added to the TVFILE. You can either add more versioning information or exit the panel.

**User response:**

None.

---

**ARYA527E      Optional VSAM fields must be spaces when overriding dyn allocation**

**Explanation:**

Overriding dynamic allocation means the ROWDATA VSAM data set must come from the standard naming convention only (i.e., name=userid.ROWDATA.CLUSTER) using only the "Create/Re-create ROWDATA VSAM file" panel. Optional VSAM fields here must be spaces.

**User response:**

Either set "Optional data sets prefix (VSAM)" to spaces, and "Optional volume serial numbers (VSAM)" to spaces, or set "Override product dynamic allocation" to "N".

---

**ARYA530E      Unsupported alter column data type found on column: &V1.**

**Explanation:**

An unsupported alter column data type was found during an attempt to create a static SQL program. Variable length to fixed length conversions, conversions to FLOAT, and conversions to DECIMAL are not currently supported.

**User response:**

Table versioning is supported via dynamic SQL processing only at this time.

---

**ARYA537E      Showing uncommitted units of work not allowed when resolving UOWs.**

**Explanation:**

You cannot show uncommitted units of work and request to resolve started units of work. By resolving started units of work, there will not be any uncommitted units of work to show.

**User response:**

Either set "Show uncommitted = N" or set "Resolve started UOWs = N". Correct your input and retry.

---

**ARYA538E      Resolve started UOWs is available only with date-time log ranges.**

**Explanation:**

Resolve started UOWs was specified, but either RBAs or LRSNs were provided as the log range. Only date-time specifications are allowed with Resolve started UOWs.

**User response:**

Correct the input and retry.

---

**ARYA618W      SQL statement not valid due to: SET clause had only non-updatable columns.**

**Explanation:**

Db2 Recovery Expert cannot recover a table containing a GENERATED ALWAYS column when an update has been made that only changed the GENERATED ALWAYS column.

**User response:**

This is a warning message indicating the generation of a particular UPDATE SQL will be skipped.

---

**ARYA707E      Mismatch encountered between the MODEFILE and JCL.**

**Explanation:**

The MODEFILE and JCL are out of sync. One is set up for 1 Phase, while another is set up for 2 Phase.

**User response:**

Regenerate or restore the MODEFILE, JCL, or both so they will be in sync.

---

**ARYB204I      Connected to Db2 subsystem ssid**

**Explanation:**

Informational message identifying the Db2 subsystem to which you are connected.

**User response:**

None

---

**ARYB205E      Error (action: action; code: code; reason: reason) occurred during connection to Db2 subsystem ssid.**

**Explanation:**

Db2 Recovery Expert cannot connect to the specified Db2 subsystem.

**User response:**

Review the *action*, *code*, and *reason* information in the message text. Correct the issues and try connecting again.

---

**ARYB206I      Disconnected from Db2.**

**Explanation:**

Informational message specifying that you have disconnected from the current Db2 subsystem.

**User response:**

None

---

**ARYB207E**      **Error (code: *code*, reason: *reason*) occurred during disconnection from Db2.**

**Explanation:**

An error occurred while Db2 was disconnecting from the specified Db2 subsystem.

**User response:**

Review the code and reason information that is included in the message text. Correct the issues and retry disconnecting.

---

**ARYB208W**      **SQL warning occurred in *modulename* on line *linenumber*. SQLCODE = *sqlstatementtext*.**

**Explanation:**

A message warns that the SQL statement in the specified module on the specified line number might not perform as expected. The text of the SQL statement is displayed.

**User response:**

Review the statement and message to verify the validity of the statement. Processing continues.

---

**ARYB209E**      **SQL error occurred in *modulename* on line *linenumber*. SQLCODE = *sqlstatementtext*.**

**Explanation:**

A SQL error has occurred in the specified module on the specified line number. The text of the SQL statement is displayed.

**User response:**

Correct the SQL statement and resubmit.

---

**ARYB210I**      ***sqlstatementtext***

**Explanation:**

This is an informational message that displays the SQL statement.

**User response:**

None

---

**ARYB211E**      **Db2 version *version.modlevel* is not supported.**

**Explanation:**

The Db2 version that you are attempting to connect to is no longer supported.

**User response:**

Update the Db2 subsystem to a supported version.

---

**ARYB213E**      **Can't open *ddname* for output.**

**Explanation:**

The specified DD cannot be opened.

**User response:**

Verify the existence of DD and correct the value if necessary.

---

**ARYB214E**      **Insufficient memory for allocation.**

**Explanation:**

Not enough memory has been allocated for the function that you are performing.

**User response:**

Allocate additional memory.

---

**ARYB215E**      **Can't load module *modulename*.**

**Explanation:**

Db2 Recovery Expert is unable to load the specified module.

**User response:**

Verify that the module exists and the name is correct.

---

**ARYB216E**      **The list of input objects is empty.**

**Explanation:**

Input list contains no objects.

**User response:**

Contact IBM Software Support. Provide the contents of *DD:ARYDIB* if possible.

---

**ARYB221E**      **Specified timestamp value *timestamp* invalid.**

**Explanation:**

The timestamp that you specified is in an invalid format.

**User response:**

Correct the timestamp value and resubmit.

---

**ARYB235E**      **Fetch for *objectkey* failed.**

**Explanation:**

An error occurred fetching object with the specified object key.

**User response:**

Examine logs for related error messages.

---

**ARYB243I**      **RTS generation module started.**

**Explanation:**

Runtime statistics processing is running.

**User response:**

None

---

**ARYB244I**      **RTS generation module completed with return code = *code*.**

**Explanation:**

Runtime statistics processing has completed.

**User response:**

None

---

**ARYB245I**      ***table* CATALOG UPDATE FOR *objectkey* SUCCESSFUL.**

**Explanation:**

Information for object with the specified object key has been updated in the specified catalog table.

**User response:**

None

---

**ARYB246E**      **Cannot open *ddstatementname* for input.**

**Explanation:**

The file in the specified DD statement cannot be opened.

**User response:**

Verify that the file named in the DD statement is available and specified correctly.

---

**ARYB247E**      ***Fieldname* is required.**

**Explanation:**

The field that is identified in the message is a required field and it has not been specified.

**User response:**

Specify the field.

---

**ARYB248E**      **Unexpected token was found: *token*. Possible tokens are: *validtokens*.**

**Explanation:**

An unexpected token that is named in the message is encountered. You must choose a valid token from the list of possible tokens that is provided.

**User response:**

Specify a valid token value.

---

**ARYB249E**      ***Token control card* is specified without a value. Value is required.**

**Explanation:**

A value is missing from the specified token control card.

**User response:**

Specify a value for the token control card.

---

**ARYB250E**      ***Token control card* must be specified only once.**

**Explanation:**

The specified token control card has been specified more than once.

**User response:**

Remove all duplicate token control cards.

---

**ARYB251E**      ***Token1* and *token2* are mutually exclusive.**

**Explanation:**

The specified tokens cannot be used at the same time.

**User response:**

Remove or change one of the tokens.

---

**ARYB252I**      **Cleanup module started.**

**Explanation:**

This is an informational message specifying that the Cleanup job is running.

**User response:**

None.

---

**ARYB253I**      **Cleanup module completed with return code = *code*.**

**Explanation:**

This is an informational message specifying that the Cleanup job has completed.

**User response:**

None.

---

**ARYB254I**      ***table* CATALOG SELECT FOR *objectkey* SUCCESSFUL.**

**Explanation:**

Information about object with the specified object key was selected from the specified catalog table.

**User response:**

None

---

**ARYB255I**      **Unnecessary records will be deleted up to *timestamp*.**

**Explanation:**

This is an informational message identifying the time and date before which all records will be deleted.

**User response:**

None.

---

**ARYB257I**      ***Number rows* are deleted from table *tablename*.**

**Explanation:**

This is an informational message identifying the number of rows that will be deleted from the specified table.

**User response:**

None

---

**ARYB258I**      **Table *tablename* is not found in repository.**

**Explanation:**

This is an informational message specifying that the named table cannot be found in the repository.

**User response:**

None

---

**ARYB259I**      ***text***

**Explanation:**

This is an informational message. The content of the message text can vary depending on the encountered issue. Review the proceeding messages to gather more information about the instance in question.

**User response:**

None

---

**ARYB260I**      **Db2 version is *db2version*,  
modification level is *modlevel*.**

**Explanation:**

This is an informational message identifying the version and mod level of the Db2 subsystem to which you are connected.

**User response:**

None

---

**ARYB282I**      **Synchronization of IDAA data  
started.**

**Explanation:**

Synchronization of IDAA data is running.

**User response:**

None

---

**ARYB283I**      **Synchronization of IDAA data  
completed with return code =  
*code*.**

**Explanation:**

Synchronization of IDAA data has completed.

**User response:**

None

---

**ARYB284W**      **Accelerator *name* is inactive and  
all related objects will be skipped.**

**Explanation:**

The specified analytics accelerator is not available.

**User response:**

Run -DISPLAY ACCEL Db2 command and check the status of the specified accelerator.

---

**ARYB285E**      **An error occurred during the  
reload of the IDAA table:  
*objectkey*. See 'DD:ddname' for  
more information.**

**Explanation:**

The reload process of the specified table in the IDAA has failed.

**User response:**

See the specified DD.

---

**ARYB286I**      **The reloading operation was  
completed successfully for IDAA  
table: *objectkey*.**

**Explanation:**

The reload process of the specified table in the IDAA has completed.

**User response:**

None

---

**ARYB287I**      **IBM Db2 Analytics Accelerator for  
z/OS is not installed.**

**Explanation:**

The IBM Db2 Analytics Accelerator for z/OS is not installed.

**User response:**

None required. If IDAA installation was verified, check that the SYSACCEL .SYSACCELERATEDTABLES table is available and not empty.

---

**ARYB288W**      **The definition of table *objectkey*  
is incomplete, because it lacks  
required indexes. Constraints for  
these indexes will be skipped.**

**Explanation:**

The index for the specified table is absent in the recovery scenario. Constraints related to the table will be skipped.

**User response:**

Verify that the index absence is valid in the recovery scenario. Processing continues.

---

**ARYB289I**      **DB2 SQL level is *sqllevel*.**

**Explanation:**

This is an informational message specifying the Db2 SQL Level.

**User response:**

None

---

**ARYA900E**      **Invalid Column Function value.  
Valid values: 1, 2, 3, 4.**

**Explanation:**

An invalid character was entered in the Column Function field.

**User response:**

Specify a valid character (1, 2, 3, or 4).

---

**ARYA901E**      **Invalid Permanent View value.  
Valid values: Y, N.**

**Explanation:**

An invalid value was entered in the Permanent View field.

**User response:**

Correct the value or cancel. Valid values are Y and N.

---

**ARYA902E**      **Invalid Reset View value. Valid  
values are Y, N.**

**Explanation:**

An invalid character was entered in the Reset View field. Valid values are Y and N.

**User response:**

Specify a valid value or cancel.

---

**ARYA903E Invalid Stop Sorting value. Valid values: Y, N.**

---

**Explanation:**

An invalid character was entered in the Reset View field. Valid values are Y and N.

**User response:**

Specify a valid value or cancel.

---

**ARYA904E Invalid FORM parameter.**

---

**Explanation:**

Invalid parameter to the FORM command. The FORM command has no parameters.

**User response:**

Clear the invalid parameters and re-issue the command. Or, clear the entire command.

---

**ARYA906E Invalid parameter for NROW. Must be numeric.**

---

**Explanation:**

The parameter you specified was not numeric and is therefore invalid.

**User response:**

Specify a numeric value corresponding to the number of rows to advance. The default value for NROW is 1.

---

**ARYA907E Invalid parameter for PROW. Must be numeric.**

---

**Explanation:**

The parameter you specified was not numeric and is therefore invalid.

**User response:**

Specify a numeric value corresponding to the number of rows to scroll back. The default value for PROW is 1.

---

**ARYA908E Invalid parameter for NROW. Too many digits.**

---

**Explanation:**

An invalid parameter for the NROW keyword was specified. More than eight digits were specified. Parsing stops at eight digits.

**User response:**

A parameter of NROW must be between 1 and the number of rows in the current report display. If no parameter is specified, 1 is assumed.

---

**ARYA909E Invalid parameter for PROW. Too many digits.**

---

**Explanation:**

Invalid parameter to PROW specified. More than eight digits were specified. Parsing stops at eight digits.

**User response:**

A parameter of PROW must be between 1 and the number of rows in the current report display. If no parameter is specified, 1 is assumed.

---

**ARYA910E CSETUP command not supported from FORM function.**

---

**Explanation:**

CSETUP functions are not supported while in the FORM display. CSETUP functions include CFIX, CORDER, CSIZE, CSORT, and CSETUP (CSET).

**User response:**

Exit the current FORM function before issuing a CSETUP function.

---

**ARYA911E Invalid ICR command. Use RIGHT command.**

---

**Explanation:**

ICR is only valid with columns that are not their maximum size. You can see the column's current and maximum sizes by issuing CSIZE.

**User response:**

RIGHT and LEFT commands can be used to see all parts of this column.

---

**ARYA912E Invalid ICL command. Use LEFT command.**

---

**Explanation:**

ICL is only allowed with columns that are not their maximum size. You can see the column's current and maximum sizes by issuing CSIZE.

**User response:**

RIGHT and LEFT commands can be used to see all parts of this column.

---

**ARYA913E Format mix data element not updated.**

---

**Explanation:**

Format MIX data cannot be updated when only part of the data is displayed.

**User response:**

None required.

---

**ARYA914E FORM command not supported from FORM function.**

---

**Explanation:**

FORM was issued from within a FORM display. This is not supported.

**User response:**

None required.

---

**ARYA915I FORM PF keys set; NROW = next row PROW = previous row.**

---

**Explanation:**

The NROW (next row) and PROW (previous row) commands are used to move the FORM display window to another row. The UP, DOWN, LEFT, and RIGHT commands move the FORM display window within the current row. Row, as mentioned above,



refers to the row from the original report display, not any reformatted FORM display row. By default, NROW advances the FORM display to the next row. If NROW n is issued, the FORM display will advance n rows. Similarly, PROW moves the FORM display window to the immediately prior row. PROW n moves the current FORM display window to the nth prior row.

**User response:**  
None required.

---

**ARYA916E Invalid CNUM parm. Valid parms are ON, OFF, or blank.**

**Explanation:**  
CNUM was issued with an invalid parameter. Issuing CNUM with no parameter acts as an ON/OFF toggle. ON and OFF are the only parameters accepted. ON turns the CNUM display on. OFF turns the CNUM display off.

**User response:**  
Use a valid CNUM parameter (ON, OFF, or blank).

---

**ARYA917E Report width for print too large.**

**Explanation:**  
The report width specified is too large. The maximum report width currently supported is 32,760.

**User response:**  
Reduce the report width.

---

**ARYA918E FORM command not supported from CSET function.**

**Explanation:**  
FORM was issued from within a CSET function. This is not supported. CSET functions include CFIX, CORDER, CSIZE, CSORT and CSETUP (CSET).

**User response:**  
None required.

---

**ARYA920I Chars string found number times.**

**Explanation:**  
The FIND command located the specified character string. The number of times the string was found is listed in the message.

**User response:**  
None required.

---

**ARY921I Chars string not found on any lines.**

**Explanation:**  
The FIND command could not locate the specified character string.

**User response:**  
None required.

---

**ARYA922I Search for CHARS string was successful.**

**Explanation:**  
The FIND command located the specified character string.

**User response:**  
None required.

---

**ARYA923E Parameter not recognized: Check for misspelled keywords or embedded blanks in search string.**

**Explanation:**  
An invalid parameter was entered for the FIND command.

**User response:**  
Check the parameter spelling and syntax.

---

**ARYA924E Inconsistent parameters: parameter 1 and parameter 2 cannot both be specified for FIND command.**

**Explanation:**  
Too many parameters were specified for the FIND command.

**User response:**  
Check the command syntax and retry.

---

**ARYA926E Parm too long: Maximum parameter length is 80.**

**Explanation:**  
The parameter entered in the FIND command is too long. Maximum length is 80 characters.

**User response:**  
Shorten the parameters to less than or equal to 80 characters and retry.

---

**ARYA927E Invalid COLS parm. Valid parms are ON, OFF, or blank.**

**Explanation:**  
An invalid parameters was entered with the COLS command.

**User response:**  
Enter a valid value as indicated in the message text.

---

**ARYA930I No columns eligible for resizing.**

**Explanation:**  
The displayed report does not contain any columns that can be resized.

**User response:**  
None required.

---

**ARYA931I No columns eligible for sorting.**

**Explanation:**  
The displayed report does not contain any columns that can be sorted.

**User response:**

None required.

---

**ARYA932E** **TBMOD failed. RC=return\_code.**

**Explanation:**

An unexpected return code of (hex) return code occurred doing TBMOD.

**User response:**

See the ISPF Services Guide under TBMOD. Review ISPTLIB allocation. Review ISPTLIB data set characteristics. Review security controlled access to ISPTLIB data sets.

---

**ARYA933E** **Invalid column name: missing quote.**

**Explanation:**

SORT or CSORT was issued with a parameter that had an initial quotation character, but not a second closing quotation character.

**User response:**

Either clear the command line and select the desired sort column(s) from the displayed selection list or correct the command on the command line.

---

**ARYA934E** **More than 9 columns specified.**

**Explanation:**

SORT or CSORT was issued with too many columns specified as sort columns. A maximum of 9 sort columns can be specified.

**User response:**

Either clear the command line and select the desired sort column(s) from the displayed selection list or correct the command on the command line.

---

**ARYA935E** **Invalid column name.**

**Explanation:**

SORT or CSORT was issued with a column parameter that does not match any column name. A list of the correct column names is seen in the SORT selection panel.

**User response:**

Either clear the command line and select the desired sort column(s) from the displayed selection list or correct the command on the command line.

---

**ARYA936E** **Invalid row selection character**

**Explanation:**

An invalid selection character was entered in the SSID selection list. The only valid selection character is S. Alternatively, simply place the cursor on the desired line and press ENTER (without a line selection character).

**User response:**

Clear the invalid character.

---

**ARYA937E** **Only one row selection allowed**

**Explanation:**

More than one SSID was selected from the SSID selection list. A maximum of one SSID can be selected.

**User response:**

Clear all, or all but one row selection character.

---

**ARYA938E** **Invalid command**

**Explanation:**

An invalid command was entered on the SSID selection list panel.

**User response:**

Clear the command.

---

**ARYA939E** **Read of control file failed**

**Explanation:**

Reading the control data set failed.

**User response**

Verify that the data set name is correct.

**Tip:** Product setup typically has a setup command, 'S' where you can see the control data set currently in use.

---

**ARYC001E** **A description for the Combined SLB Group must be specified**

**Explanation:**

You must specify a valid description for the Combined SLB group definition.

**User response:**

Specify a valid description.

---

**ARYC002I** **Add new Combined SLB Group operation canceled**

**Explanation:**

The operation to add a new Combined SLB group was canceled at your request.

**User response:**

None required.

---

**ARYC003I** **Combined SLB Group *group* added**

**Explanation:**

The listed Combined SLB group was successfully added.

**User response:**

You can now define backup and DR profiles for this group.

---

**ARYC004E** **Combined SLB Group *group* already exists**

**Explanation:**

The listed Combined SLB group is already defined.

**User response:**

Choose a different name for the Combined SLB group, and continue.

---

**ARYC005E      Subsystem *ssid* is already part of a Combined SLB Group**

**Explanation:**

The listed subsystem *ssid* is already a part of a Combined SLB group and cannot be included in another group. You can only include a subsystem in one Combined SLB group.

**User response:**

Choose a different SSID to include in this group. If the SSID must be added to this group, it must first be removed from the other group.

---

**ARYC006E      Error adding Combine SLB Group *group*, RC=*rc*, RSN=*rsn***

**Explanation:**

An internal error occurred while attempting to add the listed group to the repository.

**User response:**

Contact technical support and provide them with the information displayed in this message.

---

**ARYC007E      A Combined SLB Group must contain at least 1 member**

**Explanation:**

A Combined SLB group must contain at least 1 member. You cannot add a group that has no member(s), and you cannot delete all members from a group.

**User response:**

If you are adding a new Combined SLB group, include at least one SSID in the group. If you are deleting all SSIDs from a group, then delete the group instead of deleting the members.

---

**ARYC008I      Combined SLB Group *group* deleted**

**Explanation:**

The listed Combined SLB group was successfully deleted.

**User response:**

None required.

---

**ARYC009E      Error deleting Combine SLB Group *group*, RC=*rc*, RSN=*rsn***

**Explanation:**

An internal error occurred while attempting to delete the listed group from the repository.

**User response:**

Contact technical support and provide them with the information displayed in this message.

---

**ARYC010I      Combined SLB Group & CSLBGRPN successfully updated**

**Explanation:**

The listed Combined SLB group was successfully updated.

**User response:**

None required.

---

**ARYC011E      Error updating Combined SLB Group *group*, RC=*rc*, RSN=*rsn***

**Explanation:**

An internal error occurred while attempting to update the listed group in the repository.

**User response:**

Contact technical support and provide them with the information displayed in this message.

---

**ARYC012E      Error adding member SSID to Combined SLB Group *group*, RC=*rc*, RSN=*rsn***

**Explanation:**

An internal error occurred while attempting to add the listed member to the Combined SLB group in the repository.

**User response:**

Contact technical support and provide them with the information displayed in this message.

---

**ARYC013E      Error deleting member SSID from Combined SLB Group *group*, RC=*rc*, RSN=*rsn***

**Explanation:**

An internal error occurred while attempting to delete the listed member from the Combined SLB group in the repository.

**User response:**

Contact technical support and provide them with the information displayed in this message.

---

**ARYC014E      Error reading SYSGROUP repository, RC=*rc*, RSN=*rsn***

**Explanation:**

An internal error occurred while attempting to read the SYSGROUP repository.

**User response:**

Contact technical support and provide them with the information displayed in this message.

---

**ARYC015E      There are no Combined SLB Groups currently defined in the SYSGROUP repository**

**Explanation:**

While attempting to add a profile for a Combined SLB group, it was detected that there are currently no Combined SLB groups defined.

**User response:**

Define a Combined SLB group before creating backup or DR profiles for the Combined SLB group.

---

**ARYC016E      Unable to read the Combined SLB Group from the SYSGROUP repository**

**Explanation:**

An error occurred while attempting to read a Combined SLB group from the SYSGROUP repository.

**User response:**

Ensure that a valid SYSGROUP repository is defined and specified in the invocation CLIST.

---

**ARYC017E      Combined SLB group delete canceled, profiles exist for the group**

**Explanation:**

While attempting to delete a Combined SLB group, it was determined that there are profiles that still reference this group. A list of these profiles was displayed, and a confirmation to delete them was canceled.

**User response:**

None required.

---

**ARYC018E      View mode - updates not allowed because there are backups for this Combined SLB group**

**Explanation:**

While attempting to update a Combined SLB group, it was determined that there are backups associated with the group. You cannot add or remove SSIDs in a Combined SLB group when there are backups for the group. As a result, you are placed in the group in view mode.

**User response:**

To update the Combined SLB group, you must first delete any backups for the group.

---

**ARYC018E      Invalid Value - Please Enter a "Y" if you would like to delete the group or "N" if you do not want to delete the group.**

**Explanation:**

In the process of deleting an application group you have entered an invalid value.

**User response:**

Enter a "Y" to delete the group or "N" to cancel the delete request.

---

**ARYC020E      Specify a Combined SLB Group name or ? to display the currently defined groups**

**Explanation:**

To add a new profile for a Combined SLB group, you must either specify an existing group name or specify ? to view a list of groups from which to choose.

**User response:**

Specify a valid Combined SLB group name or ? to view a list of groups.

---

**ARYC021E      Group display allowed for Combined SLB profiles only**

**Explanation:**

The group display option is valid only for profiles that are associated with a Combined SLB group.

**User response:**

Choose a profile that is associated with a Combined SLB group for the group display option.

---

**ARYC022W      There are no Combined SLB Groups defined to the product**

**Explanation:**

There are currently no Combined SLB groups defined in the SYSGROUP repository.

**User response:**

Define one or more Combined SLB groups before attempting to create Combined SLB profiles.

---

**ARYC023E      *group* is an invalid Combined SLB Group name**

**Explanation:**

The listed group name is not a valid Combined SLB group name.

**User response:**

Specify a valid Combined SLB group name and retry the operation.

---

**ARYC024E      Only one Combined SLB Group can be selected**

**Explanation:**

You can only select a single Combined SLB group for the operation you are attempting to perform.

**User response:**

Choose one Combined SLB group and continue.

---

**ARYC025E      Invalid profile type selected**

**Explanation:**

The profile type that you selected is not valid.

**User response:**

Specify one of the listed values to select a valid profile type.

---

**ARYC026E      Only one SSID can be selected**

**Explanation:**

For the operation being performed, only one SSID can be selected.

**User response:**

Select a single SSID. If you want to perform the operation against multiple SSIDs, you must run the process multiple times.

---

**ARYC027W      The excluded volume could not be discovered**

**Explanation:**

The excluded volume could not be discovered. This backup profile is for a Combined SLB group that contains Db2 SSIDs. The volume being excluded was not associated with any IMS SSID in the CSLB group and could be associated with a Db2 SSID. If this volume is associated with one of the Db2 SSIDs in the group and contains a catalog, then BACKUP will fail.

**User response:**

Ensure that the volume being excluded does not contain any catalogs.

---

**ARYC028E      Invalid value - the Source/Target Mapping field should be A for Auto Mapping or S for Stogroup Discover**

**Explanation:**

In the **Source/Target mapping** field, you must specify A for Auto Mapping or S for Stogroup Discovery. No other values are allowed.

**User response:**

Specify A for Auto Mapping or S for Stogroup Discovery in the **Source/Target mapping** field.

---

**ARYC030E      Invalid Combined SLB group name. An SSID or data sharing group with this name already exists.**

**Explanation:**

The Combined SLB group name duplicates an existing SSID or data sharing group. Subsystem names, data sharing group names, and Combined SLB group names must be unique.

**User response:**

Change the name to a unique name.

---

**ARYC031E      Invalid subsystem name. A Combined SLB group with this name already exists.**

**Explanation:**

The subsystem name duplicates an existing Combined SLB group name. Subsystem names, data sharing group names, and Combined SLB group names must be unique.

**User response:**

Change the name to a unique name.

---

**ARYC032E      Invalid IMSPLEX name. A Combined SLB group with this name already exists.**

**Explanation:**

The IMSPLEX name duplicates an existing Combined SLB group name. Subsystem names, data sharing group names, and Combined SLB group names must be unique.

**User response:**

Change the name to a unique name.

---

**ARYC201E      You must select the SSID to be processed for a Combined SLB backup.**

**Explanation:**

You must select at least one SSID to be processed for the operation you are attempting to perform.

**User response:**

Select one or more SSIDs to be processed.

---

**ARYC202E      There are no candidate SSIDs in the backup for processing**

**Explanation:**

For the operation being performed, it was determined that there are no SSIDs that are candidates for this process.

**User response:**

None required.

---

**ARYC211E      SLB Used at DR must be L for Local Site, or R for Remote Site.**

**Explanation:**

The value specified for the SLB to be used for disaster recovery was not valid.

**User response:**

Specify L to use the local site backups, or R to use the remote site backups.

---

**ARYC212E      Invalid Value - Backup Method should be "B" for BCV volumes, "S" for SNAP volumes, "F" for Flash Volumes or "L" for DFSMSdss disk copy.**

**Explanation:**

An invalid value was entered in the Backup Method field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYC210E      Invalid Value - Enter a "B" to prepare JCL to perform disaster recovery to the offloaded Backup, or "P" if you would like to generate JCL to perform recovery to a later Point in Time.**

**Explanation:**

An invalid value was entered.

**User response:**

Enter a valid value as described in the message text.

---

**ARYD000E SLR bind controls not found**

---

**Explanation:**

The product control file (PCF) bind options are not defined.

**User response:**

Ensure that the product control file (PCF) bind options are defined.

---

**ARYD001E SLR auth indicators not found**

---

**Explanation:**

The product control file (PCF) authorization options are not defined.

**User response:**

Ensure that the product control file (PCF) authorization options are defined.

---

**ARYD002E Product plan not defined in product control file**

---

**Explanation:**

The product plan is not defined in the product control file (PCF).

**User response:**

Ensure that the product plan is defined in the product control file (PCF).

---

**ARYD003E Db2 CAF CONNECT failed**

---

**Explanation:**

The Db2 Call Attach Facility CONNECT failed.

**User response:**

Check the product control file settings, Db2 SSID, or the SSID status.

---

**ARYD004E Db2 CAF OPEN failed**

---

**Explanation:**

The Db2 Call Attach Facility OPEN failed.

**User response:**

Check the product control file settings, Db2 SSID, or the SSID status.

---

**ARYD005EE Invalid object type**

---

**Explanation:**

You have entered an invalid object type.

**User response:**

Correct the object type and retry.

---

**ARYD006E Error allocating product control file**

---

**Explanation:**

There was an error allocating the product control file (PCF).

**User response:**

Ensure that the product control file (PCF) is allocated and available.

---

**ARYE002E ABEND INTERCEPTED**

---

**Explanation:**

An abnormal condition has been detected. Processing terminated.

**User response:**

This error should not occur. Contact IBM Software Support.

---

**ARYE003E Db2 Call Attach Facility Error text**

---

**Explanation:**

The message text contains information related to the error.

**User response:**

If you cannot resolve this error using the information in the message, contact IBM Software Support.

---

**ARYE004E SSID NOT FOUND IN PCF**

---

**Explanation:**

This is an installation error.

**User response:**

Ensure that you have installed the product correctly. Refer to SAMPLIB member ARYSJ003 to determine if you have installed correctly.

---

**ARYE005E PRODUCT PLANS NOT DEFINED**

---

**Explanation:**

This is an installation error.

**User response:**

Ensure that you have installed the product correctly.

---

**ARYE006E PCF ALLOCATION FAILED**

---

**Explanation:**

This is an installation error.

**User response:**

Ensure that you have installed the product correctly.

---

**ARYF002E PLAN #1 NOT FOUND IN PCF**

---

**Explanation:**

The plan specified in Plan #1 in the ARYEMAC1 CLIST was not found in the product control file.

**User response:**

Ensure that you have the correct name for Plan #1 in the ARYEMAC1 CLIST and that you are using the correct product control file.

---

**ARYF003E Subsystem ID ssid is not currently active.**

---

**Explanation:**

An error was encountered with the Db2 Call Attach Facility (CAF). The message displayed is the CAF error message.

**User response:**

Use the information in the message to resolve the problem. Ensure that the Db2 subsystem is active and that you have specified the correct Db2 subsystem.

**ARYF006E PCF ALLOCATION FAILED****Explanation:**

Db2 Recovery Expert was unable to allocate the product control file.

**User response:**

Ensure that you are attempting to allocate the correct product control file.

**ARYF007E Db2 SQL error messages****Explanation:**

Db2 Recovery Expert encountered an error with Db2 SQL. The message displayed is the Db2 SQL error message text.

**User response:**

Use the information in the message to resolve the problem. Ensure that the Db2 subsystem is active and that you have specified the correct Db2 subsystem.

**ARYF017E LBDR Scanned Log range tracked by IDENTIFIER no longer exists.****Explanation:**

The Log Based Dropped Recovery scanned log range associated with the selected identifier no longer exists in the LBDR repository table.

**User response:**

Create a new LBDR scanned log range by entering the time range of log data to scan and proceed with the dropped object recovery.

**ARYG001I STATEMENT *statement* EXECUTION WAS SUCCESSFUL****Explanation:**

The statement identified in the message was executed.

**User response:**

No action is required.

**ARYG003EE STATEMENT *statement* EXECUTED WITH WARNING****Explanation:**

The statement identified in the message was executed and returned a "+" SQLCODE.

**User response:**

Use the information found in other messages to resolve this issue.

**ARYG004E STATEMENT *statement* EXECUTED WITH ERROR****Explanation:**

The statement identified in the message was executed and returned a "-" SQLCODE.

**User response:**

Use the information found in other messages to resolve this issue.

**ARYG005E PRECEDING STATEMENT TOO LONG (MAX *value*)****Explanation:**

The preceding statement size exceeded the Db2 SQL statement buffer size limit. The value in the message indicates the buffer size.

**User response:**

Turn on the statement compression option if it is not on, otherwise, the statement is too large to execute.

**ARYG006E INVALID SQL TERM CHARACTER****Explanation:**

The SQL terminator character supplied in the SET TERMINATOR statement is invalid. The terminator cannot be a blank, comma, double quote, "((", ")", or "\_".

**User response:**

Change the terminator character and retry.

**ARYG010E CALL ATTACH ERROR OCCURED****Explanation:**

An error occurred attempting to connect to a Db2 subsystem. Additional messages follow that describe error.

**User response:**

Use the additional messages to correct the error.

**ARYG012E MESSAGES FOLLOW:****Explanation**

These are additional messages providing information for ARYG010E.

- ARYG000I 'SQL STATEMENTS PROCESSED ..'
- ARYG000I 'INPUT RECORDS READ .....
- ARYG000I 'STATEMENT WARNING COUNT ...'
- ARYG000I 'STATEMENT ERROR COUNT .....
- ARYG000I 'STATEMENTS COMPRESSED .....
- ARYG015I 'COMMIT STATEMENT EXECUTED'
- ARYG015I 'ROLLBACK STATEMENT EXECUTED'

**User response:**

Use the information found in these and other messages to resolve the problem.

**ARYG016E SQL code error text returned by Db2****Explanation:**

An SQL statement returned a non-zero return code and this is the message text for the SQLCODE.

**User response:**

Use the information in this message to resolve the problem.

---

**ARYG017E            PRODUCT PLAN 4 NAME NOT  
                          DEFINED FOR Db2 SUBSYSTEM**

**Explanation:**

The product plan is not defined in product control file for the Db2 subsystem.

**User response:**

Correct the plan name, the Db2 subsystem name, and ensure that the Db2 subsystem and plan are defined in the product control file.

---

**ARYH001 I            Health Check running starting  
                          from *timestamp*.**

**Explanation:**

Indicates that the health check processing was started and **START-TS** is the *timestamp*.

**User response:**

None.

---

**ARYH002I            Health Check finished.**

**Explanation:**

Indicates that the health check is completed without any errors.

**User response:**

None.

---

**ARYH003I            Input object: *qualified object  
                          name*.**

**Explanation:**

Indicates that the *Qualified object name* is being processed.

**User response:**

None.

---

**ARYH004E            No objects were found for the  
                          Health Check.**

**Explanation:**

No objects were found in the catalog for the specified application profile.

**User response:**

Make sure that the selected application profile has existing objects.

---

**ARYJ000E            INTERNAL ERROR**

**Explanation:**

This represents an internal error and should not occur.

**User response:**

Contact IBM Software Support.

---

**ARYJ001 W            Error fetching ZPARM: retcode is  
                          <return-code> <message>.**

**Explanation:**

ZPARM information couldn't be fetched for the Db2 subsystem.

**User response:**

Make sure the product is installed correctly. Update the PCF with a valid Db2 loadlib for this SSID.

---

**ARYJ006E            CANCEL REQUESTED**

**Explanation:**

Recovery Plan Services interrupted at user's request.

**User response:**

No action is required.

---

**ARYJ010E            UNABLE TO READ JOB CARDS**

**Explanation:**

Dynamic allocation of and access to the data set and member containing JOB cards has failed.

**User response:**

Correct the data set name and member, or enable access.

---

**ARYJ021E            UNRECOVERABLE OBJECT**

**Explanation:**

None of the available recovery methods support this combination of object type, image copies, conflicting utilities, DDL changes for the requested Point-In-Time.

**User response:**

Choose a different Point-In-Time or exclude this object to recover the remaining selected objects.

---

**ARYJ022E            BSDS NOT FOUND IN PCF**

**Explanation**

The BSDS entry for the selected Db2 subsystem in the Product Control File is blank.

**User response**

Update the PCF with a valid BSDS for this SSID.

---

**ARYJ023E            BSDS ALLOCATION FAILED**

**Explanation:**

Dynamic allocation of the BSDS specified in the PCF for this SSID has failed.

**User response:**

Update the PCF with a valid BSDS for this SSID.

---

**ARYJ024E            BSDS OPEN FAILED**

**Explanation:**

Access to the BSDS specified in the PCF for this SSID has failed.



**User response:**

Update the PCF with a valid BSDS for this SSID.

---

**ARYJ025E      Object list exceeded for Log Analysis.**

**Explanation:**

The log analysis job has exceeded the maximum number of objects (8,000).

**User response**

Here are some suggested actions:

- Create separate profiles including 'allowed' subsets of objects; run quiet time analysis for each profile; and find an intersection of quiet time periods for different profiles manually.
- Specify fewer filters; for example, include the whole database (possibly with some excludes) instead of many individual spaces.
- Don't use quiet time for this profile; even if a selected recovery point is not a quiet time, many recovery methods are still available.

For more information, see [“Performing quiet time analysis for an object”](#) on page 312.

---

**ARYJ031I      PLAN VALID WITH NO CHANGES**

**Explanation:**

No significant difference found between the old and new recovery plans.

**User response:**

Proceed with the previously generated recovery plan.

---

**ARYJ032IE      PLAN VALID WITH MINOR CHANGES**

**Explanation:**

Additional image copies created since initial generation.

**User response:**

No action is required.

---

**ARYJ033I      PLAN IS INVALID**

**Explanation:**

The selected recovery plan has different objects, uncataloged image copies, or conflicting utilities.

**User response:**

Regenerate recovery plans.

---

**ARYJ040I      The object is not eligible for data recovery.**

**Explanation:**

The object is not eligible for data recovery. These objects (for example DATABASE) do not directly relate to database data.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ041I      Recreating the clone table would conflict with the existing base table.**

**Explanation:**

An EXCHANGE DATA command has been executed and would interfere with the existing base table data if it were to be restored using this method.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ042I      The method uses only DDL with no data recovery.**

**Explanation:**

This method is only used to drop existing objects. For example if a recovery of an object was requested to before the point in time which it existed, the DDL only plan would be generated to drop it.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ043I      The method does not support this object type.**

**Explanation:**

The method does not support this object type. Methods that are supported are listed in the Recovered Objects folder and have a green check mark.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ044I      The index is dependent on data recovery.**

**Explanation:**

The index is a COPY YES index and will be recovered using a data recovery method (for example, DSN1COPY, or Recover).

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ045I      The method does not allow recreated tables.**

**Explanation:**

The specified method will not work with a table that was re-created because it was dropped or an older version of the table was selected for recovery.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ046I      The method does not support this point in time.**

---

**Explanation:**

This method cannot be used recover the object to the specified point in time. The specified point in time may be before the object was created.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ047I      DSN1COPY does not support NOREUSE data sets.**

---

**Explanation:**

You cannot use the DSN1Copy recovery method to recover NOREUSE data sets.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ048I      REDO/UNDO SQL does not support GENERATED ALWAYS columns.**

---

**Explanation:**

You cannot use the Redo/Undo SQL recovery method to recover a table with GENERATED ALWAYS columns.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ049I      REDO/UNDO SQL does not support non-EBCDIC identifiers.**

---

**Explanation:**

You cannot use the Redo/Undo SQL recovery method to recover a table with non-EBCDIC identifiers.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ050I      REDO/UNDO SQL does not support distinct types.**

---

**Explanation:**

You cannot use the Redo/Undo SQL recovery method to recover a table with distinct types.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ051I      REDO/UNDO SQL does not support the first data set of a non-partitioned space.**

---

**Explanation:**

You cannot use the Redo/Undo SQL recovery method to recover the first data set of a non-partitioned space.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ052I      Table space method supersedes recovering all tables.**

---

**Explanation:**

All tables of a tablespace were chosen for recovery. The recovery of the tablespace will be presented instead of recovery of each individual table.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ053I      Redo SQL does not support a recreated table from a previous table space version.**

---

**Explanation:**

You cannot use the Redo SQL recovery method to recover a recreated table from a previous version of the tablespace. A previous version is one that has been dropped and recreated.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ054I      This method is not enabled in the product control file.**

---

**Explanation:**

This recovery method has not been enabled in the product control file.

**User response:**

To enable this method, update the product control file using the Tools Customizer.

---

**ARYJ055I      Last image copy before point in time unavailable.**

---

**Explanation:**

This recovery method requires an incremental image copy before the specified point in time. No usable image copy was found. This might be due to an unrecoverable event found between the image copy and the specified point in time.

**User response:**

Select an alternative recovery method and resubmit the JCL.

---

**ARYJ056I      Last image copy after point in time unavailable.**

---

**Explanation:**

This recovery method requires an incremental image copy after the specified point in time. No usable image copy was found. This might be due to an unrecoverable event found between the image copy and the specified point in time.

**User response:**

Select an alternative recovery method or choose a different recovery point in time. the JCL.

---

**ARYJ057I**      **Full image copy before point in time unavailable.**

**Explanation:**

This recovery method requires a full image copy before the specified point in time. No usable image copy was found. This might be due to an unrecoverable event found between the image copy and the specified point in time.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ058I**      **Full image copy after point in time unavailable.**

**Explanation:**

This recovery method requires a full image copy after the specified point in time. No usable image copy was found. This might be due to an unrecoverable event found between the image copy and the specified point in time.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ059I**      **LOG NO event between current and point in time.**

**Explanation:**

A LOG NO event such as a REORG or LOAD LOG NO was executed between the current point in time and the selected recovery point in time.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ060I**      **Log processing not allowed with this method.**

**Explanation:**

The selected recover method does not include any log processing component. The selected point in time to recover the object(s) to would require log processing.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ061I**      **Log processing required with this method.**

**Explanation:**

The selected recovery method requires a log processing component. The selected point in time to recover the object(s) to would not require log processing, but it must for this method.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ062I**      **Log processing not supported for NOT LOGGED intervals.**

**Explanation:**

The selected method requires log processing and a NOT LOGGED interval was discovered within the required processing range. This means that the tablespace was altered and logging was turned off.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ063I**      **Full image copy has been deleted from SYSIBM.SYSCOPY.**

**Explanation:**

The selected method requires an image copy. The record of one was found in the SLR, but not in the system catalog.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ064I**      **Concurrent copy excluded from this method.**

**Explanation:**

This method type cannot use a concurrent image copy as a resource.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ065I**      **Concurrent copy required with this method.**

**Explanation:**

This method requires a concurrent image copy as a resource.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ066I**      **REDO/UNDO SQL requires Db2 V9 for LOB column support.**

**Explanation:**

Db2 V9 is required to use the Redo/Undo SQL recovery method with LOB column support.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ067I**      **RECOVER does not support COPY NO indexes.**

**Explanation:**

The selected index is defined COPY NO and the selected plan uses the recover utility. The recover utility requires that indexes be defined COPY YES.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ068I**      **This method must provide the lowest total cost.**

**Explanation:**

This method must calculate to the lowest recovery cost before it is presented.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ069I**      **REDO/UNDO SQL does not support IMPLICITY HIDDEN columns.**

**Explanation:**

This method must calculate to the lowest recovery cost before it is presented.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ070I**      **System Backup Recovery Services is disabled in the PCF.**

**Explanation:**

This method must calculate to the lowest recovery cost before it is presented.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ071I**      **System backup usable for object restore was not found.**

**Explanation:**

A system backup usable for object restores was not found prior to the specified recovery point.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ072I**      **Load does not support XML columns.**

**Explanation:**

The table being recovered contains a XML column. This recovery method uses the LOAD utility so it cannot be used for recovery.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ073I**      **Load does not support LOB table spaces.**

**Explanation:**

The table being recovered contains a LOB column. This recovery method uses the LOAD utility so it cannot be used for recovery.

**User response:**

Select an alternative recovery method or choose a different recovery point in time.

---

**ARYJ079I**      **Recover with backout requires Db2 10 or higher.**

**Explanation:**

This message indicates that the Recover with Backout plan could not be produced when Db2 Recovery Expert is running on a Db2 version prior to Db2 10 NFM.

**User response:**

Upgrade to Db2 10 NFM.

---

**ARYJ081I**      **SQL Undo/Redo not allowed for table or index spaces with versioning.**

**Explanation:**

This message will be displayed when the objects chosen contain SYSTEM TIME TEMPORAL data. Plans with SQL Undo/Redo were not generated.

**System action:**

It is not possible to update the history table associated with the SYSTEM TIME temporal data via SQL.

**User response:**

Choose an image copy point in time for recovery. The plans generated do not require a SQL Undo/Redo component.

---

**ARYJ083I**      **Recover with BACKOUT is not supported for LOB tablespaces.**

**Explanation:**

The tablespace being recovered is a LOB tablespace. The **Recover** utility with BACKOUT cannot recover LOB tablespaces correctly, so it cannot be used.

**User response:**

Select a different recovery method or point in time.

---

**ARYJ084I**      **RBA/LRSN of RI-related tables image copies do not match. SQL processing not allowed.**

**Explanation:**

Tables being recovered are connected by Referential Integrity (RI) relation, but have no consistent copies. **Undo SQL** and **Redo SQL** may produce incorrect results for such tables, so they cannot be used for recovery.

**User response:**

Select a different recovery method or point in time.

---

**ARYJ085I**      **Recover with BACKOUT can not be performed because of mass delete.**

**Explanation:**

A mass delete or similar event produced the SYSCOPY record with ICTYPE = L and STYPE = M after the specified point in time. The **Recover** utility with BACKOUT cannot be used to recover across such events.

**User response:**

Select a different recovery method or point in time.

---

**ARYJ086I**      **LOAD into existing parent table is not supported.**

**Explanation:**

The table being recovered is a parent table in an RI relation. TRUNCATE TABLE needs to be performed as a part of the LOAD plan, but it is impossible for RI parent tables.

**User response:**

Select a different recovery method or point in time.

---

**ARYJ087I**      **Index-controlled partitioning cannot be created if the PREVENT\_NEW\_IXCTRL\_PART parameter is set to YES.**

**Explanation:**

The table space with index-controlled partitioning cannot be created if the ZPARM parameter PREVENT\_NEW\_IXCTRL\_PART is enabled.

**User response:**

Convert the partitioned table space to use table-controlled partitioning, or enable the creation of table space that uses index-controlled partitioning by setting the PREVENT\_NEW\_IXCTRL\_PART parameter to NO.

---

**ARYJ088I**      **Advanced Recover can not be used together with COPY YES indexes.**

**Explanation:**

The index being recovered is a COPY YES index. Advanced Recover does not support recovering of indexes.

**User response:**

Select a different recovery method or use the **REBUILD INDEX** utility.

---

**ARYJ088E**      **The following dropped or altered objects are not eligible for redirected recovery: <dropped-object-list>.**

**Explanation:**

Redirected Recovery for dropped objects is not allowed between different subsystems or with the Log Apply field set to N.

**User response**

To recover dropped objects using the Redirected Recovery utility, do the following things:

- Ensure that the target and source subsystems are the same.
- Set the value of the Log Apply field in the Redirected Recovery Options panel to Y.

---

**ARYJ089I**      **Advanced Recover of XML objects requires data sets for XML jobs and XML template.**

**Explanation:**

The table being recovered has XML columns, but XML options are not specified for Advanced Recover.

**User response:**

Select a different recovery method or re-generate recovery plans with XML options specified.

---

**ARYJ090I**      **Required log data set not found in the catalog.**

**Explanation:**

Resource validation is enabled in Recovery Options, and some archive log data sets required for recovery were not found in the catalog.

**User response:**

If archive logs are not cataloged but exist physically, disable the resource validation by setting **Action for missing resources** to Warning or Ignore and re-generate recovery plans. Otherwise, select a different recovery method or point in time.

---

**ARYJ091I**      **Redirected Recovery without log apply supports only tablespaces including 1 table.**

**Explanation:**

The tablespace being recovered is a multi-table segmented tablespace. Such tablespaces cannot be recovered by the Redirected Recovery plan with log apply disabled.

**User response:**

In Recovery Options, enable Log Apply and correct the desired recovery point, if possible. Note that Log Apply cannot be enabled during cross-LPAR Redirected Recovery.

---

**ARYJ092I**      **This method is not supported for simple tablespaces.**

**Explanation:**

The tablespace being recovered is a dropped simple tablespace. Simple tablespaces cannot be created in the current version of Db2 and will be re-created as segmented. Advanced Recover does not support a recovery of simple tablespaces to segmented.

**User response:**

Select a different recovery method or point in time.

---

**ARYJ093I**      **This method is generated only for dropped objects.**

**Explanation:**

The object being recovered is not dropped, but some other recovered objects are dropped. **Undo SQL** and **Redo SQL** do not support the simultaneous recovery of dropped and non-dropped objects in the same run.

**User response:**

Select a different recovery method or point in time. If no other alternatives are available, recover dropped and non-dropped objects in two separate runs.

---

**ARYJ094I**      **Recover with BACKOUT or Undo from current is not supported for objects in REFP state.**

**Explanation:**

The object being recovered has the REFP (refresh-pending) restrictive state and may contain inconsistent data. Any recovery methods using the current object data as a starting point may yield unpredictable results and should not be used.

**User response:**

Select a different recovery method or point in time.

---

**ARYJ095I**      **DSN1COPY and SQL Undo/Redo is not supported for objects in REFP state.**

**Explanation:**

The object being recovered has the REFP (refresh-pending) restrictive state, which needs to be resolved in order to make the object usable. The DSN1COPY utility is unable to modify the restrictive state of the object, even if it can recover the data itself.

**User response:**

Select a different recovery method or point in time.

---

**ARYJ096I**      **Recovery of incompletely defined partitioned tables is not supported.**

**Explanation:**

The object being recovered is an empty object with incomplete definition. The RECOVER utility is unable to recover incompletely defined objects.

**User response:**

Select a different recovery method, including DDL generation, or a different point in time.

---

**ARYJ097I**      **Load does not support existing versioned tablespaces.**

**Explanation:**

The object being recovered by the Load utility is versioned.

**User response:**

Choose different recovery plans (for example, Undo SQL or RECOVER) for this object. If a recovered tablespace is segmented, consider converting it to universal format in the future.

---

**ARYJ098I**      **SLR record for altered object is not found in the repository.**

**Explanation:**

The object being recovered was altered, and the chosen recovery point is before the alter was made. There is not enough information to restore the previous state of the object.

**User response:**

Choose a different recovery point; for example, after the alter. Consider updating the SLR repository more frequently, to avoid this issue.

---

**ARYJ099I**      **Object translation is not specified.**

**Explanation:**

Redirected Recovery to the same Db2 subsystem requires a name translation for every recovered object to avoid duplicate names.

**User response:**

Specify appropriate translations for all recovered objects, or exclude objects from the profile. Use the ISPF **Validate** command on the Object Translation panel to check this condition in advance.

---

**ARYJ100E**      **UTILID user-id.job-name NOT AVAILABLE**

**Explanation:**

The default utility-id (*user-id.job-name*) has been used by a stopped utility that has not yet been terminated.

**User response:**

You should terminate the stopped utility before proceeding with this recovery.

---

**ARYJ101E**      **SPACE NOT ACCESSIBLE**

**Explanation:**

Either the object does not have the required access level, or Db2 has assigned a restrictive status or lock. The Status and Lockinfo columns provide more detailed information.

**User response:**

Review and resolve the conflicts before proceeding with this recovery.

---

**ARYJ110E**      **PARSING ERROR**

**Explanation:**

This represents an internal error and should not occur.

**User response:**

Contact IBM Software Support .

---

**ARYJ111E**      **INVALID TYPE**

**Explanation:**

This represents an internal error and should not occur.

**User response:**

Contact IBM Software Support.

---

**ARYJ112E            OBJECT NOT FOUND**

**Explanation:**

This represents an internal error and should not occur.

**User response:**

Contact IBM Software Support.

---

**ARYJ114E            DATA CANNOT BE CONVERTED  
                         FROM EBCDIC TO UTF-8**

**Explanation:**

A character conversion error occurred during the implicit name resolution.

**User response:**

Contact the IBM Customer Support.

---

**ARYJ115E            DATA CANNOT BE CONVERTED  
                         FROM EBCDIC TO UTF-16**

**Explanation:**

A character conversion error occurred during the implicit name resolution.

**User response:**

Contact the IBM Customer Support.

---

**ARYJ116E            DATA CANNOT BE CONVERTED  
                         FROM UTF-16 TO UTF-8**

**Explanation:**

A character conversion error occurred during the implicit name resolution.

**User response:**

Contact the IBM Customer Support.

---

**ARYJ117E            DATA CANNOT BE CONVERTED  
                         FROM UTF-8 TO EBCDIC**

**Explanation:**

A character conversion error occurred during the implicit name resolution.

**User response:**

Contact the IBM Customer Support.

---

**ARYJ118E            DATA CANNOT BE CONVERTED  
                         FROM UTF-8 TO UTF-16**

**Explanation:**

A character conversion error occurred during the implicit name resolution.

**User response:**

Contact the IBM Customer Support.

---

**ARYJ119E            DATA CANNOT BE CONVERTED  
                         FROM UTF-16 TO EBCDIC**

**Explanation:**

A character conversion error occurred during the implicit name resolution.

**User response:**

Contact the IBM Customer Support.

---

**ARYJ120E            RETURN CODE: *return code*  
                         REASON: *reason code***

**Explanation:**

This message is shown together with message ARYJ114E, ARYJ115E, ARYJ116E, ARYJ117E, ARYJ118E, or ARYJ119E. It contains return and reason codes from z/OS Unicode Services if a character conversion error occurs.

**User response:**

Contact the IBM Customer Support. Please provide the text of this message.

---

**ARYJ121E            GDG must be at end of mask –  
                         DSN: *dsnmask***

**Explanation:**

The &GDG variable can only be specified at the end of the data set mask.

**User response:**

Move the &GDG variable to the end of the data set mask.

---

**ARYJ122E            IC DSN exceeds 44 char – DSN:  
                         *dsn***

**Explanation:**

Image Copy DSN exceeded the character limit.

**User response:**

Edit the data set mask to make sure the resulting data set is not greater than 44 characters.

---

**ARYJ122W            IC mask may exceed 44 char –  
                         Mask: *dsnmask***

**Explanation:**

When the specified DSN MASK *dsnmask* is resolved, it may be greater than 44 characters and generate an invalid data set name.

**User response:**

If the resulting data set name is greater than 44 characters, edit the data set mask to make it shorter.

---

**ARYJ123E            Invalid character in IC DSN – DSN:  
                         *dsn***

**Explanation:**

An invalid character is in the Image Copy DSN. Valid characters are A through Z, 0 through 9, and \$ # @.

**User response:**

Reenter the information using only valid characters.

---

**ARYJ124E            Invalid qualifier detected – DSN:  
                         *dsn***

**Explanation:**

Db2 Recovery Expert detects an invalid qualifier.

**User response:**

Enter a valid qualifier.

---

**ARYJ125E**      **Qualifier exceeds 8 bytes – DSN: *dsn***

**Explanation:**

The qualifier is invalid. Only 8 bytes are allowed between each period.

**User response:**

Ensure that the qualifier is 8 bytes or less.

---

**ARYJ125W**      **Qualifier may exceed 8 bytes – DSN: *dsn***

**Explanation:**

The qualifier is invalid. When the data set mask is resolved, it may exceed 8 bytes.

**User response:**

Ensure that the qualifier is 8 bytes or less.

---

**ARYJ126E**      **IC DSN already exists – DSN: *dsn***

**Explanation:**

The generated data set name already exists.

**User response:**

Either delete the existing data set or change the data set mask so a different data set name is generated.

---

**ARYJ127E**      **Local secondary duplicates local primary/Recover site primary duplicates local primary/Recover site primary duplicates local secondary/Recover site secondary duplicates local primary/Recover site secondary duplicates local secondary/Recover site secondary duplicates recover site primary**

**Explanation:**

The same data set mask cannot be used for more than one image copy specification.

**User response:**

Change the data set masks so they are unique.

---

**ARYJ130W**      **ZPARM parameter IMPDSDEF set to NO. Set it to YES before executing the recovery job.**

**Explanation:**

An implicit tablespace was found in the recovery list. This tablespace will not have its own dataset after creation due to the disabled IMPDSDEF parameter.

**User response:**

The ZPARM parameter IMPDSDEF must be set to YES before running the recovery job.

---

**ARYJ131I**      **Only Redirected Recovery of indexes over universal**

**tablespaces is supported by the RECOVER utility.**

**Explanation:**

RECOVER utility doesn't support Redirected Recovery of indexes over non-universal table spaces. The index will be rebuilt when the recovery of table space or table objects is performed.

**User response:**

The index cannot be recovered separately from parent table space or table. Select the recoverable table space or table or use Generate DDL only option.

---

**ARYJ131W**      **Separate jobs may be generated for XML objects.**

**Explanation:**

XML table on a data sharing subsystem is recovered by Advanced Recover or Redirected Recovery plans. Additional jobs may be generated that should be submitted on other data sharing members.

**User response:**

Look at the output of the recovery job and submit additionally generated JCLs.

---

**ARYJ132I**      **Redirected Recovery (Change Accumulation) of indexes is not supported.**

**Explanation:**

Redirected Recovery of indexes using Change Accumulation tool is available only if you are recovering database, table space or table objects together with it. The indexes will be rebuilt when the recovery of table space or table objects is performed.

**User response:**

The index cannot be recovered separately from parent table space or table. Select a recoverable table space or table or use Generate DDL only option.

---

**ARYJ132W**      **Table with Data Capture Changes enabled is being recovered.**

**Explanation:**

**Notify if Data Capture Changes enabled** option is active, and a table with Data Capture Changes enabled is found in the profile.

**User response:**

If a table is a part of some replication setup, it may need to be replicated after the recovery.

---

**ARYJ133I**      **Redirected Recovery of implicit indexes is not supported.**

**Explanation:**

Redirected Recovery of implicit indexes is available only if you are recovering database, table space or table objects together with it. The indexes will be rebuilt when the recovery of table space or table objects is performed.



**User response:**

The index cannot be recovered separately from parent table space or table. Select a recoverable table space or table or use Generate DDL only option.

---

**ARYJ133W      Unrecoverable objects are skipped.**

**Explanation:**

Some objects in profile can't be recovered by any method. Details are available on the **Recovered Objects** screen.

**User response:**

Review the list of unrecoverable objects. Fix the cause of problems listed there, if possible. Continue the recovery or exclude the reported objects from profile, if these objects are unnecessary.

---

**ARYJ134W      Required resources data sets are not found in the catalog.**

**Explanation:**

Some image copy or archive log data sets that may be required for the recovery are not found in catalog.

**User response:**

Continue the recovery if data sets are intentionally not cataloged. Otherwise, look at the recovery plan details and check required resources.

---

**ARYJ135W      Recovery plan may be unusable for segmented tablespace with multiple tables.**

**Explanation:**

The tablespace being recovered is segmented. It contains only one table, but may have contained multiple tables in the past. Copies of tablespaces with multiple tables cannot be used by Redirected Recovery with log apply disabled.

**User response:**

Make sure that the tablespace being recovered did not previously contain multiple tables; if it did not, the generated recovery plan may be executed with no additional action needed.

---

**ARYJ136E      XML template data set should have been generated. XML template or XML jobs data set is not specified**

**Explanation:**

XML table on a data sharing subsystem is found for recover by Advanced Recover or Redirected Recovery plans. Additional jobs may be generated that should be submitted on other data sharing members. But data sets in which these additional jobs should be generated are not specified. This message is shown as an error if this is a Redirected Recovery plan, or a warning for other types of recovery plans.

**User response:**

You should specify XML template and XML jobs data sets in the subsystem's **Log Read and Log Apply Defaults** or in the application profile's **Redirected Recovery Options - Log read and log apply options**.

---

**ARYJ137W      XML template data set should have been generated. XML template or XML jobs data set is not specified**

**Explanation:**

XML table on a data sharing subsystem is found for recover by Advanced Recover or Redirected Recovery plans. Additional jobs may be generated that should be submitted on other data sharing members. But data sets in which these additional jobs should be generated are not specified. This message is shown as an error if this is a Redirected Recovery plan, or a warning for other types of recovery plans.

**User response:**

You should specify XML template and XML jobs data sets in the subsystem's **Log Read and Log Apply Defaults** or in the application profile's **Redirected Recovery Options - Log read and log apply options**.

---

**ARYJ138E      Can't open the XML data set: *data set name*; Reason: *reason***

**Explanation:**

XML table on a data sharing subsystem is found for recover by Advanced Recover or Redirected Recovery plans. Additional jobs may be generated that should be submitted on other data sharing members. But one of the data sets in which these additional jobs should be generated cannot be opened; the reason describes why. This message is shown as an error if this is a Redirected Recovery plan, or a warning for other types of recovery plans.

**User response:**

Check *reason* for *data set name* data set.

---

**ARYJ139W      Can't open the XML data set: *data set name*; Reason: *reason***

**Explanation:**

XML table on a data sharing subsystem is found for recover by Advanced Recover or Redirected Recovery plans. Additional jobs may be generated that should be submitted on other data sharing members. But one of the data sets in which these additional jobs should be generated cannot be opened; the reason describes why. This message is shown as an error if this is a Redirected Recovery plan, or a warning for other types of recovery plans.

**User response:**

Check *reason* for *data set name* data set.

---

**ARYJ140E      Object translation: source or target values are invalid.**

**Explanation:**

There is an invalid value in the translation.

**User response:**

Enter a valid value and try again.

**ARYJ141E**      **VCAT and storage group translations are mutually exclusive.**

**Explanation:**

VCAT and storage group translations cannot be used together.

**User response:**

Remove one of these translation values.

**ARYJ142E**      **Translated value is too long and will be truncated.**

**Explanation:**

The translation value is longer than the possible object name.

**User response:**

Edit the translation value to ensure that the name of the resulting object is not greater than the Db2 restrictions.

**ARYJ143E**      **Unexpected QUERYIND. QUERYIND filtered by IX00 or IX01 was expected.**

**Explanation:**

An error occurred while processing an internal request.

**User response:**

Contact IBM Software Support.

**ARYJ144E**      **Unexpected QUERYIND. QUERYIND filtered by P200 was expected.**

**Explanation:**

An error occurred while processing an internal request.

**User response:**

Contact IBM Software Support.

**ARYJ145E**      **Unexpected QUERYIND. QUERYIND filtered by K200 was expected.**

**Explanation:**

An error occurred while processing an internal request.

**User response:**

Contact IBM Software Support.

**ARYJ146E**      **Unexpected RI00 type.**

**Explanation:**

An error occurred while processing an internal request.

**User response:**

Contact IBM Software Support.

**ARYJ147E**      **At least one source required. Object: <object-name>.**

**Explanation:**

An error occurred while processing an internal request.

**User response:**

Contact IBM Software Support.

**ARYJ148E**      **SEL\_REQ conflict. Object: <object-name>.**

**Explanation:**

An error occurred while processing an internal request.

**User response:**

Contact IBM Software Support.

**ARYJ149E**      **PIT conversion job job\_ID failed.**

**Explanation:**

The job with the specified job\_ID has ended without a completion code. The possible reasons could be a JCL error or the job was canceled.

**User response:**

Check the job\_ID output for the cause of the failure. In case of a JCL error, correct the Job Cards settings in the interface you use to recover.

**ARYJ150W**      **Loading of LDRM module <module\_name> failed.**

**Explanation:**

An error occurred while trying to load the LDRM <module\_name>.

**User response:**

Verify if the load libraries exist. Fix the errors if any and try again.

**ARYJ151 E**      **LDRM snapset query failed.**

**Explanation:**

An error occurred while performing an LDRM query for a snapset list.

**User response:**

Look for the last "LDRM log:" message in the agent log to find out the details of the error.

**ARYJ300E**      **An error occurred while processing the request. Query status: <query-status>**

**Explanation:**

An error occurred while processing an internal request.

**User response:**

Contact IBM Software Support.

**ARYJ301E**      **Invalid object type.**

**Explanation:**

An error occurred while processing an internal request.

**User response:**

Contact IBM Software Support.

---

**ARYJ303E**      **Variables are only supported on DB2 V11 and above.**

**Explanation:**

An object of type variable was passed to an internal request, and the current version of Db2 is earlier than Version 11.

**User response:**

Select the appropriate objects to recover or upgrade the subsystem to a newer version.

---

**ARYJ304E**      **Aliases for sequences are only supported on DB2 V11 and above.**

**Explanation:**

A sequence alias was passed to an internal request, and the current version of Db2 is earlier than V11.

**User response:**

Select the appropriate objects to recover or upgrade the subsystem to a newer version.

---

**ARYJ302E**      **Repository update in progress.**

**Explanation:**

Db2 Recovery Expert detected that a repository update in progress.

**User response:**

Retry action after repository updated has completed.

---

**ARYJ400E**      **SSID not found in PCF.**

**Explanation:**

This is an installation error.

**User response:**

Make sure the product is installed correctly. Refer to the SAMPLIB member ARYSJ003 to verify if the product is installed correctly.

---

**ARYJ401E**      **SSID Db2 loadlib not found in PCF.**

**Explanation:**

The Db2 loadlib entry for the selected Db2 subsystem in the Product Control File is blank.

**User response:**

Update the PCF with a valid Db2 loadlib for this SSID.

---

**ARYJ402E**      **Product plans are not defined.**

**Explanation:**

This is an installation error.

**User response:**

Make sure the product is installed correctly.

---

**ARYJC001I**      **Image copy syntax generation started.**

**Explanation:**

Utility started.

**User response:**

No action is required.

---

**ARYJC002I**      **Generating image copy syntax for object collection *collection*.**

**Explanation:**

Utility has started processing the specified object collection.

**User response:**

No action is required.

---

**ARYJC003I**      **Image copy syntax generation for object collection *collection* completed successfully.**

**Explanation:**

Utility completed successfully.

**User response:**

No action is required.

---

**ARYJC004E**      **Image copy syntax generation failed (RC = rc).**

**Explanation:**

Utility has failed.

**User response:**

Check and correct input parameters. Contact IBM Customer Support if necessary.

---

**ARYJC005E**      **Error occurred during the processing of the file *filename*: error**

**Explanation:**

Operations failed for the specified file.

**User response:**

Check and correct input parameters. Contact IBM Customer Support if necessary.

---

**ARYJC006E**      **Location *db2location* has not been configured.**

**Explanation:**

The specified Db2 location is not configured properly.

**User response:**

Check your working environment. Contact IBM Customer Support if necessary.

---

**ARYJC007I**      **Object Profiles Migration Utility started.**

**Explanation:**

Utility started.

**User response:**

No action is required.

---

**ARYJC008I**      **Product client is terminating.**

**Explanation:**

Client is terminating.

**User response:**

No action is required.

---

**ARYJC009I      SSID *ssid* not found.**

**Explanation:**

No Db2 subsystems were found for the specified input.

**User response:**

Check and correct input parameters. Contact IBM Customer Support if necessary.

---

**ARYJC010I      *ssid* exists on multiple LPARs.  
Response required to WTOR for  
disambiguation.**

**Explanation:**

Specified Db2 subsystem exists on multiple LPARs.

**User response:**

Use WTOR to specify appropriate target system.

---

**ARYJC011I      *ssid* may exist on multiple LPARS.  
Reply with LPAR name.**

**Explanation:**

Specified DB2 subsystem exist on multiple LPARs.

**User response:**

Use WTOR to specify appropriate target system.

---

**ARYJC012I      *owner.name* will be saved at  
*system.sid*.**

**Explanation:**

Object collection will be saved at specified location.

**Explanation:**

No action is required.

---

**ARYJC014E      Server has responded with an  
error: *error*.**

**Explanation:**

Error response has been received.

**Explanation:**

Check error message. Contact IBM Customer Support if necessary.

---

**ARYJC015E      Client is not ready within *timeout*  
seconds.**

**Explanation:**

Utility was unable to establish connection to the server within the specified amount of time.

**Explanation:**

Check and correct input parameters. Contact IBM Customer Support if necessary.

---

**ARYJC016E      Server has not reported SSIDs list.**

**Explanation:**

Topology report was not received.

**Explanation:**

Contact IBM Customer Support if necessary.

---

**ARYJC017E      Server has not responded within  
*timeout* seconds.**

**Explanation:**

Response sequence is broken.

**Explanation:**

Contact IBM Customer Support if necessary.

---

**ARYJC018I      Processing object profile  
*owner.name*.**

**Explanation:**

Utility is processing the specified object profile.

**User response:**

No action is required.

---

**ARYJC019I      *owner.name* already exists on  
*system.sid*.**

**Explanation:**

Specified object collection already exists.

**User response:**

No action is required.

---

**ARYJC020E      Missed input option *option*.**

**Explanation:**

Specified option is required but not specified.

**User response:**

Check and correct input parameters. Contact IBM Customer Support if necessary.

---

**ARYJC021E      Input option *option* value *value* is  
invalid.**

**Explanation:**

Specified option has invalid value.

**User response:**

Check and correct input parameters. Contact IBM Customer Support if necessary.

---

**ARYJC030I      Object profile generation utility  
started.**

**Explanation:**

Utility started.

**User response:**

No action is required.

---

**ARYJC031I      Object profile generation utility  
completed successfully.**

**Explanation:**

Utility completed successfully.

**User response:**

No action is required.

---

**ARYJC032E      Object profile generation utility  
failed (RC = *rc*).**

**Explanation:**

Utility has failed.

**User response:**

Check previous error messages. Contact IBM Customer Support if necessary.

---

**ARYJC033E      Input object card *card* is invalid.**

**Explanation:**

Specified object card is not valid.

**User response:**

Check and correct input parameters. Contact IBM Customer Support if necessary.

---

**ARYJC034E      *ddname* DD is empty. There are no input objects.**

**Explanation:**

Specified input DD is not valid, no input objects are present.

**User response:**

Check and correct input parameters. Contact IBM Customer Support if necessary.

---

**ARYJC040I      Recovery JCL generation utility started.**

**Explanation:**

Utility started.

**User response:**

No action is required.

---

**ARYJC041I      Recovery JCL generation utility completed successfully.**

**Explanation:**

Utility completed successfully.

**User response:**

No action is required.

---

**ARYJC042E      Recovery JCL generation utility failed (RC = rc).**

**Explanation:**

Utility has failed.

**User response:**

Check previous error messages. Contact IBM Customer Support if necessary.

---

**ARYJC043E      Recovery JCL could not be generated.**

**Explanation:**

Utility has failed to generate recovery JCL.

**User response:**

Check previous error messages. Contact IBM Customer Support if necessary.

---

**ARYJC044E      No valid plans were generated.**

**Explanation:**

No valid plans were generated.

**User response:**

Check and correct input parameters. Contact IBM Customer Support if necessary.

---

**ARYJC045E      Plan *plan.type* unsupported.**

**Explanation:**

Specified plan type is not supported.

**User response:**

Check and correct input parameters. Contact IBM Customer Support if necessary.

---

**ARYJC046I      Strategy RECOVER is used for JCL generation.**

**Explanation:**

Strategy of type RECOVER is used to generate recovery JCL.

**User response:**

No action is required.

---

**ARYJC047I      File *file.name* was produced.**

**Explanation:**

Recovery JCL has been saved in specified file.

**User response:**

No action is required.

---

**ARYJC048I      Match generated plans to at least one selected plan.**

**Explanation:**

Generated plans have matched to at least one selected plan.

**User response:**

No action is required.

---

**ARYJC049I      Match generated plans to at least one RECOVER plan.**

**Explanation:**

Generated plans have matched at least one RECOVER plan.

**User response:**

No action is required.

---

**ARYJC050I      (*plan\_status*) *plan\_name* : cost**

**Explanation**

This message provides the description of the generated plans. The *plan\_status* has the following values:

- **S**: Plan is selected, but not generated.
- **G**: Plan is generated.
- **\***: Plan is selected and generated and has the best cost. This plan will be used for the JCL generation.

*plan\_name* is a plan name that can be passed as a input using the PLAN keyword. *cost* is the relative cost of plan execution.

**User response:**

No action is required.

---

**ARYJC051E      Unable to match generated plans to at least one selected plan.**

**Explanation:**

Unable to match generated plans to at least one selected plan.

**User response:**

Check and correct input parameters. Contact IBM Customer Support if necessary.

---

**ARYJC052E      Unable to match generated plans to at least one RECOVER plan.**

**Explanation:**

Unable to match generated plans to at least one RECOVER plan.

**User response:**

Check and correct input parameters. Contact IBM Customer Support if necessary.

---

**ARYJC053I      Strategy AUTO is used for JCL generation.**

**Explanation:**

Utility is configured to select recovery plans automatically based on approximate cost.

**User response:**

No action is required.

---

**ARYJC054E      Provided DSN *dsn* is not associated with consistent history point.**

**Explanation:**

Provided image copy data set name is not associated with a consistent history point..

**User response:**

Check and correct input parameters. Contact IBM Customer Support if necessary.

---

**ARYJC060E      Object profile *owner.name* is being skipped due to lack of credentials for SSID *ssid* on LPAR system.**

**Explanation:**

No valid credentials were specified.

**User response:**

Check and correct input parameters. Contact IBM Customer Support if necessary.

---

**ARYJC090I      Data sets are not found in the catalog.**

**Explanation:**

The **Action for missing resources** option is set to Warning during the plan generation in batch, and some resource data sets are not found in the catalog. This message is accompanied by the ARYJ134W warning message and a set of ARYJC091I messages describing the missing resources.

**User response:**

Review the ARYJC091I messages and respond accordingly.

---

**ARYJC091I      <data set name>**

**Explanation:**

The resource data set shown is not found in the catalog.

**User response:**

Investigate whether the data set was intentionally not cataloged or if it was deleted accidentally. If this uncataloged data set physically exists, ignore this message and run the generated recovery plan. If the data set was deleted, choose a different recovery point or another recovery plan that does not rely on this resource.

---

**ARYJC100I      LRSN Conversion Utility started.**

**Explanation:**

LRSN Conversion Utility was started.

**User response:**

None required.

---

**ARYJC101I      Config has been read.**

**Explanation:**

Config has been read.

**User response:**

None required.

---

**ARYJC102E      Timestamp is not specified.**

**Explanation:**

Parameter TS is required but has not been specified.

**User response:**

Check and correctly input the TS parameter.

---

**ARYJC103E      Invalid time zone '*time zone*' specified.**

**Explanation:**

An invalid value for the TZ parameter has been specified. Valid values are LOCAL/GMT.

**User response:**

Check and correct the TZ parameter.

---

**ARYJC104E      SSID is not specified.**

**Explanation:**

The SSID parameter is required but has not been specified.

**User response:**

Check and input the correct SSID parameter.

---

**ARYJC105E**      **SSID is not found.**

**Explanation:**

The specified SSID could not be found.

**User response:**

Check that SSID is defined in the product control file and that the SSID is located on the LPAR where the job was submitted.

---

**ARYJC106E**      **Output DD 'ARYLRSN' is not allocated.**

**Explanation:**

Required DD ARYLRSN is not allocated.

**User response:**

Verify that DD ARYLRSN is allocated.

---

**ARYJC107E**      **Output DD 'ARYLRSN' couldn't be opened.**

**Explanation:**

Required DD ARYLRSN could not be opened.

**User response:**

Verify that DD ARYLRSN is accessible and that there are no processes currently using it.

---

**ARYJC108E**      **Invalid timestamp '*timestamp*' specified.**

**Explanation:**

An invalid value was specified for the TS parameter was specified. The timestamp should have the following format: *yyyy-mm-dd-hh.mm.ss.uuuuuu*

**User response:**

Check and correct the TS parameter.

---

**ARYJG001I**      **Recovery status utility started.**

**Explanation:**

Recovery status utility started.

**User response:**

No action is required.

---

**ARYJG002I**      **Recovery status utility ended.**

**Explanation:**

Recovery status utility ended.

**User response:**

No action is required.

---

**ARYJG003I**      **Monitoring Recovery Status started.**

**Explanation:**

Recovery Status monitoring started.

**User response:**

No action is required.

---

**ARYJG004I**      **Monitoring Recovery Status finished.**

**Explanation:**

Recovery Status monitoring ended.

**User response:**

No action is required.

---

**ARYJG005I**      **Monitoring Utility History started.**

**Explanation:**

Utility History monitoring started.

**User response:**

No action is required.

---

**ARYJG006I**      **Monitoring Utility History finished.**

**Explanation:**

Utility History monitoring ended.

**User response:**

No action is required.

---

**ARYJG010W**      **Input option *option value value* is invalid: expected *expected*.**

**Explanation:**

Input option value is invalid.

**User response:**

Ignore if JOB has been started manually. Contact IBM Customer Support.

---

**ARYJG011E**      **Input option *option value value* is invalid: expected *expected*.**

**Explanation:**

Input option value is invalid.

**User response:**

Ignore if JOB has been started manually. Contact IBM Customer Support.

---

**ARYJG012E**      **Missed input option *option*.**

**Explanation:**

Specified input option is missing.

**User response:**

Ignore if JOB has been started manually. Contact IBM Customer Support.

---

**ARYJG013I**      **Processing was skipped due to missed input parameter *parameter*.**

**Explanation:**

Specified input option is missing.

**User response:**

Ignore if JOB has been started manually. Contact IBM Customer Support.

---

**ARYJG014E**      **Attempt to retrieve steps total from the job card *job\_card* failed.**

**Explanation:**

The job card *job\_card* doesn't contain steps total value.

**User response:**

Contact IBM Customer Support.

---

**ARYJG015E**      **Attempt to retrieve size total from the job card *job\_card* failed.**

**Explanation:**

The job card *job\_card* doesn't contain size total value.

**User response:**

Contact IBM Customer Support.

---

**ARYJG016I**      **Processing was skipped due to UTILITY\_HISTORY system parameter set to NONE.**

**Explanation:**

Utility History monitoring is not started because UTILITY\_HISTORY system parameter is set to NONE.

**User response:**

Change the UTILITY\_HISTORY system parameter value to UTILITY or OBJECT to enable Utility History monitoring.

---

**ARYJL001I**      **Configuration discovery utility started.**

**Explanation:**

Utility started.

**User response:**

No action is required.

---

**ARYJL002I**      **Configuration discovery utility completed successfully.**

**Explanation:**

Utility completed successfully.

**User response:**

No action is required.

---

**ARYJL003E**      **Configuration discovery utility failed (RC = rc).**

**Explanation:**

Utility has failed.

**User response:**

Check previous error messages. Contact IBM Customer Support if necessary.

---

**ARYL000E**      **Db2 ZPARM member could not be read**

**Explanation:**

An error was encountered trying to read the Db2 ZPARM member.

**User response:**

Ensure that the product control file information is correct for the Db2 SSID.

---

**ARYL002E**      **Unknown error**

**Explanation:**

An unknown error was encountered.

**User response:**

Contact IBM Software Support.

---

**ARYL003E**      **Db2 LOADLIB processing error**

**Explanation:**

A Db2 LOADLIB processing error was encountered.

**User response:**

Ensure that the Db2 load libraries are available.

---

**ARYL004E**      **Db2 ZPARM member load failed**

**Explanation:**

The LOAD of the Db2 ZPARM member failed.

**User response:**

Ensure that the Db2 SSID ZPARM member is available.

---

**ARYL005E**      **BSDS reader RC=24 - process error**

**Explanation:**

The bootstrap data set reader has encountered an error.

**User response:**

Contact IBM Software Support.

---

**ARYL006E**      **BSDS reader RC=20 - allocate error**

**Explanation:**

The bootstrap data set reader has encountered an error.

**User response:**

Contact IBM Software Support.

---

**ARYL007E**      **BSDS reader RC=16 - GENCB error**

**Explanation:**

The bootstrap data set reader has encountered an error.

**User response:**

Contact IBM Software Support.

---

**ARYL008E**      **BSDS reader RC=16 - GENCB error**

**Explanation:**

The bootstrap data set reader has encountered an error.

**User response:**

Contact IBM Software Support.

---

**ARYL009E**      **Error during subsystem information retrieval**

**Explanation:**

An error occurred while retrieving subsystem information.

**User response:**

Contact IBM Software Support.

---

**ARYL010E**      **APF AUTH REQUIRED:  
*library\_name***



**Explanation:**

One or more product libraries are not APF authorized.

**User response:**

Ensure that the product libraries are APF authorized.

**ARYL011E All data sets are APF authorized.**

**Explanation:**

Informational message that all data sets are APF authorized.

**User response:**

No action is required.

**ARYL013E Product version migrate is in progress**

**Explanation:**

Schema level repository is being migrated and access to the product is denied.

**User response:**

Try again later after SLR data migration is completed.

**ARYP001I Received shutdown request.**

**Explanation:**

Indicates that the server has received a shutdown request.

**User response:**

No action is required.

**ARYP002I Servername server started.**

**Explanation:**

Indicates that the server with the specified name was started.

**User response:**

No action is required.

**ARYP003I Starting the socket selector thread (thread number).**

**Explanation:**

The server is starting a separate thread to manage activity on the socket. You can track this thread by its *number*.

**User response:**

No action is required.

**ARYP004I Starting the command listener thread (thread number).**

**Explanation:**

Server is starting a separate thread to handle commands. You can track this thread by its *number*.

**User response:**

No action is required.

**ARYP006I The socket selector thread is terminating.**

**Explanation:**

Indicates that the socket selector thread is finishing its work and will cease managing activity on the socket.

**User response:**

No action is required.

**ARYP007I Received "stop" command: commandtext.**

**Explanation:**

Indicates that the server has received a "stop" command. The full command text is specified in the variable *commandtext*.

**User response:**

No action is required.

**ARYP008I Received modify command: commandtext**

**Explanation:**

Indicates that the server has received a modify command. The full command text is specified in the variable *commandtext*.

**User response:**

No action is required.

**ARYP009S The servername server is terminating due to hard stop request.**

**Explanation:**

The server has received a "force" command and will stop without waiting for queued events to be handled.

**User response:**

No action is required.

**ARYP010I The servername server is terminating.**

**Explanation:**

Indicates that the server *servername* will be stopped.

**User response:**

No action is required.

**ARYP012I Received shutdown request.**

**Explanation:**

Indicates that the server has received a shutdown request while waiting to handle queued events.

**User response:**

No action is required.

**ARYP013I Servername secured server listening on port number using the protocolname protocol.**

**Explanation:**

Indicates that the specified server is listening on the specified port number using the specified protocol. The option *secured* if present indicates that SSL encryption has been used.

**User response:**  
No action is required.

---

**ARYP017E**      **The maximum number of listen attempts has been reached.**

**Explanation:**  
The maximum number of listen attempts has been reached on the port specified in the server configuration.

**User response:**  
Set free port in the server configuration or stop already running server (that uses same port) before starting this one.

---

**ARYP019E**      **Could not match *requested-uri-string* to existing routes.**

**Explanation:**  
The server could not match the *requested-uri-string* to existing routes. Client must use different routes to interact with the server.

**User response:**  
Use the actual version of the client to interact with the server. Contact your product administrator for additional information.

---

**ARYP020E**      **The variable *controller-name* is not registered as a valid controller name.**

**Explanation:**  
The client sent an unknown name for the RESTful controller. The route is only partially recognized.

**User response:**  
Use the actual version of the client to interact with the server. Contact your product administrator for additional information.

---

**ARYP021E**      **Requested HTTP Method has not been implemented.**

**Explanation:**  
The client has sent a HTTP request that is not implemented on the server.

**User response:**  
Use the actual version of the client to interact with the server. Contact your product administrator for additional information.

---

**ARYP023E**      **Not authorized to access this resource.**

**Explanation:**  
The use of the RESTful controller requires authorization that was not passed.

**User response:**  
Change authorization credentials and retry.

---

**ARYP024E**      **HTTP Method Override *method-name* is not supported for this request.**

**Explanation:**  
Specified an unknown override method. An 'x-http-method-override' request header option can be specified as GET, PUT or DELETE.

**User response:**  
Avoid using this option. Contact IBM Software Support for additional information.

---

**ARYP026E**      **Request body is required and must be provided.**

**Explanation:**  
The HTTP request body is missing and must be provided.

**User response:**  
Use the actual version of the client to interact with the server. Contact your product administrator for more information.

---

**ARYP027E**      **The configuration file *configuration-file-name* is invalid; the root element *element-name* is not *server-config*.**

**Explanation:**  
The configuration file is invalid.

**User response:**  
Change the configuration root element to the variable specified in *server-config* or use a valid configuration file.

---

**ARYP028E**      **An error occurred while opening the configuration file *configuration-file-name error-text*.**

**Explanation:**  
Opening the configuration file ended with the error that is specified in the variable *error-text*.

**User response:**  
Check that the configuration file exists and can be accessed. Contact your product administrator for additional information if necessary.

---

**ARYP029S**      **Server-name server is not configured.**

**Explanation:**  
The configuration section for this server was not found in the configuration file.

**User response:**  
Add a configuration section to the server configuration file or contact your product administrator.

---

**ARYP030E**      **Unexpected symbols in URL: *string***

**Explanation:**

This error can occur while accessing a help page.

**System action:**

This error can occur while accessing a help page. The help page was not found.

**User response:**

Use the actual version of the client to interact with the server. Contact your product administrator for more information.

---

**ARYP031E      Invalid parameters in URL.**

**Explanation:**

This error can occur while accessing a help page. The page was not found.

**User response:**

Use the actual version of the client to interact with the server. Contact your product administrator for more information.

---

**ARYP032I      HTTP session *number* established.**

**Explanation:**

Indicates that the new HTTP session with the specified number has been established to the server.

**User response:**

No action is required.

---

**ARYP033I      HTTP session *number* ended normally.**

**Explanation:**

Indicates that the HTTP server session with the specified *number* ended normally.

**User response:**

No action is required.

---

**ARYP034I      HTTP session *number* upgraded to *protocol-name* protocol.**

**Explanation:**

Indicates that the HTTP server session with the specified *number* has been upgraded to the specified *protocol-name*.

**User response:**

No action is required.

---

**ARYP035I      HTTP session *number* downgraded to HTTP 1.1 protocol.**

**Explanation:**

Indicates that the HTTP server session with specified *number* has been downgraded to HTTP 1.1 protocol.

**User response:**

No action is required.

---

**ARYP036E      Websocket exception occurred: session *number*; status code = '*statuscode*'.**

**Explanation:**

Indicates that the HTTP server session working on the websocket protocol has produced an exception with the specified status code while reading the data from the socket.

**User response:**

Contact IBM Software Support if it occurs frequently or if it affects the ability to run the product successfully.

---

**ARYP037I      Sending websocket '*operation*' frame to client with HTTP session *number*.**

**Explanation:**

The server is sending the specified websocket frame to the client.

**User response:**

No action is required.

---

**ARYP038I      Received websocket *operation* frame from client with HTTP session *number*.**

**Explanation:**

The server has received the specified websocket frame from the client.

**User response:**

No action is required.

---

**ARYP039E      HTTP '*Origin: origin\_name*' is not allowed.**

**Explanation:**

Web UI access is restricted in the server configuration, but *origin\_name* is not included.

**User response:**

Refer the 'Server security' topic for information on how to enable access for *origin\_name*.

---

**ARYQ001E      Storage allocation failure, increase the region size.**

**Explanation:**

There was a failure detected when storage was requested by the program. The region size can be specified on the JOB card in the JCL or enforced by various system exit routines.

**User response:**

Increase the region size and resubmit the job.

---

**ARYQ002I      Termination complete.**

**Explanation:**

The program has ended, either normally or abnormally.

**User response:**

No action is required.

---

**ARYQ003W      Externalabend. Error retry is not possible.**

**Explanation:**

An abend has occurred. However, the abend location was not within the boundaries of error recovery established for the program. This is usually attributed to an abend in a called service routine. Since the exact circumstances are not known leading up to the unexpected abend, no safe error retry processing can be attempted and the abend is percolated leading to the program abnormally ending.

**User response:**

Collect all available diagnostic information, including the job log, any dumps taken and a printed copy of the LOGREC starting at least 5 minutes prior to the time of the abend. Any additional environmental information will also be useful such as release and maintenance levels for the operating system and the selected Db2 subsystem. Contact IBM Software Support for further instructions.

---

**ARYQ004I            ABENDED xxxx at offset X"xxxx"**

**Explanation:**

An abend has occurred. The abend location was within the boundaries of error recovery established for the program. The failing instruction offset and the abend code is reported.

**User response:**

Collect all available diagnostic information, including the job log, any dumps taken and a copy of LOGREC starting at least 5 minutes prior to the time of the abend. Any additional environmental information will also be useful such as release and maintenance levels for the operating system and the selected Db2 subsystem. Contact IBM Software Support for further instructions.

---

**ARYQ005I            Diagnostic SDUMP in progress.**

**Explanation:**

An abend has occurred. The abend location was within the boundaries of error recovery established for the program. A SVC dump is being attempted.

**User response:**

No action is required.

---

**ARYQ006I            Diagnostic SDUMP complete.**

**Explanation:**

An abend has occurred. The abend location was within the boundaries of error recovery established for the program. A SVC dump was successfully captured.

**User response:**

Collect all available diagnostic information, including the job log, any dumps taken and a copy of LOGREC starting at least 5 minutes prior to the time of the abend. Any additional environmental information will also be useful such as release and maintenance levels for the operating system and the selected Db2 subsystem. Contact IBM Software Support for further instructions.

---

**ARYQ007W            Diagnostic SDUMP suppressed by DAE.**

**Explanation:**

An abend has occurred. The abend location was within the boundaries of error recovery established for the program. However, the system Dump Analysis and Elimination facility has suppressed the dump due to a duplicate dump already captured.

**User response:**

Determine the status and location of the original dump and contact IBM Software Support for further instructions.

---

**ARYQ008E            Diagnostic SDUMP failed.**

**Explanation:**

An abend has occurred. The abend location was within the boundaries of error recovery established for the program. However, an attempt to capture a SVC dump failed.

**User response:**

Investigate the reasons why the dump has failed and correct the source of the failure.

---

**ARYQ009I            Diagnostic SDUMP in progress.**

**Explanation:**

An abend has occurred. The abend location was within the boundaries of error recovery established for the program.

**User response:**

Collect all available diagnostic information, including the job log, any dumps taken and a copy of LOGREC starting at least 5 minutes prior to the time of the abend. Any additional environmental information will also be useful such as release and maintenance levels for the operating system and the selected Db2 subsystem. Contact IBM Software Support for further instructions.

---

**ARYQ010I            Diagnostic SDUMP complete.**

**Explanation:**

An abend has occurred. The abend location was within the boundaries of error recovery established for the program.

**User response:**

Collect all available diagnostic information, including the job log, any dumps taken and a copy of LOGREC starting at least 5 minutes prior to the time of the abend. Any additional environmental information will also be useful such as release and maintenance levels for the operating system and the selected Db2 subsystem. Contact IBM Software Support for further instructions.

---

**ARYQ011I            Quiet Time Cleanup program starting. Version xx.yy.zzz**

**Explanation:**

This message confirms the Quiet Time Cleanup program has started and is running.

**User response:**

No action is required.

**ARYQ012I**      **Current date and time:**  
*yyyy/mm/dd hh:mm:ss*

**Explanation:**

This message reports the date and time that the Quiet Time Cleanup program started running.

**User response:**

No action is required.

**ARYQ013I**      **Db2 SSID selected: *ssid***

**Explanation:**

This message reports the selected Db2 subsystem identifier specified on the JCL EXEC card parameter of the Quiet Time Cleanup job.

**User response:**

No action is required.

**ARYQ014I**      **Retention period (Days) : *xxxx***

**Explanation:**

This messages reports the retention period that was specified on the JCL EXEC card parameter of the Quiet Time Cleanup job. Entries in the Quiet Time tables that are older than the specified number of days will be displayed if REPORT mode was selected or will be deleted if DELETE mode was selected. A valid value range is 0 - 9999 days.

**User response:**

No action is required.

**ARYQ015I**      **Execution Mode : *report/delete***

**Explanation:**

This message reports the execution mode specified on the JCL EXEC card parameter of the Quiet Time Cleanup job. A valid selection is either REPORT or DELETE. Entries in the Quiet Time tables that are older than the specified number of days will be displayed if REPORT mode was selected or will be deleted if DELETE mode was selected.

**User response:**

No action is required.

**ARYQ016I**      **Initialization complete.**

**Explanation:**

This message reports that the Quiet Time Cleanup program has successfully completed the first phase of execution. Working storage has been allocated, error recovery has been established, and user input parameters have been validated.

**User response:**

No action is required.

**ARYQ017I**      **Requires APF authorization.**

**Explanation:**

The program requires APF authorization to continue processing and it has been determined that APF authorization has not been granted. The program terminates.

**User response:**

Add the library from where the program is loaded to the system APF list.

**ARYQ018I**      **Missing execution mode. Assume default REPORT.**

**Explanation:**

The user input parameter "MODE", which is the 3rd positional parameter on the job JCL EXEC PARM card was omitted. The default of REPORT is assigned.

**User response:**

Specify a valid mode input parameter, either REPORT or DELETE on the job JCL EXEC PARM card.

**ARYQ019E**      **Invalid or missing required input parameters.**

**Explanation:**

One or more positional user input parameters on the JOB JCL EXEC PARM card of the Quiet Time Cleanup job were omitted.

**User response:**

Specify a valid and active Db2 SSID for the first positional parameter; a valid Retention Period for the second positional parameter in the range 0 - 9999 days; and either REPORT or DELETE for the third positional parameter on the job JCL EXEC PARM card.

**ARYQ020E**      **Invalid or missing Db2 subsystem ID.**

**Explanation:**

The user input parameter "SSID", which is the 1st positional parameter on the job JCL EXEC PARM card of the Quiet Time Cleanup job was omitted.

**User response:**

Specify a valid and active Db2 SSID for the first positional parameter.

**ARYQ021E**      **Invalid or missing retention period.**

**Explanation:**

The user input parameter "Retention Period", which is the 2nd positional parameter on the job JCL EXEC PARM card of the Quiet Time Cleanup program was omitted.

**User response:**

Specify a valid retention period in the range 0 - 9999 days for the second positional parameter.

---

**ARYQ022E Invalid or missing execution mode, REPORT or DELETE.**

---

**Explanation:**

The user input parameter "Execution Mode", which is the 3rd positional parameter on the JOB JCL EXEC PARM card of the Quiet Time Cleanup program was omitted.

**User response:**

Specify either REPORT or DELETE for the third positional parameter.

---

**ARYQ023I Attempting Connect to Db2: ssid - planname**

---

**Explanation:**

This message specifies that an attempt is being made to connect to the indicated Db2 Subsystem using the indicated PLAN NAME.

**User response:**

No action is required.

---

**ARYQ024E Error connecting to Db2: ssid**

---

**Explanation:**

The Quiet Times Cleanup program was unable to establish an active connection with the indicated Db2 subsystem. This usually happens when the Db2 SSID specified is either invalid or the Db2 subsystem is not active.

**User response:**

Check that a valid Db2 SSID was specified as the first positional parameter on the JOB JCL EXEC PARM card of the Quiet Times Cleanup job and that the Db2 subsystem is started and fully operational.

---

**ARYQ025I Performing SQL processing.**

---

**Explanation:**

The Quiet Times Cleanup program has successfully connected to Db2 and is now processing the SELECT and/or DELETE SQL statements.

**User response:**

No action is required.

---

**ARYQ026I The following rows were deleted from table ARYQTG.**

---

**Explanation:**

This message is only written to SYSPRINT. This is a report heading. Following the heading will be a list of abbreviated rows that will be deleted from the ARYQTG Quiet Time table based on the retention periods specified.

**User response:**

No action is required.

---

**ARYQ027I The following rows were selected from table ARYQTG.**

---

**Explanation:**

This message is only written to SYSPRINT. This is a report heading. Following the heading will be a list of abbreviated rows that will be selected from the ARYQTG Quiet Time table based on the retention periods specified.

**User response:**

No action is required.

---

**ARYQ028E Error deleting row from ARYQTG.**

---

**Explanation:**

This message is only written to SYSPRINT. A failure occurred when a SQL delete statement was issued for the indicated row for the ARYQTG Quiet Time table.

**User response:**

Investigate the accompanying SQL error codes and correct the source of the problem.

---

**ARYQ030I The following rows were selected from table ARYQT.**

---

**Explanation:**

This message is only written to SYSPRINT. A SQL select statement was executed and the qualifying rows are being displayed.

**User response:**

No action is required.

---

**ARYQ031I Error deleting row from ARYQT.**

---

**Explanation:**

This message is only written to SYSPRINT. A failure occurred when a SQL delete statement was issued for the indicated row for the ARYQT Quiet Time table.

**User response:**

Investigate the accompanying SQL error codes and correct the source of the problem.

---

**ARYQ032E SQL error, SQLCODE = ?xxxx**

---

**Explanation:**

This message is only written to SYSPRINT. A failure occurred when a SQL statement was issued for either a select or delete. The literal ?xxxx will be substituted by the actual SQLCODE that is returned from Db2 when the SQL statement was executed.

**User response:**

Investigate the accompanying SQL error codes and correct the source of the problem.

---

**ARYQ033I Now disconnected from Db2: xxxx**

---

**Explanation:**

A previously established active connection with the indicated Db2 subsystem has been successfully terminated.

**User response:**

No action is required.

---

**ARYQ034E      Error disconnecting from Db2:  
      xxxx****Explanation:**

An attempt to end an active connection with a Db2 subsystem has failed.

**User response:**

Collect all available diagnostic information, including the job log, any dumps taken and a copy of LOGREC starting at least 5 minutes prior to the time of the abend. Any additional environmental information will also be useful such as release and maintenance levels for the operation system and the selected Db2 subsystem. Contact IBM Software Support for further instructions.

---

**ARYQ035I      Activity summary report:****Explanation:**

This is a report heading. Following the heading will be a report showing the number of rows deleted from the ARYQTG and ARYQT Quiet Time tables based on the retention period specified.

**User response:**

No action is required.

---

**ARYQ036I      Number of rows deleted from  
      ARYQTG = xxxx.****Explanation:**

This message reports the number of rows deleted from the ARYQTG Quiet Time table based on the retention period specified.

**User response:**

No action is required.

---

**ARYQ037I      Number of rows deleted from  
      ARYQT = xxxx.****Explanation:**

This message reports the number of rows deleted from the ARYQT Quiet Time table based on the retention period specified.

**User response:**

No action is required.

---

**ARYQ038W      MODE = REPORT, no rows were  
      deleted.****Explanation:**

This message informs the user that no rows will be deleted from the ARYQTG and ARYQT Quiet Time tables because the operating mode REPORT was either explicitly specified or assigned by default.

**User response:**

If this was the intention then no further user action is required. If Quiet Time table cleanup was desired, rerun the job and specify DELETE as the third

positional parameter on the JOB JCL EXEC PARM card and rerun the job.

---

**ARYQ040I      < qualifying ARYQTG table row  
      entry>****Explanation:**

This message is only written to SYSPRINT. It shows a qualifying row entry selected from the ARYQTG table.

**User response:**

This is an informational message only. No further user action is required. The user can inspect each row listed to determine which rows will be deleted if the program should run in REPORT mode. The user can see each row deleted when the program runs in DELETE mode.

---

**ARYQ041I      < qualifying ARYQT table row  
      entry>****Explanation:**

This message is only written to SYSPRINT. It shows a qualifying row entry selected from the ARYQT table.

**User response:**

This is an informational message only. The user can inspect each row listed to determine which rows will be deleted if the program should run in REPORT mode. The user can see each row deleted when the program runs in DELETE mode.

---

**ARYQ042E      Open failed for SYSPRINT.****Explanation:**

An attempt to open the SYSPRINT DD failed. The program terminates.

**User response:**

Check the SYSPRINT DD card in the JCL and correct the error. Some DD parameters might be invalid for your installation.

---

**ARYQ043I      GRPID---+GRPNUM---+T+-FILTER  
      NAME-****Explanation:**

This is a report formatting message.

**User response:**

No action is required.

---

**ARYQ044I      GRPID---+START  
      TIMESTAMP-----+END  
      TIMESTAMP-----+****Explanation:**

This is a report formatting message.

**User response:**

No action is required.

---

**ARYM640E      Allocation Error - The ISPF DD  
      is already allocated and cannot  
      be deallocated - Process not  
      completed.**

**Explanation:**

The ISPF DD allocation failed. The DD is already allocated and cannot be deallocated for this TSO session. The process did not complete successfully.

**User response:**

Free the ISPF DD. You must exit the product and re-enter, then rebuild the job.

---

**ARYS641E**      **Allocation Error: An error was encountered allocating the ISPWRK1 or ISPWRK2 DD. Process not completed.**

**Explanation:**

The ISPWRK1 or ISPWRK2 DD allocation failed. The process did not complete successfully.

**User response:**

Verify TSO session parameters are set correctly for your site prior to allocation of these DD statements.

---

**ARYR001E**      **Invalid value entered - Please enter a valid value from the list displayed.**

**Explanation:**

You entered an invalid selection in the Option line.

**User response:**

Correct the invalid value and retry.

---

**ARYR002E**      **AUTOTGT is only valid for BCV type profiles.**

**Explanation:**

You used the AUTOTGT primary command, but the backup is a SNAP type backup. The AUTOTGT command searches for any BCVs that have a current relationship with the source volumes listed in the profile. If a BCV is found that is currently established to a source volume, it will be placed in the first open target UCB slot. The AUTOTGT command is only available for BCV type profiles.

**User response:**

Clear the invalid command from the Option line.

---

**ARYR003I**      **Log Suspend is required for Flash or DFSMSdss type profiles. The value of the issue Log Suspend field has been changed to "Y"**

**Explanation:**

Log Suspend must be set to Y for Flash or DFSMSdss type backup profiles.

**User response:**

None required.

---

**ARYR004E**      **Invalid Subsystem ID (SSID) entered. The SSID must be defined in the "Setup" section of the product before it can be used.**

**Explanation:**

The subsystem listed in the message has not been configured using the product setup screen.

**User response:**

From the product main menu, enter 0 to set up the subsystem. Refer to the configuration documentation for information about the setup parameters.

---

**ARYR005E**      **Invalid Command Entered. The command is not supported on this screen. Enter a "?" to get a list of the valid commands.**

**Explanation:**

An invalid command was entered in the Option line.

**User response:**

Clear the invalid command from the command line. Enter ? and press Enter to get a list of valid primary commands.

---

**ARYR006E**      **Varies depending on the source of the error.**

**Explanation:**

Internal error. Command processor's normal processing has ended unsuccessfully.

**User response:**

Contact IBM Customer Support. Please provide the text of this message.

---

**ARYR007E**      **Invalid value entered - Please enter a valid value.**

**Explanation:**

An invalid value was entered.

**User response:**

Enter Y or N and press Enter.

---

**ARYR008E**      **Invalid Command Entered. The command is not supported on this screen.**

**Explanation:**

An invalid command was entered in the Option line.

**User response:**

Check the command syntax and resubmit.

---

**ARYR009E**      **Bootstrap #01 cannot be equal to bootstrap #02.**

**Explanation:**

The Db2 Bootstrap data set names must be unique.

**User response:**

Enter a unique name for one of the boot strap data sets.

---

**ARYR010**      **Rocket Licensed Materials - Property of Rocket Software (c) Copyright Rocket Software, Inc. 2006 All Rights Reserved.**



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**Explanation:**

This message appears upon starting the Db2 Recovery Expert ISPF screens.

**User response:**

None required.

---

**ARYR011E**      **Cannot offload from a backup that is not on disk.**

**Explanation:**

You cannot generate offload JCL for this backup because it is no longer on DASD volumes.

**User response:**

The backup must be on DASD volumes in order to be offloaded.

---

**ARYR012E**      **Invalid value. Must be H for HSM or R for ARY**

**Explanation:**

An invalid value was entered when specifying offload options.

**User response:**

Enter "H" to use IBM's HSM product to offload the backup to tape. In order to use HSM, you must have created the proper HSM dump classes and configured them properly. Enter "R" to have Db2 Recovery Expert manage the offload process.

---

**ARYR014E**      **Invalid value. Backup method should be (B)cv, (S)nap, (F)lash, (D)b2, or dfsmsdss(L)**

**Explanation:**

An invalid value was entered for the Backup method.

**User response:**

Enter B for BCV, S for Snap, F for Flash, D for Db2, or L for DFSMSdss.

---

**ARYR015E**      **Invalid value. Must be H for HSM or A for Db2 Recovery Expert.**

**Explanation:**

**User response:**

Invalid value entered. Enter H to use IBM's HSM product to offload the backup to tape. In order to use HSM, you must have created the proper HSM dump classes and configured them properly. Enter A to have Db2 Recovery Expert manage the offload process.

---

**ARYR016E**      **Only one Db2 type profile can be created for each Db2 SSID. Profile *profile\_creator.profile\_name* already exists for this Db2 SSID. Please cancel from this profile edit session.**

**Explanation:**

Only one profile that specifies a backup method of "Db2" can be created per Db2 subsystem.

**User response:**

Please edit and/or use the profile name specified in the message.

---

**ARYR018E**      **Any volume that contains a data user catalog or active log user catalog cannot be excluded.**

**Explanation:**

The Exclude line command was entered next to a volume that contains a data user catalog or active log user catalog. This volume cannot be excluded from a system backup.

**User response:**

Clear the line command from the selected volume.

---

**ARYR019W**      **This volume has already been excluded.**

**Explanation:**

Since this volume has already been excluded, the exclude command cannot be performed.

**User response:**

None required.

---

**ARYR020E**      **No source volumes were found in the entered range.**

**Explanation:**

The entered UCB range was scanned and no valid online disk volume serials were found.

**User response:**

Enter another range or contact your DASD administrator.

---

**ARYR021I**      **There were no Backup System history records found in the product repository. The Restore System utility cannot be run without running a Backup System utility first.**

**Explanation:**

You selected the System Restore and Offload option from the Db2 Recovery Expert main menu, but no backup history records have been found.

**User response:**

None required.

---

**ARYR022E**      **No offload options were specified for this backup profile. Update the Backup Profile and add Offload Options before trying again.**

**Explanation:**

No offload options were specified for this backup profile. Offload options must be set before attempting an offload.

**User response:**

Update the Backup Profile and add Offload Options before attempting to offload again.

---

**ARYR023E**      **Invalid Entry - The Recover RBA/LRSN field is not a valid hexadecimal string. Please enter a valid RBA / LRSN to recover to.**

**Explanation:**

An invalid value was entered in the Recover to RBA/LRSN field.

**User response:**

Enter a valid value as listed in the message text, or enter Y in the Select Timestamp Recovery Point field to locate an appropriate RBA or LRSN.

---

**ARYR024E**      **Invalid Entry - Enter a "Y" if you would like to enter a date/time and have it converted to an LRSN for you.**

**Explanation:**

An invalid value was entered in the Select Timestamp Recovery Point field.

**User response:**

Enter Y in the Select Timestamp Recovery Point field to locate an appropriate RBA or LRSN. Enter N to use the listed RBA/ LRSN as the recovery point.

---

**ARYR025W**      **This volume has not been excluded so the undo will not be performed.**

**Explanation:**

The U(ndo) line command was entered next to a volume, but since this volume has not been excluded, the undo command will not be performed.

**User response:**

None required.

---

**ARYR026E**      **Invalid Entry - Only one recovery point can be selected from the list for the Restore System Utility. Please select only one line or select none and enter a recovery point RBA/LRSN.**

**Explanation:**

Two or more recovery points were selected for restoration.

**User response:**

Select one recovery point, or enter the RECOVER subsystem command to specify an RBA/LRSN.

---

**ARYR027E**      **Invalid value. Please enter one of the listed valid line commands.**

**Explanation:**

An invalid line command was entered next to the recovery point.

**User response:**

Enter S to choose the recovery point for restoration, or enter another valid line command from the list on the screen.

---

**ARYR028E**      **Invalid Value - Please enter a "Y" if you would like to edit the generated JCL after the job has been built.**

**Explanation:**

An invalid value was entered in the Edit Generated Job field.

**User response:**

Enter Y to edit the generated JCL after the job is built. Enter N to return to the Backup Profile Display without editing the job after it is built.

---

**ARYR029E**      **A fully qualified dataset name is required to save the generated JCL.**

**Explanation:**

The data set name is missing from the Build job in Dataset field.

**User response:**

Enter a fully qualified data set name in the Build job in Dataset field to hold the generated JCL.

---

**ARYR030E**      **Invalid Dataset/Member/Alias - The Dataset, Member name, or Alias entered does not meet the MVS Dataset naming standards.**

**Explanation:**

The data set, member name, or alias entered is not valid for z/ OS data set names. The first character must be capitalized alphabetic (A-Z,@,\$,#) and the remaining characters must be capitalized alphanumeric (A-Z,0-9,@,\$,#).

**User response:**

Correct the data set, member name, or alias.

---

**ARYR031I**      **No Profiles were found that match your selection criteria. Press enter to create a new profile or change the selection criteria.**

**Explanation:**

No profiles match your selection criteria.

**User response:**

Press Enter to create a new profile, or change your selection criteria to get a different list.

---

**ARYR032E**      **Error opening VSAM repository dataset. DSN=data set name RETCODE= return code.**

**Explanation:**

An error occurred upon opening the ARY VSAM repository data set. The data set and return code are

listed in the message. Possible cause of this message is the data set was not found.

**User response:**

A WTO is issued for this message listing the file that is in error. Check to ensure the data set exists and is accessible.

---

**ARYR033E**      **Error writing to VSAM repository dataset. DSN = data set name  
RETcode = return code**

**Explanation:**

An error occurred upon attempting to write to the ARY VSAM repository data set. The data set and return code are listed in the message.

**User response:**

A WTO is issued for this message listing the file that is in error. Check to ensure the data set exists and is accessible.

---

**ARYR034E**      **Error reading from VSAM repository dataset. DSN = data set name  
RETcode = return code.**

**Explanation:**

An error occurred upon attempting to read the ARY VSAM repository data set. The data set and return code are listed in the message. Possible cause is the data set was not found.

**User response:**

A WTO is issued for this message listing the file that is in error. Check to ensure the data set exists and is accessible.

---

**ARYR035E**      **Profile *profile\_creator.profile\_name* was not found.**

**Explanation:**

The specified profile is not found in the ARY VSAM repository.

**User response:**

A WTO is issued for this message listing the file that is in error. Check to ensure the repository exists and is accessible.

---

**ARYR036E**      **The entered value must be numeric.**

**Explanation:**

An invalid value was entered in a numeric field.

**User response:**

Enter a valid numeric value.

---

**ARYR037E**      **You are not authorized to enter any line commands for this profile. The Creator of the profile is restricting all activity.**

**Explanation:**

The creator of the selected profile specified that no other user is to view, update, or export the selected profile.

**User response:**

Choose a different profile to work with.

---

**ARYR038E**      **You are not authorized to update or delete this profile. Enter a "V" if you would like to View this profile.**

**Explanation:**

The creator of the selected profile specified that no other user is to update or delete the selected profile.

**User response:**

Enter V to view the profile, or choose a different profile to work with.

---

**ARYR039E**      **Invalid Line Command Entered.**

**Explanation:**

An invalid value was entered in the line command area.

**User response:**

Enter one of the valid line commands listed at the bottom of the screen.

---

**ARYR040E**      **Invalid profile name specified.**

**Explanation:**

An error occurred upon attempting to save a profile. The profile name or creator cannot contain an asterisk (\*).

**User response:**

Remove the asterisk from the profile name and continue.

---

**ARYR041E**      **A problem was encountered in allocating the files necessary for ISPF file tailoring. Please try again**

**Explanation:**

An error occurred when dynamically allocating the ISPF work files ISPFIL, ISPWK1, or ISPWK2.

**User response:**

Retry the operation. Contact IBM Customer Support if the problem persists.

---

**ARYR042E**      **Invalid Dataset DSORG - The job can only be built into a sequential file or a PDS/PDSE. VSAM and other data types are not supported for job generation.**

**Explanation:**

The data set organization of the file you entered is not supported for job generation. The data set must be a sequential or a partitioned data set.

**User response:**

Specify a data set of the proper type.

---

**ARYR043E**      **Dataset not found - Dataset data set name was not found in the MVS catalog. Please enter a valid dataset that is cataloged.**

**Explanation:**

The data set name entered in the Build job in Dataset field does not exist.

**User response:**

Enter an existing cataloged data set name in the Build job in Dataset field.

---

**ARYR044E**      **The dataset could not be allocated or opened.**

**Explanation:**

The dynamic allocation of the specified data set failed.

**User response:**

Verify that the data set exists and is available for allocation.

---

**ARYR045E**      **Field Required - The dataset entered is a partitioned dataset and the member name is required.**

**Explanation:**

A required field was not specified. The data set entered is a PDS (partitioned data set) and a member in this PDS must be referenced.

**User response:**

Enter a valid member name for PDS access.

---

**ARYR046E**      **Dataset must be a partitioned dataset because multiple members will be generated.**

**Explanation:**

The data set entered is a sequential data set. Because multiple members will be generated, you must specify a PDS in this field.

**User response:**

Enter an existing cataloged PDS data set name in the Build job in Dataset field.

---

**ARYR047E**      **The member name entered for the Restore job cannot be the same as the Restore System Utility member. Please enter a different member for one of the jobs.**

**Explanation:**

When building a restore job, a duplicate member name was entered for one of the member names. This is not allowed.

**User response:**

Enter three unique member names to hold the output from the restore system job build.

---

**ARYR048E**      **A member name is not allowed on a non-partitioned dataset.**

**Explanation:**

A member name was included for the specified data set, but the data set is sequential, not a PDS.

**User response:**

Remove the member name or use a PDS.

---

**ARYR049E**      **The specified dataset could not be opened for I/O.**

**Explanation:**

A VSAM open error occurred while attempting to open the Db2 Recovery Expert VSAM repository.

**User response:**

Verify that the VSAM data set is accessible.

---

**ARYR050E**      **Profile *profile\_creator.profile\_name* already exists in the repository. Please enter a unique profile name or creator and press enter.**

**Explanation:**

When creating a new profile, a profile name was used that duplicates another profile name created by the same user ID.

**User response:**

Enter a unique profile name or creator and press Enter.

---

**ARYR051E**      **Invalid Value - Please enter a "Y" if you would like to delete profile *profile\_creator.profile\_name* or an "N" if you do not want to delete it.**

**Explanation:**

An invalid value was entered in the Delete confirmation field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR052I**      **Profile *profile\_creator.profile\_name* has been successfully deleted.**

**Explanation:**

The profile named in the message text was successfully deleted.

**User response:**

None required.

---

**ARYR053I**      **Object does not exist.**

**Explanation:**

The profile does not exist. It may have already been deleted.

**User response:**

None required.

---

**ARYR054E**      **Invalid Value - Please enter the Unit Device (SYSDA, DISK, etc.) that you want used when generating a job.**

**Explanation:**

A value was not entered for the work file unit devices.

**User response:**

Specify a valid unit device that Db2 Recovery Expert can use when generating utility JCL.

---

**ARYR055E**      **The entered device type is not recognized by OS/390 as a valid device type.**

**Explanation:**

An invalid device type was entered in the Work File Unit Type field.

**User response:**

Enter a valid device type or CART for tape devices.

---

**ARYR056E**      **The VOLSER qualifier should always be part of the dataset name to ensure that each dataset name is unique.**

**Explanation:**

When specifying data set names for offloaded backups, the VOLSER qualifier was not selected. The VOLSER qualifier should always be part of the data set name to ensure that each data set name is unique.

**User response:**

Add the VOLSER qualifier to the data set name.

---

**ARYR057E**      **Invalid Value - Please Enter a "N" if you want to Restore both Data and Logs or a "Y" if you want to restore only the data.**

**Explanation:**

An invalid value was entered in the Restore Only field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR058E**      **If restoring both Data and Logs you cannot select a timestamp recovery point.**

**Explanation:**

You cannot select a timestamp recovery point if you have specified to restore both data and logs.

**User response:**

Db2 Recovery Expert changes the Select Timestamp Recovery Point field to N and makes the field read only. To select a timestamp recovery point, change the Restore Only Data field to Y.

---

**ARYR059E**      **A timestamp recovery point cannot be selected for a non data sharing Db2 subsystem.**

**Explanation:**

You cannot select a timestamp recovery point when the subsystem you are restoring is not a data sharing subsystem.

**User response:**

None required; Db2 Recovery Expert changes the Select Timestamp Recovery Point field to N.

---

**ARYR060E**      **Invalid Entry - The Roll Forward to RBA/LRSN field is not a valid hexadecimal string. Please enter a valid RBA/LRSN**

**Explanation:**

The Roll Forward to RBA/LRSN field is an invalid hexadecimal string.

**User response:**

Enter a valid RBA or LRSN.

---

**ARYR061E**      **Invalid Value - Please Enter a "F" if you would like to perform a Full Backup (Data and Logs) or a "D" if you want to perform a Data only backup.**

**Explanation:**

An invalid value was entered in the Backup Type field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR062E**      **Invalid Value - The number of backup generations must be numeric.**

**Explanation:**

A non-numeric value was entered in the Backup Generations field.

**User response:**

Enter a numeric value in the specified range for the backup type.

---

**ARYR063E**      **Invalid Value - Backup Method should be "B" for BCV volumes, "S" for SNAP volumes, "F" for Flash Volumes, "D" for Db2 or "L" for DFSMSdss Disk copy**

**Explanation:**

An invalid value was entered in the Backup Method field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR064E**      **Invalid Value - Please Enter a "Y" if you would like to perform a Log Suspend or a "N" if you do not want to perform a Log Suspend.**

**Explanation:**

An invalid value was entered in the Issue Log Suspend field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR065E**      **Invalid Value - Please Enter a "Y" if you would like to perform**

**validations or a "N" if you do not want to perform validations.**

**Explanation:**

An invalid value was entered in the Validate Db2 Volumes field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR066E Invalid Value - Please Enter a "Y" if you would like to add offload options, a "N" if you do not want to add offload options or "U" to update offload options.**

**Explanation:**

An invalid value was entered.

**User response:**

Enter "Y" if you wish to have the DASD backups offloaded to tape. Enter "N" if you do not want to offload the backups to tape. Enter "U" to update previous offload options.

---

**ARYR067E Invalid Value - The number of backup generations for a BCV target must be numeric and must be between 1 and 8.**

**Explanation:**

An invalid value was entered in the Backup Generations field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR068E Invalid Value - Enter a "U" to allow other users to Update your profile, a "V" to allow other users to just View your profile or "N" to disallow other users from viewing or updating your profile.**

**Explanation:**

An invalid value was entered in the Share Option field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR069I Profile *profile)\_creator.profile\_name* saved**

**Explanation:**

The profile named in the message was successfully saved.

**User response:**

None required.

---

**ARYR070E An error occurred trying to allocate a repository dataset data set name.**

**Explanation:**

An error occurred when allocating the Db2 Recovery Expert VSAM repository data set.

**User response:**

Check the system log for additional error information.

---

**ARYR071E At least one Volume Mapping must be entered.**

**Explanation:**

No volume mappings have been created for the profile. At least one volume mapping is required for successful execution of the backup job.

**User response:**

Enter a volume mapping, or type CAN in the option line to exit the profile.

---

**ARYR072E The Source Volume must not be blank.**

**Explanation:**

The value in the Source Volume field was removed, but the target volumes are still in place.

**User response:**

If you intended to remove the source volume and its mapping, use the D line command in the Cmd area. Otherwise, enter a source volume.

---

**ARYR073E Invalid Value - Please Enter a "Y" if you would like to enable Object Restore or a "N" if you do not want to enable Object Restore.**

**Explanation:**

An invalid value was entered in the Enable Obj Restore field.

**User response:**

Enter Y for Yes or N for No.

---

**ARYR074E The volume must start with an alphabetic or a national character.**

**Explanation:**

An invalid value was entered as the first character of the volumes field. The first character must be alphabetic or a national character, and the remaining characters must be alphabetic or numeric.

**User response:**

Change the first character of the volume.

---

**ARYR075E The volume must only contain alphanumeric characters.**

**Explanation:**

An invalid character was entered in the volumes field.

**User response:**

The first character must be alphabetic and the remaining characters must be alphanumeric. Change the invalid value to an alphanumeric character.

---

**ARYR076E**      **The Target Unit must only contain valid hexadecimal characters.**

**Explanation:**

A non-hexadecimal value was entered in the Target Unit field.

**User response:**

Re-enter the Target Unit field using valid hexadecimal characters.

---

**ARYR077E**      **The Profile Creator is a required field. Please enter a valid profile creator.**

**Explanation:**

When creating a new profile, the Profile Creator field was left blank.

**User response:**

Enter a profile creator in the Profile Creator field.

---

**ARYR078E**      **The Profile Name is a required field. Please enter a unique profile name.**

**Explanation:**

When creating a new profile, the Profile Name field was left blank.

**User response:**

Enter a unique profile name in the Profile Name field.

---

**ARYR079E**      **Invalid Value - Enter a "U" to allow other users to Update your profile, a "V" to allow other users to just View your profile or "N" to disallow other users from viewing or updating your profile.**

**Explanation:**

When creating a new profile, an invalid value was entered the Update Option field.

**User response:**

Correct the value as described in the message text.

---

**ARYR080E**      **Invalid Value - The number of backup generations for a SNAP, Flash, or DFSMSdss type target must be numeric and must be between 1 and 99.**

**Explanation:**

An invalid value was entered for the number of backup generations for a SNAP, Flash, or DFSMSdss target. The value must be numeric and must be between 1 and 99.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR081E**      **The End Unit must be greater than the Start Unit.**

**Explanation:**

An invalid value was entered for the End Unit. The end unit specified for a target range must be greater than the start unit.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR082E**      **The new Source Volume entered is a duplicate of an existing Source Volume.**

**Explanation:**

A source volume was added to the volume mapping, but the source volume is already listed in the volume mapping.

**User response:**

Remove the duplicate value or use the D line command to delete the volume mapping.

---

**ARYR083E**      **The unit of the new Source Volume entered is a duplicate of an existing Target Unit.**

**Explanation:**

A source volume is also specified as a target unit. The same device cannot be specified as both a source volume and target unit.

**User response:**

Change either the source volume or the target unit.

---

**ARYR084E**      **The new Target Unit entered is a duplicate of an existing Source Volume.**

**Explanation:**

A target unit was added to the volume mapping, but the target unit is also listed as a source volume in the mapping. The same device cannot be specified as both a source volume and target unit.

**User response:**

Change either the source volume or the target unit.

---

**ARYR085E**      **The new Target Unit entered is a duplicate of an existing Target unit.**

**Explanation:**

A target unit was added to the volume mapping, but the unit is already listed in the volume mapping as a target unit.

**User response:**

Remove the duplicate value or use the D line command to delete the volume mapping.

---

**ARYR086E**      **The Source Volume's device type is not the same as the Target Unit's device type.**

**Explanation:**

The source and target volume must be of the same volume type (such as both 3390 mod 9s).

**User response:**

Choose a target unit of the same volume type as the source unit.

---

**ARYR087E            The beginning target value must be less than the end target value.**

**Explanation:**

The value entered in the Beginning Target Range field is less than the value in the Ending Target Range field. This is not valid.

**User response:**

Correct the range and retry.

---

**ARYR088E            The Source Volume and the Target Unit are not on the same storage array.**

**Explanation:**

The source volume and its specified target unit are not located on the same storage array. The source volume and target unit must be on the same array.

**User response:**

Select a different target unit that is on the same array.

---

**ARYR089E            Invalid value - the Source/Target Mapping field should be A for Auto discover/pool mapping, S for Stogroup discover/pool mapping, or M for Manual mapping.**

**Explanation:**

An invalid value has been specified in the **Source/Target Mapping** field in the Enter New Backup Profile Options panel. The value specified should be A for Auto discover/pool mapping, S for Stogroup discover/pool mapping, or M for Manual mapping.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR090E            Invalid Device Number (CUU) entered.**

**Explanation:**

An invalid device number (CUU) was entered.

**User response:**

Check with your systems programmer for a valid list of device numbers.

---

**ARYR091E            Number of BCV devices must be numeric and between 1 and 9999 inclusive.**

**Explanation:**

An invalid value was entered for the number of BCV devices. The number of BCV devices entered must be numeric and between 1 and 9999.

**User response:**

Enter a valid value as listed in the message text.

---

**ARYR092E            The Enter By Generation field must be "Y" or "N".**

**Explanation:**

An invalid value was entered in the Enter by Generation field.

**User response:**

Correct the value and press Enter.

---

**ARYR093E            The Setup Job field must be "Y" or "N".**

**Explanation:**

An invalid value was entered in the Setup Job field.

**User response:**

Enter Y to build JCL to run profile setup only. Enter N to build JCL for backing up the systems.

---

**ARYR094E            The Backup Repository field must be "Y" or "N".**

**Explanation:**

An invalid value was entered in the Backup Repository field.

**User response:**

Enter Y to include job steps to back up the Db2 Recovery Expert VSAM repository as the last step of the job. Enter N to omit these steps.

---

**ARYR095E            Invalid value. Enter "Y" or "N".**

**Explanation:**

An invalid value was entered.

**User response:**

Enter Y for Yes or N for No.

---

**ARYR096E            Profile *profile\_creator.profile\_name* is currently being used by another user or process.**

**Explanation:**

The profile listed in the message is being used by another user or another process.

**User response:**

Please try again later.

---

**ARYR097E            The Start MVS Device Number must be less than or equal to the Stop MVS Device Number.**

**Explanation:**

An invalid value was entered for the start MVS device number must be less than or equal to the stop MVS device number.

**User response:**

Enter a valid value as listed in the message text.



---

**ARYR098E**      **Flash Query error, Return Code: *return\_code*, Reason Code *reason\_code*.**

**Explanation:**

An error occurred doing a Flash Query.

**User response:**

Please refer to the Flash Query manual for a description and resolution to the error.

---

**ARYR099E**      **Auto mapping is not valid for BCV type targets or phased SNAP type targets.**

**Explanation:**

An invalid value was entered in the Target Mapping field. Auto mapping is not valid for BCV type targets or phased SNAP type targets.

**User response:**

Change the value in the Target Mapping or Backup Method field.

---

**ARYR100E**      **An error occurred trying to allocate the ARYR Parmlib - Check the PARMLDSN and PARMLMBR in the startup CLIST and try again.**

**Explanation:**

The PARMLIB data set could not be allocated. There may be an error in the PARMLIB's data set name or member in the startup CLIST.

**User response:**

Ensure the PARMLDSN and PARMLMBR parameters are correctly specified in the CLIST. Ensure the PARMLIB data set exists and is available.

---

**ARYR101E**      **The CUU selection field must only contain valid hexadecimal characters.**

**Explanation:**

An invalid value was entered for the CUU selection field.

**User response:**

Enter a valid hexadecimal value.

---

**ARYR102E**      **The SYM# selection field must only contain valid hexadecimal characters.**

**Explanation:**

An invalid value was entered for the CUU selection field.

**User response:**

Enter a valid hexadecimal value.

---

**ARYR103E**      **The BCV Only selection field can only be "Y" or "N".**

**Explanation:**

An invalid value was entered.

**User response:**

Enter a valid value as listed in the message text.

---

**ARYR104E**      **The VOLSER selection field must start with an alphabetic character or a national character.**

**Explanation:**

An invalid value was entered for the VOLSER selection field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR105E**      **The VOLSER selection field must only contain alphanumeric characters.**

**Explanation:**

An invalid value was entered for the VOLSER selection field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR106E**      **This is a partial System Backup, it cannot be used for recovery.**

**Explanation:**

This is a partial system backup. It cannot be used for a system-level Db2 recovery. It can only be used to recover individual objects.

**User response:**

None required.

---

**ARYR107E**      **The source unit must only contain valid hexadecimal characters.**

**Explanation:**

An invalid value was entered for the source unit.

**User response:**

Enter a valid source unit.

---

**ARYR108E**      **The beginning source unit must be less than the end source unit.**

**Explanation:**

An invalid value was entered for the source and/or the end unit. The beginning source unit must be less than the ending source unit.

**User response:**

Correct the invalid beginning or ending source unit.

---

**ARYR109E**      **The target range entered overlaps a previously entered target range.**

**Explanation:**

An invalid value was entered for the target range. The target range overlaps a previously entered target range.

**User response:**

Correct the value in the Start Unit or End Unit fields, or remove the target range from the list.

---

**ARYR110W**      **LDRM recovery and job parallelization are enabled simultaneously.**

**Explanation:**

The installed version of LDRM does not support parallel recovery requests. If a plan contains more than one LDRM recovery request and job parallelization is enabled, the plan may fail. The plan generation may also be unsuccessful.

**User response:**

Do not run parallel jobs if LDRM is enabled.

---

**ARYR111E**      **The start unit must also be specified.**

**Explanation:**

No value was entered in the Start Unit field.

**User response:**

Enter a start unit value in the Start Unit field.

---

**ARYR112I**      **Debug Mode is now Activated.**

**Explanation:**

DEBUG mode is currently ON. To turn off DEBUG mode, type DEBUG in the option line of the Db2 Recovery Expert main menu.

**User response:**

None required.

---

**ARYR113I**      **Debug Mode is now Deactivated.**

**Explanation:**

DEBUG mode is currently OFF. To turn on DEBUG mode, type DEBUG in the option line of the Db2 Recovery Expert main menu.

**User response:**

None required.

---

**ARYR114I**      **XDC Mode is now Activated.**

**Explanation:**

XDC mode is currently ON.

**User response:**

None required.

---

**ARYR115I**      **XDC Mode is now Deactivated.**

**Explanation:**

XDC mode is currently OFF.

**User response:**

None required.

---

**ARYR116E**      **The end unit must also be specified.**

**Explanation:**

No value was entered in the End Unit field.

**User response:**

Enter an end unit value in the End Unit field.

---

**ARYR117E**      **Allocation Error - The ISPF DD is already allocated and cannot be deallocated - Process not completed.**

**Explanation:**

The ISPF DD allocation failed. The DD is already allocated and cannot be deallocated for this TSO session. The process did not complete successfully.

**User response:**

---

**ARYR118E**      **Allocation Error - An error was encountered allocating the ISPWRK1 or ISPWRK2 DD - Process not completed.**

**Explanation:**

The ISPWRK1 or ISPWRK2 DD allocation failed. The process did not complete successfully.

**User response:**

Verify TSO session parameters are set correctly for your site prior to allocation of these DD statements.

---

**ARYR119E**      **Field Required - The dataset entered is a partitioned dataset and the member name is required.**

**Explanation:**

A required field was not entered. The data set entered is a PDS (partitioned data set) and a member in this PDS must be referenced.

**User response:**

Enter a valid member name for PDS access.

---

**ARYR120I**      **A repository file has not been allocated for Subsystem Setup. No information regarding setup steps taken will be logged. Enter a Db2 subsystem and press enter to continue or PF3 to exit.**

**Explanation:**

The repository file to save information about subsystem setup has not been allocated. Please refer to the documentation for installing and configuring Db2 Recovery Expert for information on creating and allocating this file.

**User response:**

You may proceed with the setup, but no information will be saved for later use.

---

**ARYR121E**      **Invalid reply - Please enter a "Y" if you would to re-analyze this subsystem or "N" to retrieve the information stored in the repository.**

**Explanation:**

An invalid value was entered in the Re-analyze Db2 Subsystem Info field.

**User response:**

Enter Y to re-analyze the subsystem. Enter N to view the previous history and analysis.

---

**ARYR122E** Invalid command - Please enter a "C" to create a new MVS user catalog, "A" to add an alias to the catalog, "D" to view a list of aliases assigned to this catalog or "U" to change the name of the entered catalog, or "V" to view the aliases assigned to the catalog.

**Explanation:**

An invalid line command was entered.

**User response:**

Enter C to create a new MVS user catalog. Enter A to add an alias to the listed catalog. Enter D to view the aliases for the listed catalog. Enter U to change the name of the entered user catalog. Enter V to view the aliases assigned to the catalog.

---

**ARYR123E** Invalid command - Please enter an "V" to view all the aliases assigned to this catalog, or "D" to view all the datasets assigned to the catalog.

**Explanation:**

An invalid line command was entered.

**User response:**

Enter A to view the aliases assigned to the listed catalog. Enter D to view the data sets assigned to the listed catalog.

---

**ARYR124E** Invalid command - Please enter an "R" to rename all the BSDS or Active log datasets in the list or "M" to move all the datasets.

**Explanation:**

An invalid command was entered on the heading line.

**User response:**

Enter R to rename all of the BSDS or active log data sets listed. This will be done by specifying a new high-level qualifier. Enter M to move all of the BSDS or active log data sets listed.

---

**ARYR125E** Invalid command - Please enter an "R" to rename the dataset or "M" to move the dataset to another volume.

**Explanation:**

An invalid line command was entered.

**User response:**

Enter R to rename this data set or M to move it to a different MVS volume.

---

**ARYR126E** Invalid reply - Please enter a "U" to enter targets by unit or "S" to enter targets by stogroup.

**Explanation:**

An invalid value was entered.

**User response:**

Enter U to enter targets by unit or S to enter targets by stogroup.

---

**ARYR127E** Invalid command - Please enter "D" to display all datasets using this alias, "M" to mergecat this alias into another catalog, or "R" to rename all Db2 object datasets using this alias.

**Explanation:**

An invalid line command was entered.

**User response:**

Enter D to display all the data sets using the alias. Enter M to perform a MERGECAT to move this alias from one MVS usercat into another. Enter R to rename all the Db2 object data sets using this alias.

---

**ARYR128E** Invalid command - Please enter "D" to display all datasets on this volume, or "M" to move datasets from this volume to another.

**Explanation:**

An invalid line command was entered.

**User response:**

Enter the D line command to display all the MVS data sets on this volume, or M to move data sets from this volume to another.

---

**ARYR129E** Invalid Entry - An MVS User Catalog has already been created for this entry.

**Explanation:**

The C command is not valid on this line because the MVS user catalog specified already exists and cannot be created.

**User response:**

None required.

---

**ARYR130E** Invalid Entry - This option is not allowed until the MVS User Catalog has been created. Create the usercat before attempting to view the aliases or data sets.

**Explanation:**

The entered command requires that you first specify the MVS user catalogs to be used for both logs and data for this Db2 subsystem.

**User response:**

None required.

---

**ARYR131I**      **Catalog Not Found - Press Enter to create this MVS user catalog.**

**Explanation:**

The entered MVS catalog was not found.

**User response:**

Press enter to be taken to a screen that will help you create a MVS user catalog with this name.

---

**ARYR132I**      **Subsystem Information was updated in the System Backup and Restore subsystem setup repository.**

**Explanation:**

The analysis and subsystem setup information was saved in the product repository for future use. You may leave Db2 Recovery Expert and reenter this subsystem SSID when you return to continue working on the setup of this subsystem.

**User response:**

None required.

---

**ARYR133E**      **Option not allowed - The command you entered is not allowed until the new MVS User Catalogs to be used by this subsystem have been entered above and created. Please enter the required catalog information above before entering this command.**

**Explanation:**

The entered command requires that you first specify the MVS user catalogs to be used for both logs and data for this Db2 subsystem.

**User response:**

None required.

---

**ARYR134E**      **Subsystem *subsystem\_ID* is currently inactive. It must be active for this function. Please start the system and try again.**

**Explanation:**

The Db2 subsystem must be active to perform the requested function.

**User response:**

Start the Db2 subsystem and try again.

---

**ARYR135E**      **Option not allowed - Dataset Renaming or moving is not allowed while Db2 is active. Please shut all Db2 Subsystems down that will have data sets renamed or moved.**

**Explanation:**

The Db2 subsystem must down to perform BSDS or active log renaming or moving.

**User response:**

Shut down the subsystem before renaming or moving these data sets.

---

**ARYR136E**      **Option not allowed - The MVS User catalog used for the Db2 active logs and boot straps is not allowed to the same catalog used for the Db2 Data.**

**Explanation:**

The specified MVS user catalogs must not be the same data set name. The active logs and BSDS data sets should use one MVS catalog, and all other Db2 data sets should use another.

**User response:**

None required.

---

**ARYR137E**      **Invalid command - Please enter an "V" to view all the volumes assigned to this copy pool.**

**Explanation:**

An invalid command was entered. The only valid command is V to view all the volumes assigned to this copy pool.

**User response:**

Enter V to view all the volumes assigned to this copy pool.

---

**ARYR138E**      **The stogroup entered is a duplicate of a previously entered stogroup.**

**Explanation:**

The stogroup entered is a duplicate of a previously entered stogroup.

**User response:**

Clear the duplicate stogroup.

---

**ARYR139E**      **The stogroup entered does not exist.**

**Explanation:**

The stogroup entered does not exist.

**User response:**

Clear the stogroup and enter a valid existing stogroup. Or, press Enter again and the stogroup will be accepted. If the stogroup does not exist, it is assumed that it will be created before executing the backup.

---

**ARYR140E**      **A User Catalog name must be specified.**

**Explanation:**

The user catalog name must be specified in order to create a new MVS user catalog.

**User response:**

None required.

---

**ARYR141E**      **The User Catalog specified already exists.**

**Explanation:**

The specified user catalog name already exists.

**User response:**

Specify a new data set name.

---

**ARYR142E**      **A Volume or SMSCLASS must be specified.**

**Explanation:**

Either the User Catalog Volume or SMS Storage Class field must be specified to create a MVS user catalog.

**User response:**

Specify one of the required fields.

---

**ARYR143E**      **The Volume must start with an alphabetic character.**

**Explanation:**

The specified volume is not valid. It must start with an alphabetic character.

**User response:**

Correct the invalid volume.

---

**ARYR144E**      **The Volume must only contain alphanumeric characters.**

**Explanation:**

The specified volume is not valid. It must contain only alphanumeric characters.

**User response:**

Correct the invalid volume.

---

**ARYR145E**      **The Volume name supplied is not a valid volume at your MVS installation.**

**Explanation:**

The volume name supplied is not a valid volume at your MVS installation.

**User response:**

Check with your systems programmer for a valid list.

---

**ARYR146E**      **The data parameter for tracks or cylinders must be specified.**

**Explanation:**

A parameter is missing.

**User response:**

Specify either C for cylinders or T for tracks.

---

**ARYR147E**      **The data parameter for tracks and cylinders must be T or C.**

**Explanation:**

An invalid value was specified.

**User response:**

Specify either C for cylinders or T for tracks.

---

**ARYR148E**      **The data parameter for primary quantity must be specified.**

**Explanation:**

A parameter is missing.

**User response:**

The primary quantity must be specified and it must be numeric.

---

**ARYR149E**      **The data parameter for primary quantity must be numeric.**

**Explanation:**

An invalid value was specified.

**User response:**

The primary quantity must be specified and it must be numeric.

---

**ARYR150E**      **The data parameter for secondary quantity must be specified.**

**Explanation:**

A parameter is missing.

**User response:**

The secondary quantity must be specified and it must be numeric.

---

**ARYR151E**      **The data parameter for secondary quantity must be numeric.**

**Explanation:**

An invalid value was specified.

**User response:**

The secondary quantity must be specified and it must be numeric.

---

**ARYR152E**      **The data parameter for buffers must be specified.**

**Explanation:**

A parameter is missing.

**User response:**

The buffers value must be specified and it must be numeric.

---

**ARYR153E**      **The data parameter for buffers must be numeric.**

**Explanation:**

An invalid value was specified.

**User response:**

The buffers value must be specified and it must be numeric.

---

**ARYR154E**      **The index parameter for tracks or cylinders must be specified.**

**Explanation:**

A parameter is missing.

**User response:**

You must specify either C for cylinders or T for tracks.

---

**ARYR155E      The index parameter for tracks or cylinders must be T or C.**

**Explanation:**

An invalid value was specified.

**User response:**

You must specify either C for cylinders or T for tracks.

---

**ARYR156E      The index parameter for primary quantity must be specified.**

**Explanation:**

A parameter is missing.

**User response:**

The primary quantity must be specified and it must be numeric.

---

**ARYR157E      The index parameter for primary quantity must be numeric.**

**Explanation:**

An invalid value was specified.

**User response:**

The primary quantity must be specified and it must be numeric.

---

**ARYR158E      The index parameter for secondary quantity must be specified.**

**Explanation:**

A parameter is missing.

**User response:**

The secondary quantity must be specified and it must be numeric.

---

**ARYR159E      The index parameter for secondary quantity must be numeric.**

**Explanation:**

An invalid value was specified.

**User response:**

The secondary quantity must be specified and it must be numeric.

---

**ARYR160E      The RBA/LRSN selected must be greater than or equal to the RBA/LRSN of the Backup selected.**

**Explanation:**

The Recover To RBA/LRSN specified is at a point prior to the RBA/LRSN of the selected backup. This is not allowed.

**User response:**

Specify a recovery point RBA/LRSN equal to or greater than the listed RBA/LRSN, or choose an earlier backup.

---

**ARYR161E      This profile's data has been corrupted. It must be re-created.**

**Explanation:**

The profile you selected has been corrupted and is not usable.

**User response:**

Delete the profile and re-create it with a different name.

---

**ARYR162E      Subsystem *subsystem ID* needs to be defined in the "SETUP" area of the product.**

**Explanation:**

The subsystem listed in the message has not been configured using the product setup screen.

**User response:**

From the Db2 Recovery Expert main menu, enter 0 to set up the subsystem. Refer to the documentation for configuring Db2 Recovery Expert setup parameters for more information.

---

**ARYR163E      Invalid Value - Please enter a "Y" if you want to backup the repository datasets during a backup, or "N" if you do not want to backup the repository datasets during a backup.**

**Explanation:**

An invalid value was entered in the Backup Repository field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR164E      Your selection of targets do not match any of the unmapped source volumes.**

**Explanation:**

The target range of volumes entered are not the same type as the source volumes, or the target range entered is not on the same Symmetrix array as the source volumes.

**User response:**

Enter a target range of the same volume type and/or on the same Symmetrix array.

---

**ARYR165E      A Db2 subsystem ID must be specified with the Restore Command.**

**Explanation:**

When entering the RESTORE primary command, a Db2 subsystem ID was not specified.

**User response:**

Add the subsystem ID after the RESTORE command.

---

**ARYR166E      The Db2 subsystem entered is not found in any recovery point.**

---

**Explanation:**

The RESTORE primary command was entered, but the specified Db2 subsystem does not have any Db2 Recovery Expert recovery points. A valid Db2 Recovery Expert backup has not yet been performed.

**User response:**

A valid Db2 Recovery Expert backup must be performed before recovery is possible. If you believe this message is in error, contact IBM Customer Support.

---

**ARYR167I      A recovery point has been selected.**

---

**Explanation:**

The RESTORE primary command was entered and Db2 Recovery Expert selected a valid recovery point.

**User response:**

None required.

---

**ARYR168E      No recovery point that matches the selection criteria was found.**

---

**Explanation:**

The RECOVER ssid primary command was entered, but a recovery point was not found.

**User response:**

Enter an RBA/LRSN greater than or equal to the recovery point listed on the display for the subsystem.

---

**ARYR169E      A volume cannot be excluded if it was manually added. The volume can just be deleted.**

---

**Explanation:**

This volume was inserted as an inclusion volume. It should not be excluded, but can be deleted.

**User response:**

If you want to eliminate the volume from the profile, use the D line command to delete the volume from the list.

---

**ARYR170E      The index parameter for buffers must be specified.**

---

**Explanation:**

A parameter is missing.

**User response:**

The buffers value must be specified and it must be numeric.

---

**ARYR171E      The index parameter for buffers must be numeric.**

---

**Explanation:**

An invalid value was entered.

**User response:**

The buffers value must be specified and it must be numeric.

---

**ARYR172E      The SMS Storage Class name specified is invalid, it must only contain alphanumeric characters.**

---

**Explanation:**

The SMS Storage Class specified is invalid. It must only contain alphanumeric characters. These include A-Z and 0-9.

**User response:**

Correct the invalid value.

---

**ARYR173E      At least one ALIAS needs to be specified.**

---

**Explanation:**

At least one alias name needs to be specified. The alias name is a high-level that will be tracked in this user catalog data set.

**User response:**

Specify an alias name.

---

**ARYR174E      The Alias name specified is invalid, it must only contain alphanumeric characters.**

---

**Explanation:**

The alias name specified is invalid. It must only contain alphanumeric characters. These include A-Z and 0-9.

**User response:**

Correct the invalid value.

---

**ARYR175E      The Action field should be E - Edit, O - Online Submission or B - Batch Submission.**

---

**Explanation:**

An invalid value was entered in the Action Field.

**User response:**

Enter E to edit the shown information. Enter O to execute the shown information online. Enter B to execute the shown information in batch.

---

**ARYR176E      The specified alias already exists in your MVS installation.**

---

**Explanation:**

The entered alias name already exists in your MVS installation.

**User response:**

If you wish to have this alias tracked by this user catalog, you must perform a MERGECAT to move the alias from another user catalog to this one.

---

**ARYR177E      Error allocating SYSIN dataset.**

---

**Explanation:**

The entered alias name already exists in your MVS installation.

**User response:**

If you wish to have this alias tracked by this user catalog, you must perform a MERGECAT to move the alias from another user catalog to this one.

---

**ARYR178E      Open failed for SYSIN dataset.**

**Explanation:**

An error occurred opening the SYSIN data set.

**User response:**

Check the system log for any further information.

---

**ARYR179E      Allocate failed for TEMPFILE.**

**Explanation:**

An error occurred allocating the TEMPFILE data set.

**User response:**

Check the system log for any further information.

---

**ARYR180E      Open failed for TEMPFILE.**

**Explanation:**

An OPEN failed on the temporary ISPF file tailoring data set.

**User response:**

Retry the operation. Contact IBM Customer Support if the problem persists.

---

**ARYR181E      Error allocating SYSPRINT dataset.**

**Explanation:**

An error occurred trying to allocate the SYSPRINT data set.

**User response:**

Retry the operation. Contact IBM Customer Support if the problem persists.

---

**ARYR182E      Open failed for SYSPRINT.**

**Explanation:**

An error occurred trying to open the SYSPRINT data set.

**User response:**

Retry the operation. Contact IBM Customer Support if the problem persists.

---

**ARYR183E      A volume and storage class cannot both be specified.**

**Explanation:**

When entering values for the target pool, you can enter either target units in ranges or you can specify SMS storage groups. However, you cannot enter a combination of the two. When entering the target pool selection, you can switch back and forth between target unit or SMS storage groups; when switching, the previous list will be deleted. However, once the profile

has been setup, you will no longer be able to switch between the two.

**User response:**

If the incorrect target pool type was specified, recreate the profile.

---

**ARYR184E      An error occurred during file tailoring.**

**Explanation:**

An error occurred during file tailoring.

**User response:**

Retry the operation. Contact IBM Customer Support if the problem persists.

---

**ARYR185E      Invalid Value - The number of offline generations must be numeric.**

**Explanation:**

The number of offline generations must be numeric.

**User response:**

Specify offline generations as a numeric value.

---

**ARYR186I      System restore will be performed from the offloaded backup.**

**Explanation:**

This backup is no longer on DASD and therefore the system restore will be performed from the backup that has been offloaded to tape.

**User response:**

None required.

---

**ARYR187E      The new dataset name *data\_set\_name* already exists.**

**Explanation:**

The alias entered will rename the data set to a data set name that already exists in your MVS installation.

**User response:**

Either choose another alias, or delete or rename the data set that already exists with this name.

---

**ARYR188E      A new User Catalog must be entered and must already exist before adding an alias.**

**Explanation:**

The MVS user catalog must be specified and created before you can add an alias to it.

**User response:**

Create or specify the new MVS user catalog, then add the alias.

---

**ARYR189E      An error occurred trying to retrieve the Active and Archive Log datasets**

**Explanation:**



An error occurred trying to retrieve the active and archive log data sets.

**User response:**

---

**ARYR190E**      **Invalid Value - Enter a "Y" to display the subsystem Log RBAs captured by the ARY RBA Capture utility or "N" to bypass RBA display.**

**Explanation:**

An invalid value has been entered for Display Timestamp / RBA Captured Data.

**User response:**

Enter Y to display the subsystem log RBAs captured by the RBA capture utility or N to bypass the RBA display.

---

**ARYR191E**      **Option not allowed - The ARY RBA repository file has not been allocated or the utility has not been run to capture log RBA data**

**Explanation:**

The ARY RBA repository file has not been allocated or the utility has not been run to capture log RBA data.

**User response:**

Create the RBA repository file and run the RBA capture utility. Refer to the user documentation about configuring the RBA capture utility for more information.

---

**ARYR192E**      **Invalid Value - Enter a "Y" to display the Archive Log RBA information with their respective timestamps.**

**Explanation:**

An invalid value has been entered for Display Archive Logs times / RBAs.

**User response:**

Enter Y to display the Archive Log RBA information with their respective timestamps.

---

**ARYR193E**      **Invalid Value - Enter a "Y" to display the Checkpoint RBA information with their respective timestamps.**

**Explanation:**

An invalid value has been entered for Display Checkpoint times / RBAs.

**User response:**

Enter Y to display the Checkpoint RBA information with their respective timestamps.

---

**ARYR194E**      **Invalid Value - Enter a "Y" to enter a recovery timestamp and have the Db2 LRSN generated for you or "N" to bypass timestamp to LRSN Utility.**

**Explanation:**

An invalid value has been entered for Timestamp to Db2 LRSN Utility field.

**User response:**

Enter Y to enter a recovery timestamp and have the Db2 LRSN generated for you or N to bypass the timestamp to LRSN utility.

---

**ARYR195E**      **Invalid Selection - You can enter the display timestamp screen or the Timestamp to LRSN utility, but not both. Please deselect one of the options.**

**Explanation:**

You cannot use both utilities.

**User response:**

Deselect one of the options.

---

**ARYR196W**      **There are no RBA capture times found in the repository for this Db2 subsystem.**

**Explanation:**

No RBA capture times were found for the selected SSID.

**User response:**

Change the RBA value and retry the operation.

---

**ARYR197E**      **There were no RBA capture records for this Db2 Subsystem found in the repository for the time ranges requested.**

**Explanation:**

There were no RBA capture records for the selected Db2 subsystem in the repository for the time ranges requested.

**User response:**

Change the time range and retry the operation.

---

**ARYR198I**      **The RBA capture records display list was truncated because the capture times were greater than the backup times of another backup made after this one.**

**Explanation:**

The RBA capture records list was truncated because the capture times were greater than the capture times of a backup taken after this one.

**User response:**

None required.

---

**ARYR199E**      **Invalid return code attempting to read DSNZPARMs to acquire boot strap and checkpoint information. Check setup for this subsystem to verify the information entered for this subsystem is correct.**

**Explanation:**

An invalid return code was received attempting to read DSNZPARMs to acquire boot strap and checkpoint information.

**User response:**

Check setup for this subsystem to verify that the information entered for this subsystem is correct.

---

**ARYR200E Invalid characters in new alias. It must be alphanumeric.**

**Explanation:**

The Alias entered is not a valid MVS alias.

**User response:**

It must start with an alphabetic character and contain only letters and numbers.

---

**ARYR201E New alias must not have embedded blanks.**

**Explanation:**

The alias entered must not contain any embedded blanks.

**User response:**

Edit the alias and remove the blank(s).

---

**ARYR202E The only & variable supported is &SSID.**

**Explanation:**

The only replaceable variable supported is &SSID. This variable will be replaced by the subsystem identifier to create the new alias name.

**User response:**

Change the variable to the supported type.

---

**ARYR203E &SSID cannot be specified twice.**

**Explanation:**

The variable can only be specified once.

**User response:**

Remove one occurrence of the variable.

---

**ARYR204E Alias alias is not in the specified Usercat *user\_catalog*. If you wish to use this alias, you need to add it to the usercat first.**

**Explanation:**

The specified alias must exist in the specified MVS user catalog first.

**User response:**

You can add the alias to the usercat by using the A command next to the usercat in the New MVS User Catalogs section of the Subsystem Setup Information screen.

---

**ARYR205E The old and new alias cannot be equal. Please specify a new alias that is different from the old alias.**

**Explanation:**

The old and new aliases cannot be equal.

**User response:**

Enter a different new alias.

---

**ARYR206E The alias cannot be renamed if it contains LOG data. You can rename log files in the Boot Strap and Active Log Dataset sections.**

**Explanation:**

The alias listed cannot be renamed because it contains Db2 log or boot strap data set data.

**User response:**

You can rename Db2 log/BSDS data sets from their respective sections on the Subsystem Setup Information panel.

---

**ARYR207E Invalid Value - The value for Encryption Type must be "S" for Substitution, "C" for Cipher, "A" for AES, "1" for AES192, "2" for AES256, "F" for AES Fast or "T" for TDES.**

**Explanation:**

An invalid value was entered for the type of FDR encryption to use.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR208E If RSA encryption is selected, an RSA Label must be entered.**

**Explanation:**

If RSA encryption is selected, an RSA Label must be entered. An RSA label can be defined in the Integrated Cryptographic Service Facility (ICSF).

**User response:**

Enter a valid value for the label. An RSA label can be from 1 to 64 characters in length and must be specified as follows: the first character must be alphabetic or a national character and the remaining characters must be alphabetic, numeric, a national character or a period.

---

**ARYR209E The first character of the Label must be alphabetic or a national character.**

**Explanation:**

An invalid value was entered for the first character of the RSA Label.

**User response:**

Enter a valid value for the label. An RSA label can be from 1 to 64 characters in length and must be specified as follows: the first character must be alphabetic or a national character and the remaining

characters must be alphabetic, numeric, a national character or a period.

---

**ARYR210E**      **A new MVS user catalog for data needs to be specified.**

**Explanation:**

The new MVS user catalog for Db2 object data must be specified before you can perform this action.

**User response:**

Create the new MVS user catalog for Db2 object data.

---

**ARYR211E**      **A new MVS user catalog for logs needs to be specified.**

**Explanation:**

The new MVS user catalog for Db2 logs and BSDS data must be specified before you can perform this action.

**User response:**

Create the new MVS user catalog for Db2 log/BSDS data.

---

**ARYR212E**      **This alias contains both data and logs, the logs must be renamed using a different alias before a mergecat can be performed.**

**Explanation:**

The selected alias contains both Db2 log and object data.

**User response:**

The log and/or boot strap data sets using this alias must be renamed before the mergecat can be performed.

---

**ARYR213E**      **Cannot mergecat alias information into the same user catalog.**

**Explanation:**

The current user catalog for this alias is the same user catalog specified in the New section above. The mergecat function moves all data sets using an alias from one MVS user catalog to another. The target MVS user catalog is specified in the New MVS User catalog section above.

**User response:**

Enter the correct MVS target user catalog in the New MVS User catalog section.

---

**ARYR214E**      **The Action field should be E - Edit, or B - Batch Submission.**

**Explanation:**

An invalid value was entered in the Action field.

**User response:**

The valid values for Action include: "E" - Edit the control cards before execution. "B" - Generate JCL to run the job in Batch.

---

**ARYR215E**      **The new volume specified is not a valid device.**

**Explanation:**

The new volume specified is not valid or might be offline.

**User response:**

Enter a valid volume name or vary the volume online.

---

**ARYR216E**      **All characters after the first character must be alphabetic, numeric, a national character or a period.**

**Explanation:**

An invalid value was entered for the RSA Label.

**User response:**

Enter a valid value for the label. An RSA label can be from 1 to 64 characters in length and must be specified as follows: the first character must be alphabetic or a national character and the remaining characters must be alphabetic, numeric, a national character or a period.

---

**ARYR217E**      **This command requires a current analysis to show which data sets are in use by Db2.**

**Explanation:**

The command entered requires a current analysis to be performed.

**User response:**

Enter the REANALYZE command from the Subsystem Setup Information screen to perform the analysis.

---

**ARYR218E**      **Entering a target volume requires a current analysis to determine which data sets are in use by Db2.**

**Explanation:**

The command entered requires a current analysis to be performed.

**User response:**

Enter the REANALYZE command from the Subsystem Setup Information screen to perform the analysis.

---

**ARYR219W**      **No datasets were selected to be moved.**

**Explanation:**

There were no data sets that satisfied the selection criteria. No data sets will be moved.

**User response:**

None required.

---

**ARYR220E**      **The Volume must start with an alphabetic character.**

**Explanation:**

The volume entered must start with an alphabetic character from A through Z.

**User response:**

Correct the invalid volume name.

---

**ARYR221E      The Volume must only contain alphanumeric characters.**

**Explanation:**

The volume entered must contain only alphanumeric characters, A through Z and 1 through 9.

**User response:**

Correct the invalid volume name.

---

**ARYR222E      The Db2 Object Data field must be "Y" or "N".**

**Explanation:**

An invalid value was entered in the Db2 Object Data field. Valid values are "Y" and "N". Specifying "Y" will move all object data sets (table space and index) for the Db2 subsystem being analyzed to the target volume(s).

**User response:**

Correct the invalid value.

---

**ARYR223E      The Other Data field must be "Y" or "N".**

**Explanation:**

An invalid value was entered in the Other Data field. Valid values are "Y" and "N". Specifying "Y" will move all non-Db2 data sets not related to the Db2 subsystem being analyzed to the target volume(s). You cannot move VSAM data sets for other Db2 subsystems or MVS user catalogs via this interface.

**User response:**

Correct the invalid value.

---

**ARYR224E      The new volume entered must not be the same as the old volume.**

**Explanation:**

The entered volume is the same name as the source volume.

**User response:**

Enter a different target volume name.

---

**ARYR225E      Invalid Value - Please enter a "1" to see a display of Db2 RBA data, "2" to send a modify command to current utility, "3" to build a job to clean up the RBA captured repository, "4" to build the RBA capture utility JCL/proc or "5" to exit Db2 RBA**

**Explanation:**

An invalid selection was entered.

**User response:**

Enter a valid selection as listed in the message text.

---

**ARYR226E      Option not available - An RBA Capture Repository file has not been added to the startup clist. If**

**a repository file has been created, add it to the ARY startup clist and try this option again.**

**Explanation:**

The selection entered requires that you create the RBA capture utility repository.

**User response:**

Please refer to the installation chapter of the user guide for more information about the RBA capture utility.

---

**ARYR227E      Option not available - There is no RBA Capture Utility currently running on this MVS LPAR.**

**Explanation:**

The RBA capture utility must be running before entering this selection.

**User response:**

Please refer to the installation chapter of the user guide for more information about the RBA capture utility.

---

**ARYR228E      A volume of "-NONE-" or "MIGRAT" cannot be moved.**

**Explanation:**

A volume of "-NONE-" indicates Db2 datasets that could not be located. The can be viewed via the "D" command, but cannot be viewed. A volume of "MIGRAT" indicates Db2 datasets that have been migrated by DFSMSHSM and cannot be moved.

**User response:**

Clear the invalid line command.

---

**ARYR229E      Recovery Resources must be "A" for all resources, "S" for SLB, or "I" for image copies.**

**Explanation:**

An invalid value was entered in the Recover Resources field.

**User response:**

Enter A for all resources (system-level backups and image copies), S for system-level backups only, or I for image copies only.

---

**ARYR230I      Valid line commands for New MVS User Catalogs are: C-Create User Catalog, A-Add Alias to User Catalog, D-Display Datasets in User Catalog, U-Update User Catalog Name, V-View Aliases associated with the User Catalog.**

**Explanation:**

This message appears when a ? is entered in the line command area to get help on valid line commands. The following line commands are valid in this line

command area: Enter C to create a new MVS user catalog. Enter A to add an alias to the listed catalog. Enter D to view the aliases for the listed catalog. Enter U to change the name of the entered user catalog. Enter V to view the aliases assigned to the catalog.

**User response:**  
None required.

---

**ARYR231I**      **Valid line commands for Existing MVS User Catalogs are: D-Display Datasets in User Catalog, V-View Aliases associated with the User Catalog.**

**Explanation:**

This message appears when a ? is entered in the line command area to get help on valid line commands. The following line commands are valid in this line command area: Enter A to view the aliases assigned to the listed catalog. Enter D to view the data sets assigned to the listed catalog.

**User response:**  
None required.

---

**ARYR232I**      **Valid line commands for All BSDS or Active Log Datasets are: R-Rename all the Datasets, M-Move all the Datasets.**

**Explanation:**

This message appears when a ? is entered in the line command area to get help on valid line commands. The following line commands are valid in this line command area: Enter R to rename all of the BSDS or Active Log data sets listed. Enter M to move all of the BSDS or Active Log data sets listed.

**User response:**  
None required.

---

**ARYR233I**      **Valid line commands for individual BSDS or Active Log Datasets are: R-Rename the Dataset, M-Move the Dataset.**

**Explanation:**

This message appears when a ? is entered in the line command area to get help on valid line commands. The following line commands are valid in this line command area: Enter R to rename this data set. Enter M to move it to a different MVS volume.

**User response:**  
None required.

---

**ARYR234I**      **Valid line commands for Aliases are: D-Display Datasets associated with Alias, M-Mergecat Datasets from one User Catalog to another, R-Rename the Alias.**

**Explanation:**

This message appears when a ? is entered in the line command area to get help on valid line commands. The following line commands are valid in this line command area: Enter D to display all the data sets using the alias. Enter M to perform a MERGECAT to move this alias from one MVS usercat into another. Enter R to rename all the Db2 object data sets using this alias.

**User response:**  
None required.

---

**ARYR235I**      **Valid line commands for Volumes are: D-Display Datasets on the Volume, M-Move all datasets on the volume.**

**Explanation:**

This message appears when a ? is entered in the line command area to get help on valid line commands. The following line commands are valid in this line command area: Enter the D line command to display all the MVS data sets on this volume, or M to move data sets from this volume to another.

**User response:**  
None required.

---

**ARYR236E**      **If you select a recovery point of Last Copy, Last Incremental or Last Full Copy you cannot specify a Recovery Resource of SLB.**

**Explanation:**

If you select a recovery point of last copy, last incremental or last full copy, you cannot specify a system-level backup as a recovery resource.

**User response:**  
Either change the recovery point or change the recovery resource.

---

**ARYR237E**      **You are not authorized to use application profile *profile\_creator.profile\_name*; - build process aborted.**

**Explanation:**

The Update option for the indicated profile is either View or No, and your user ID does not match the creator ID of the profile. Your user ID must match the creator ID of the profile with an update option of View or No. The job cannot be built

**User response:**  
Examine the profile in question. If you are not authorized to use the profile, select a different profile to use.

---

**ARYR238E**      **The application profile *profile\_creator.profile\_name* has been deleted.**

**Explanation:**

The application profile included in the job has been deleted. The job cannot be built.

**User response:**

Recreate the application profile.

---

**ARYR239E**      **Build of application profile  
profile\_creator.profile\_name has  
resulted in no selected objects.**

**Explanation:**

The build of application profile  
profile\_creator.profile\_name produced no selected  
objects.

**User response:**

Check the profile to make sure an object is selected or  
the object mask(s) specified are correct.

---

**ARYR250E**      **Invalid Value - Please Enter a "Y"  
if you want to take a Local Primary  
Offload or "N" if you do not want  
to perform offload.**

**Explanation:**

An invalid value was entered.

**User response:**

Enter a "Y" if you want to take a local primary (LP)  
offload or "N" if you do not want to perform offload.

---

**ARYR251E**      **Invalid Value - Please Enter a "Y"  
if you want to take a Local Backup  
Offload or "N" if you do not want  
to perform offload.**

**Explanation:**

An invalid value was entered.

**User response:**

Enter a valid value as listed in the message text.

---

**ARYR252E**      **Invalid Value - Please Enter a "Y"  
if you want to take a Recovery  
Primary Offload or "N" if you do  
not want to perform offload.**

**Explanation:**

An invalid value was entered.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR253E**      **Invalid Value - Please Enter a "Y"  
if you want to take a Recovery  
Backup Offload or "N" if you do not  
want to perform offload.**

**Explanation:**

An invalid value was entered.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR254E**      **Invalid Value - Please enter a "Y"  
if you want to encrypt the offload**

**data, "U" to update the encryption  
options or "N" if you do not want  
to perform encryption.**

**Explanation:**

An invalid value was entered.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR255E**      **Invalid Value - Please enter a "Y"  
if you want to use KEYPASSWORD  
for encryption else enter "N".**

**Explanation:**

An invalid value was entered.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR256E**      **Invalid Value - The value for  
ICOUNT must be numeric and  
must be between 1 and 10000.**

**Explanation:**

An invalid value was entered.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR257E**      **Invalid Value - The value for  
KEYPASSWORD type must be  
"C" for CLRAES128 or "D" for  
CLRTDES.**

**Explanation:**

An invalid value was entered.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR258E**      **Invalid Value - Please enter a  
"Y" if you want to use RSA for  
encryption else enter "N".**

**Explanation:**

An invalid value was entered.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR259E**      **Invalid Value - The value for RSA  
type must be "C" for CLRAES128,  
"D" for CLRTDES or "E" for  
ENCTDES.**

**Explanation:**

An invalid value was entered.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR260E**      **Either KEYPASSWORD or RSA  
encryption should be selected, but  
not both.**

**Explanation:**

Y was specified in both the Keypasswd and the RSA field. This combination is not allowed.

**User response:**

Enter Y in either the Keypasswd or RSA field.

---

**ARYR261E**      **One encryption method, either KEYPASSWD or RSA, should be selected.**

**Explanation:**

N was specified in both the Keypasswd and the RSA field.

**User response:**

Enter Y in either the Keypasswd or RSA field, or type CAN in the Option line to exit.

---

**ARYR262E**      **A Local Backup offload can not be selected unless a Local Primary offload is selected.**

**Explanation:**

A local backup offload was specified, but a local primary offload must be selected first.

**User response:**

Enter Y in the Local Primary field, then enter Y in the Local Backup field.

---

**ARYR263E**      **A Recovery Backup offload can not be selected unless a Recovery Primary offload is selected.**

**Explanation:**

A recovery backup offload was specified, but a recovery primary offload must be selected first.

**User response:**

Enter Y in the Recovery Primary field, then enter Y in the Recovery Backup field.

---

**ARYR264E**      **An offload unit and an offload symbolic data set name must be entered when selecting this type of offload.**

**Explanation:**

An offload unit and an offload symbolic dataset name must be entered when selecting this type of offload.

**User response:**

Enter valid values as described in the message text.

---

**ARYR265E**      **Invalid Value - Please Enter a "Y" if you want to update the dataset name specification otherwise enter "N".**

**Explanation:**

An invalid value was entered in the Update DSN Specification field.

**User response:**

Enter a valid value as listed in the message text.

---

**ARYR266E**      **The unit type must be specified.**

**Explanation:**

In order to update the data set name specification, you must specify the unit type.

**User response:**

Enter a valid unit type in the Unit Type field.

---

**ARYR267E**      **Invalid Value - Please Enter a "Y" if you want the dataset to be Cataloged otherwise enter "N".**

**Explanation:**

An invalid value was entered in the Catalog field.

**User response:**

Enter a valid value as listed in the message text.

---

**ARYR268E**      **The entered device type is not recognized by OS/390 as a valid device type.**

**Explanation:**

An invalid value was entered in the Unit Type field.

**User response:**

Enter a valid device type.

---

**ARYR269E**      **When using Disk type devices, expiration date and retention period are not valid.**

**Explanation:**

A disk device was specified for the unit type, but values were also entered in the Expiration date and/or Retention period fields. This is not a valid combination.

**User response:**

Remove the values from the Expiration date or Retention period fields, or change the unit type to a tape devices.

---

**ARYR270E**      **If a Tape device is selected, either retention period or expiration date can be specified.**

**Explanation:**

You selected a tape device without specifying retention period or expiration date.

**User response:**

Select either a retention period or expiration date.

---

**ARYR271E**      **The retention period and expiration date fields cannot be entered at the same time.**

**Explanation:**

You entered both a retention period or expiration date. Only one of those is permitted.

**User response:**

Select either a retention period or expiration date.

---

**ARYR272E      The entered value for Retention Period must be numeric.**

**Explanation:**  
A non-numeric value was entered for Retention Period.

**User response:**  
Enter a numeric retention period.

---

**ARYR273E      The entered value for Expiration Date must be numeric.**

**Explanation:**  
A non-numeric value was entered for Expiration Date.

**User response:**  
Enter a numeric expiration date period.

---

**ARYR274E      The day in the expiration date must be in the range of 1 to 366.**

**Explanation:**  
An invalid value was entered in the Expiration date field. The day portion of the value is incorrect.

**User response:**  
Enter a valid value as described in the message text.

---

**ARYR275E      The year in the expiration date must be in a range of 1999 and higher.**

**Explanation:**  
An invalid value was entered in the Expiration date field. The year portion of the value is incorrect.

**User response:**  
Enter a valid value as described in the message text.

---

**ARYR276E      Invalid Value - Please Enter a "Y" if you want to display the dataset otherwise enter "N".**

**Explanation:**  
An invalid value was entered in the Show DSN field.

**User response:**  
To display the data set name as generated using the current qualifiers, enter Y in the Show DSN field and press Enter.

---

**ARYR277E      The specified qualifier code is not a supported value.**

**Explanation:**  
An invalid value was entered in the Qualifier code field.

**User response:**  
Enter one of the valid qualifier code numbers listed at the bottom of the panel.

---

**ARYR278E      The GDG limit must be numeric.**

**Explanation:**  
The GDG limit must be numeric.

**User response:**

Enter a numeric value between 1 and 255 as the GDG limit.

---

**ARYR279E      The GDG limit value must be either blank or a number in the range of 1-255.**

**Explanation:**  
An invalid value was entered in the GDG Limit field.

**User response:**  
Enter a numeric value between 1 and 255 as the GDG limit.

---

**ARYR280W      The symbolic dataset name generation field is full.**

**Explanation:**  
The symbolic input area is out of space. The maximum number of characters allowed is 159.

**User response:**  
Reduce the number or type of symbolics in the generated data set name.

---

**ARYR281E      Truncation has occurred in building the dataset qualifier.**

**Explanation:**  
The data set name for the image copy is too long as constructed.

**User response:**  
Shorten the data set name by using less or shorter qualifiers.

---

**ARYR282E      Invalid starting position entered. Enter a numeric value for the starting position in the symbolic to substring.**

**Explanation:**  
An invalid value was entered in the Enter Starting Position field.

**User response:**  
Enter a valid numeric as specified in the message text.

---

**ARYR283E      Invalid substring length entered. Enter a numeric value greater than 1 to substring the symbolic.**

**Explanation:**  
An invalid value was entered in the Enter Substring Length field.

**User response:**  
Enter a valid numeric as specified in the message text.

---

**ARYR285E      Invalid dataset node detected - first character not alphabetic or national.**

**Explanation:**



The first character of the entered substring resolved to an invalid character. Data set nodes must begin with alphabetic or national characters.

**User response:**

Change the starting character to a valid character.

---

**ARYR286E      Dataset truncation may occur.**

**Explanation:**

When resolved, the data set name may be too long. The maximum number of characters allowed for data set names is 44.

**User response:**

Shorten the data set name so it resolves to less than 44 characters.

---

**ARYR287E      Invalid dataset node detected  
length greater than 8 characters.**

**Explanation:**

The substring entered caused a data set node to be greater than eight characters.

**User response:**

Shorten the substring to less than eight characters.

---

**ARYR288E      Invalid dataset node detected - 2  
consecutive periods.**

**Explanation:**

The qualifier string contains two consecutive periods as resolved. Data set names cannot contain two consecutive periods.

**User response:**

Change the qualifier string so that two periods do not appear consecutively.

---

**ARYR289E      Invalid characters detected in  
dataset node.**

**Explanation:**

The first character must be alphabetic or national and the remaining seven characters must be alphabetic, numeric, national, or a hyphen.

**User response:**

Correct the data set name.

---

**ARYR290E      Invalid starting position entered.  
Enter a numeric value for the  
starting position in the symbolic to  
substring.**

**Explanation:**

An invalid starting position was entered.

**User response:**

Enter a numeric value for the starting position in the symbolic to substring.

---

**ARYR291E      Invalid substring length entered.  
Enter a numeric value greater than  
1 to substring the symbolic**

**Explanation:**

An invalid value was entered for the substring length.

**User response:**

Enter a numeric value greater than 1 to substring the symbolic.

---

**ARYR292E      Invalid substring starting position  
entered. Enter a starting position  
that is within the range of  
generated symbolic.**

**Explanation:**

An invalid value was entered for the substring starting position.

**User response:**

Enter a starting position that is within the range of the generated symbolic.

---

**ARYR293E      Invalid substring length. Length  
exceeds end of data. Enter a  
length where the starting position  
plus length are less than or equal  
to the maximum length of data.**

**Explanation:**

An invalid value was entered in the Enter Substring Length field.

**User response:**

Enter a length where the starting position plus length are less than or equal to the maximum length of data.

---

**ARYR294E      Recovery point must be a value  
from 1 through 6.**

**Explanation:**

An invalid value was entered in the Recovery Point field.

**User response:**

Enter a valid recovery point as listed in the message text.

---

**ARYR295E      Site must be "Z", "L", or "R".**

**Explanation:**

An invalid value was entered for the Site field.

**User response:**

Enter L for local site, R for recovery site, or Z to use the site specified in the ZPARM member for this Db2 subsystem.

---

**ARYR296E      Reuse must be "Y" or "N".**

**Explanation:**

An invalid value was entered for the Reuse field.

**User response:**

Enter Y to specify that the IBM RECOVER utility is to logically reset and reuse Db2-managed data sets without deleting and redefining them. If you enter N, Db2-managed data sets are deleted and redefined.

---

**ARYR297E**      **Edit Rebuild Indexes Options must be "Y" or "N".**

**Explanation:**

An invalid value was entered in the Edit Rebuild IX Options field.

**User response:**

Enter Y in this field to set options for REBUILD INDEX.

---

**ARYR298E**      **Value must be between 01 and 99.**

**Explanation:**

An invalid value was entered.

**User response:**

Enter a numeric between 01 and 99.

---

**ARYR299E**      **Reuse must be "Y" or "N".**

**Explanation:**

An invalid value was entered in the Reuse existing datasets field.

**User response:**

Enter Y in this field to specify that Db2-managed data sets will be logically reset and reused without deleting and redefining them. Enter N to specify that Db2-managed data sets will be deleted and redefined to reset them.

---

**ARYR310W**      **Line commands were cleared for a cursor sensitive screen command.**

**Explanation:**

Line commands were cleared for a cursor sensitive screen command.

**User response:**

None required.

---

**ARYR311E**      **An invalid line command was entered.**

**Explanation:**

An invalid line command was entered.

**User response:**

Enter a valid line command.

---

**ARYR312E**      **You are not authorized to enter any line commands for this profile. The creator of the profile is restricting all activity.**

**Explanation:**

The creator of the selected profile specified that no other user is to view or update the selected profile.

**User response:**

Choose a different profile to work with.

---

**ARYR313E**      **You are not authorized to update or delete this profile. Enter a "V" if you would like to view this profile.**

**Explanation:**

A profile was selected that has restricted access. The creator of the selected profile specified that no other user is to update or delete the selected profile.

**User response:**

Enter V if you would like to view the profile.

---

**ARYR314E**      **If RSA encryption is not selected the RSA label should not be specified.**

**Explanation:**

Keypassword was selected for the encryption type, but a value was entered in the Label field for RSA.

**User response:**

Enter Y in the RSA field to specify RSA, or remove the value from the Label field.

---

**ARYR315E**      **The Profile Creator is a required field. Please enter a valid creator.**

**Explanation:**

When creating a new profile, the Profile Creator field was left blank.

**User response:**

Enter a profile creator in the Profile Creator field.

---

**ARYR316E**      **The Profile Name is a required field. Please enter a unique name.**

**Explanation:**

When creating a new profile, the Profile Name field was left blank.

**User response:**

Enter a unique profile name in the Profile Name field.

---

**ARYR317E**      **Invalid Value - Enter a "U" to allow other users to update your profile, a "V" to allow other users to just view your profile or "N" to disallow other users from viewing or updating your profile.**

**Explanation:**

When creating a new profile, an invalid value was entered the Update Option field.

**User response:**

Correct the value as described in the message text.

---

**ARYR318E**      **Invalid Value - Enter a value of "Y" to enter a new Target Pool selection, enter a "U" to update the Target Pool selection, a value of "N" indicates that a Target Pool selection does not exist.**

**Explanation:**

An invalid value was entered for the Target Pool field. If a target pool already exists, this value will be set to Y.

**User response:**

Correct the value as described in the message text.

---

**ARYR319I**      **Profile**  
                  "*profile\_creator.profile\_name*"  
                  saved.

**Explanation:**

The profile named in the message was successfully saved.

**User response:**

None required.

---

**ARYR320E**      **Invalid Value - The only valid**  
                  **values are "Y" or "N".**

**Explanation:**

An invalid value was entered in the Process RI field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR321E**      **Invalid Value - The only valid**  
                  **values are "Y" or "N".**

**Explanation:**

An invalid value was entered in the Process Indexes field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR322E**      **Invalid Value - Please enter a "Y"**  
                  **if you would like to delete profile**  
                  **"*profile\_creator.profile\_name*" or**  
                  **an "N" if you do not want to delete**  
                  **it.**

**Explanation:**

An invalid value was entered in the Delete field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR323I**      **Profile**  
                  "*profile\_creator.profile\_name*" has  
                  been successfully deleted.

**Explanation:**

The profile named in the message text was successfully deleted.

**User response:**

None required.

---

**ARYR324E**      **Required Field - Please enter a**  
                  **Profile Creator.**

**Explanation:**

When renaming a profile, the new profile creator was not specified.

**User response:**

Enter the new profile creator in the Creator field.

---

**ARYR325E**      **Required Field - Please enter a**  
                  **Profile Name.**

**Explanation:**

When renaming a profile, the new profile name was not specified.

**User response:**

Enter the new profile name in the Profile Name field.

---

**ARYR326E**      **Duplicate Profile - Please change**  
                  **the Profile Creator or Profile Name**  
                  **to make it unique.**

**Explanation:**

The combination of profile name and profile creator entered is identical to another profile.

**User response:**

Enter a different profile creator or name to make the profile unique.

---

**ARYR327I**      **Profile was successfully renamed.**

**Explanation:**

The profile was successfully renamed.

**User response:**

None required.

---

**ARYR328E**      **Invalid Value - Please Enter a "Y"**  
                  **if you want to resolve Recover/**  
                  **Rebuild pending objects else enter**  
                  **"N".**

**Explanation:**

An invalid value was entered in the Resolve Recover/ Rebuild Pending Objects field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR329E**      **Invalid value - Enter "Y" to add**  
                  **tablespaces or "N" to not add**  
                  **tablespaces.**

**Explanation:**

An invalid value was added in the Add Tablespaces field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR330E**      **Invalid value - Enter "Y" to add**  
                  **indexes or "N" to not add indexes.**

**Explanation:**

An invalid value was added in the Add Indexes field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR331E**      **Invalid line command entered.**

**Explanation:**

An invalid line command was entered.

**User response:**

Enter A to add objects to the profile, D to delete objects from the profile, or E to explode a list of all objects in a detail line.

---

**ARYR332E Invalid Value - The only valid values are "Y", "N" or "B".**

**Explanation:**

An invalid value was entered.

**User response:**

Enter a valid value listed in the message text.

---

**ARYR333E Application profile contains no objects to view.**

**Explanation:**

This application profile is empty; there is nothing to view.

**User response:**

Press PF3 to exit the profile.

---

**ARYR334E Requested object not found.**

**Explanation:**

The selected object was not found in this Db2 subsystem.

**User response:**

Check to see if it has since been dropped.

---

**ARYR335E An excluded object cannot be exploded.**

**Explanation:**

This object has been explicitly excluded from the profile. The Explode operation cannot be performed upon it.

**User response:**

To continue, clear the line command from the excluded object.

---

**ARYR336W There are no spaces that meet the wildcard selection criteria. Press Enter to accept the wildcard anyway or change the selection criteria.**

**Explanation:**

There are currently no table spaces or index spaces in this Db2 subsystem that meet the specified wildcard that you have entered. This might be acceptable if you know there will be objects that match it in the future.

**User response:**

Press Enter to accept the wildcard as is, or change your selection criteria.

---

**ARYR337E Requested object not found.**

**Explanation:**

The requested object was not found.

**User response:**

Change the selection criteria and retry the process.

---

**ARYR338I Object queue has been modified.**

**Explanation:**

The selected objects have been added to the queue of objects to be restored.

**User response:**

None required.

---

**ARYR339E Invalid line command entered.**

**Explanation:**

Invalid line command has been entered.

**User response:**

Please check the list of valid line commands.

---

**ARYR340W Object already exists.**

**Explanation:**

The selected object already has been included in this application profile.

**User response:**

Select a different object.

---

**ARYR341E Cannot specify both Process RI and Process Clones, change one of the values to "N".**

**Explanation:**

A Y was entered in both the Process RI and Process Clones field; this is an invalid combination. RI is not allowed on clone objects.

**User response:**

Change one or both values to N.

---

**ARYR342E No objects meet wildcard criteria.**

**Explanation:**

You entered the Explode line command next to an object detail line that contains wildcard selection criteria. However, no objects exist on the Db2 subsystem that meet the wildcard criteria. The object or objects may have been dropped.

**User response:**

Press Enter to continue.

---

**ARYR343E Object already excluded.**

**Explanation:**

The specified object has already been excluded in a previous exclude selection.

**User response:**

To continue, clear the line command from the excluded object.

---

**ARYR344E Invalid Value - The only valid values are "Y" and "N".**

**Explanation:**

An invalid value has been detected by the SCMD processor.

**User response:**

Please specify either "Y" or "N".

---

**ARYR345E Invalid line command entered.**

**Explanation:**

An invalid line command has been detected.

**User response:**

Please enter one of the listed values.

---

**ARYR346E An encryption type or key must be specified when selecting offloads to be encrypted.**

**Explanation:**

You have selected to encrypt an offload and neglected to specify an encryption type or key.

**User response:**

Enter a valid encryption type or key.

---

**ARYR348E Message text varies depending on the cause of the error.**

**Explanation:**

Parmlib member parsing error. Text describes the problem and possible solution..

**User response:**

See error text and check for correctness of entered values, or check the parmlib member for syntax errors.

---

**ARYR349E Invalid Value - Please enter "Y" if you would like to reset ISPF client passwords or "N" if you do not want to reset them.**

**Explanation:**

Invalid character was entered on the **Reset ISPF client passwords** panel.

**User response:**

Enter a valid character: **Y** or **N**.

---

**ARYR360E An APF authorization failure occurred.**

**Explanation:**

Db2 Recovery Expert requires that all the load libraries in the startup CLIST for ISPLLIB LIBDEF be APF authorized. Certain product functions will not work without this requirement. If a data set name is listed in this message help, it is the first one in the ISPLLIB LIBDEF concatenation detected as not being APF authorized.

**User response:**

Refer to the installation instructions for more information. If additional assistance is needed, contact IBM Customer Support.

---

**ARYR369E Invalid value. Delete Aged Backup should be Yes or No.**

**Explanation:**

An invalid value was entered in the Delete Aged Backup field.

**User response:**

Enter Y to have the product automatically delete any offload files when it is removed from the ARY repository. For example, if you specify two offload generations and the third backup is offloaded, the first (or oldest) offloaded backup would be removed from the Db2 Recovery Expert repository. If this option is Y, then Db2 Recovery Expert will also delete the offload files from the MVS catalog.

---

**ARYR370E Invalid value - Enter "D" to select DFSMSDSS as the offload vendor, enter a "F" to select FDR as the offload vendor or "I" to use FDRInstant.**

**Explanation:**

An invalid value was entered in the Data Mover field.

**User response:**

Enter D to use DFSMSdss to perform the offload of volumes. Enter F to use FDR to perform the offload of volumes. Enter I to use FDRInstant to perform the offload of volumes. You must have a license for FDR to use it as the data mover.

---

**ARYR371E Invalid value - Enter a "Y" to stack tapes otherwise enter "N"**

**Explanation:**

An invalid value was entered in the Stack Backups on Tape field.

**User response:**

Enter Y to direct Db2 Recovery Expert to stack multiple volume backups (or offloads) onto one tape. Most tape cartridges will hold multiple volume backups. You can specify how many volume backups to stack on each tape under the options for each backup type (local primary, local backup, remote primary, and remote backup).

---

**ARYR372E The RBA/LRSN entered must be greater than or equal to the RBA/LRSN of the Backup selected.**

**Explanation:**

The value in the Roll Forward to RBA/LRSN field is at a point prior to the RBA/LRSN of the selected backup. This is not allowed.

**User response:**

Specify a roll forward RBA/LRSN equal to or greater than the listed RBA/LRSN.

---

**ARYR373E Invalid value - The tape stack limit must be numeric.**

**Explanation:**

An invalid value was entered in the Tape Stack Limit field. The tape stack limit controls how many volume

offloads will be stacked onto one tape before the next tape mount is requested.

**User response:**

Calculate approximately how many volume backups will fit onto one tape. There are performance concerns also. When performing data set restore from offloaded backups that have been stacked to tape, there will be a time delay while the tape is forwarded to the correct location to perform the restore.

---

**ARYR374E Invalid value - the Perform Offload field must be "Y" or "N".**

**Explanation:**

An invalid value was entered in the Perform Offload field.

**User response:**

Enter Y if you wish to make this type of backup. You may wish to make multiple backups for use at a disaster recovery site. If each backup is going to disk, make sure you have enough tape units to satisfy the request. If you take all four backup types, and have specified Max Tasks of 1, then you will need FOUR tape units.

---

**ARYR375E No mapping information found for this Db2 subsystem.**

**Explanation:**

No volume information was found for this subsystem.

**User response:**

Enter the VOLUME command or make sure the Db2 subsystem has been properly configured for the Db2 system backup utility within SMS and HSM.

---

**ARYR376W The configuration of the product does not allow the creation of profiles at the data sharing member level but the current Db2 SSID is not active. The product cannot determine whether the subsystem is a data sharing member.**

**Explanation:**

Profiles can only be created on an individual data sharing member when the control file DSMEMBER parameter is set to **Y**. This parameter is currently set to **N** but the chosen Db2 SSID is not active, so the product cannot determine whether the subsystem is a data sharing member or not.

**User response:**

Find out why chosen Db2 SSID is not active and make it active.

---

**ARYR377E The member name selected for the generated job cannot be the same as the member name used for the generation job (which was**

**specified in the dataset shown at the text at the beginning of this window)**

**Explanation:**

The same member name was used for the output of the job to build the JCL as for the built JCL.

**User response:**

You must enter different member names for location of the JCL to perform the batch job generation and the location where the batch job will place its generated JCL.

---

**ARYR378E Invalid value - Update Recovery Options should be "Y" or "N".**

**Explanation:**

An invalid value was entered in the Update Recovery Options field.

**User response:**

Enter Y to update recovery options.

---

**ARYR379E Invalid value - Compress Data should be Yes or No.**

**Explanation:**

An invalid value was entered in the Compress Data field.

**User response:**

Enter Y to have DFSMSdss or FDR compress the volume backup while it is being copied to tape. If you have hardware tape compression, you should set this value to N.

---

**ARYR380E Gather index statistics must be "Y" or "N".**

**Explanation:**

An invalid value was entered in the Gather Index Statistics field.

**User response:**

Enter Y to have the index rebuild utility collect inline object statistics (RUNSTATS values).

---

**ARYR381E Report messages must be "Y" or "N".**

**Explanation:**

An invalid value was entered in the Report Messages field.

**User response:**

Enter Y to have the index rebuild utility generate a report on the collected statistics values.

---

**ARYR382E Update catalog tables must be "A", "P", "S" or "N".**

**Explanation:**

An invalid value was entered in the Update catalog tables field.

**User response:**

Enter these values to have the REBUILD INDEX utility record the following values in the Statistics tables: A - All values; P - Access path values; S - Space-related values; N - Update none of the above (Only valid when Report = Y)

---

**ARYR383E Update history tables must be "A", "P", "S" or "N".**

**Explanation:**

An invalid value was entered in the Update history tables field.

**User response:**

Enter these values to have the REBUILD INDEX utility record the following values in the Statistics history tables: A - All values; P - Access path values; S - Space-related values; N - Update none of the above (Only valid when Report = Y)

---

**ARYR384E Collect all distinct values must be "Y" or "N".**

**Explanation:**

An invalid value was entered in the Collect all distinct values field.

**User response:**

Enter Y to have the REBUILD INDEX utility collect distinct counts for each index key.

---

**ARYR385E Invalid value - Edit Recovery Options should be "Y" or "N".**

**Explanation:**

An invalid value was entered in the Edit Recovery Options field.

**User response**

Enter Y to update the recovery options for this application profile.

**Note:** All recovery options changed here will automatically be saved into the application profile.

---

**ARYR386E At least one DUMP Class needs to be specified.**

**Explanation:**

No dump classes were specified for an HSM offload.

**User response:**

You must specify at least one HSM dump class in order to perform an offload. The HSM dump class is a construct that can be created in the HSM setup screen.

---

**ARYR387E This volume is offline. You cannot move datasets from it while it is offline.**

**Explanation:**

The specified volume is offline. Data sets cannot be moved from offline volumes.

**User response:**

Bring the volume online before attempting to move the listed data sets to different volumes.

---

**ARYR388E If restoring both Data and Logs you cannot choose to resolve Recover/Rebuild pending objects.**

**Explanation:**

You cannot choose to resolve Recover Pending and Rebuild Pending objects if you have specified to restore both data and logs.

**User response:**

None required; Db2 Recovery Expert changes the Resolve Recover/Rebuild Pending Objects field to N.

---

**ARYR389E Invalid Value - The only valid value for a Disaster Recovery Profile is "B" to build the job in Batch.**

**Explanation:**

An invalid value was entered in the Build Online or Batch field.

**User response:**

Enter B to build the job in batch.

---

**ARYR390E The entered value must be numeric.**

**Explanation:**

A non-numeric value was entered in a numeric field.

**User response:**

Enter a numeric value.

---

**ARYR392E The maximum value for the drain wait is 1800 seconds.**

**Explanation:**

An invalid value was entered in the Drain Wait field.

**User response:**

Enter a valid value that is less than or equal to the maximum of 1800 seconds.

---

**ARYR393E The maximum value for the number of retries is 255.**

**Explanation:**

An invalid value was entered in the Retry field.

**User response:**

Enter a valid value that is less than or equal to the maximum of 255.

---

**ARYR394E The maximum value for the retry delay is 1800 seconds.**

**Explanation:**

An invalid value was entered in the Retry Delay field.

**User response:**

Enter a valid value that is the range of 1 to 1800 seconds.

---

**ARYR395E**      **The valid values for Maxro are a blank, "DEFER", or a number.**

**Explanation:**

An invalid value was entered for the Maxro field.

**User response:**

Enter a valid value as specified in the message text.

---

**ARYR396E**      **Sharelevel has valid values of "R"eference, and "C"hange.**

**Explanation:**

An invalid value was entered in the Sharelevel field.

**User response:**

Enter a valid value as specified in the message text.

---

**ARYR397E**      **The valid values for Long Log are "C"ontinue, "T"erm, and "D"rain.**

**Explanation:**

An invalid value was entered for the Longlog field.

**User response:**

Enter a valid value as specified in the message text.

---

**ARYR398E**      **Online Rebuild Index must be "Y" or "N".**

**Explanation:**

An invalid value was entered in the Online Rebuild Index field.

**User response:**

Enter Y to specify an online REBUILD INDEX. This option is valid for Db2 V9 and later.

---

**ARYR399E**      **Edit Online Rebuild Index Options must be "Y" or "N".**

**Explanation:**

An invalid value was entered in the Edit Online Rebuild Index Options field.

**User response:**

Enter Y to edit options for an online REBUILD INDEX utility. This option is only valid for Db2 V9 and later.

---

**ARYR400E**      **Invalid Value - Enter a "C" if you would like System Backup to copy your archive logs, "1" if you will be using Local Archive Log 1, or "2" if you will be using Local Archive Log 2 logs at the DR.**

**Explanation:**

An invalid value was entered in the Archive Logs used at DR field.

**User response:**

Enter a valid value as listed in the message text.

---

**ARYR401E**      **Invalid Value - Enter a "1" if you want to copy only Archive Log 1, "2" if you want to copy only**

**Archive Log 2, "B" if you want to copy both Archive Log 1 and 2, or "C" to create both Archive Log 1 and 2 from Local Archive Log 1.**

**Explanation:**

An invalid value was entered in the Copy Localsite Logs field.

**User response:**

Enter a valid value as listed in the message text.

---

**ARYR402E**      **Invalid Value - Enter a valid nbr of days of Archive Logs you will need at the DR site. Valid values are 0 thru 999.**

**Explanation:**

An invalid value was entered in the Archive Logs needed at DR (days) field.

**User response:**

Enter a valid value as listed in the message text.

---

**ARYR403E**      **Invalid Value - Enter a valid nbr of hours back of Archive Logs you will need at the DR site. This field can be added to the nbr of days needed. Valid Values are 0 thru 999.**

**Explanation:**

An invalid value was entered in the Archive Logs needed at DR (hours) field.

**User response:**

Enter a valid value as listed in the message text.

---

**ARYR404E**      **Please Enter Required Field - A new Archive Log 1 prefix is required for copying Local Logs for the DR site.**

**Explanation:**

No archive log prefix was entered in the DR Archive Log Prefix 1 field. This field is required.

**User response:**

Enter the archive log prefix that the new archive logs will have at the recovery site.

---

**ARYR405E**      **Please Enter Required Field - A new Archive Log 2 prefix is required for copying Local Logs for the DR site.**

**Explanation:**

No archive log prefix was entered in the DR Archive Log Prefix 2 field. This field is required.

**User response:**

Enter the archive log prefix that the new archive logs will have at the recovery site.



---

**ARYR406E** Please Enter Required Field - A valid unit is required for copying Local Logs for the DR site.

---

**Explanation:**

No unit device was entered in the Unit for copying Archive Logs field. This field is required.

**User response:**

Enter a valid unit device to be used to copy the archive logs.

---

**ARYR407E** Invalid Unit - Unit entered must be a tape or disk device that will be used for copying local logs for the DR site.

---

**Explanation:**

An invalid unit device was entered in the Unit for copying Archive Logs field.

**User response:**

Enter a valid unit device to be used to copy the archive logs.

---

**ARYR408E** Invalid Value - Please enter the number of days back that you would like your image copies cataloged at the DR site.

---

**Explanation:**

An invalid value was entered in the Catalog x days of Image Copies at DR field.

**User response:**

Enter a valid numeric that specifies how many days of image copies back from current are to be cataloged at the recovery site.

---

**ARYR409E** Invalid Value - Please enter an "L" if you will be using Local site backups at the DR or "R" if you will be using Recovery site backups at the DR.

---

**Explanation:**

An invalid value was entered in the Image Copies (or SLB) used at DR field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR410E** In order to process Disaster Recovery via the archive log method, we need to know the archive logs that will be needed at the DR site. You must enter either nbr of days or nbr of hours or both days and hours of logs you need available for disaster recovery.

---

**Explanation:**

An invalid value was entered in the Archive Logs needed at DR field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR411E** This Db2 subsystem is a member of a Datasharing group. A symbolic of &SSID is required in the Archive Log Prefix in order for the new logs symbolic to be unique across subsystems.

---

**Explanation:**

If the subsystem is a member of a data sharing group, you must have &SSID somewhere in the archive log prefix.

**User response:**

Enter &SSID in the archive log prefix.

---

**ARYR412E** Invalid Value - Please Enter a "Y" if you would like to force a check point before issuing the archive log command - It is recommended that you check point if the current active logs contain the information from the last image copy of the Db2 catalog and directory. Enter an "N" to bypass this step.

---

**Explanation:**

An invalid value was entered in the Force a checkpoint before Archiving field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR413W** Setting the force check point without issuing the archive log command has no meaning. This option will be ignored at run time.

---

**Explanation:**

A Y was entered in the Force a checkpoint before Archiving field, but the Force the Active Log to Archive field was set to N. This combination is not allowed; the checkpoint cannot be generated without an archive log process.

**User response:**

If you want to force a checkpoint, make sure the Force the Active log to Archive field is set to Y.

---

**ARYR414E** Invalid Value - Please Enter a "Y" if you would like to archive the current active logs on each subsystem, or an "N" to bypass archiving of the active logs.

---

**Explanation:**

An invalid value was entered in the Force the Active log to Archive field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR415E**      **The entered value must be numeric.**

**Explanation:**  
An invalid value was entered in a numeric field.

**User response:**  
Enter a valid numeric value.

---

**ARYR416E**      **Invalid Value - Please Enter a "Y" if you would like this DR profile to only process the capturing of new archive logs. Enter an "N" if you would like all phases of the DR process built.**

**Explanation:**  
An invalid value was entered in the Only run Archive Log Update Process field.

**User response:**  
Enter a valid value as described in the message text.

---

**ARYR417E**      **Invalid Value - Please enter an "S" if you would like to process only this Db2 subsystem, an "A" to process all subsystems in the datasharing group or "L" to process only subsystems in the datasharing group that are currently running on this MVS LPAR.**

**Explanation:**  
An invalid value was entered in the Process Datasharing Subsystems field.

**User response:**  
Enter a valid value as described in the message text.

---

**ARYR418E**      **Invalid Value - Please Enter an "S" if you are using copies made from a System Backup utility or "I" if you will be using native Db2 image copies to recover your data at the DR site.**

**Explanation:**  
An invalid value was entered in the Recovery Method field.

**User response:**  
Enter an "S" if you have backups made with the backup system utility with offloaded dumps or "I" if the subsystem will be recovered with native Db2 image copies.

---

**ARYR419I**      **Profile *profile\_creator.profile\_name* has been successfully updated.**

**Explanation:**  
The profile listed in the message has been successfully updated in the repository with the changes you made.

**User response:**  
None required.

---

**ARYR420E**      **Updating Profile *profile\_creator.profile\_name* has encountered an unrecoverable error. Check the system log for additional information and correct the problem.**

**Explanation:**  
An unexpected error was encountered updating your profile in the VSAM repository dataset.

**User response:**  
Please check the system log for additional MVS messages related to this error. Correct the error and try the update again.

---

**ARYR421E**      **A DASD device is only allowed if Copy Archive Logs to DASD option is set to 0 days/hours.**

**Explanation:**  
A DASD device is entered in the Unit for Copying Archive Logs field, and a value greater than 0 has been specified for the number of days in the Copy Archive Logs to DASD field. This combination is not valid; the Copy Archive Logs field specifies the number of days to be copied *from tape* at the recovery site.

**User response:**  
Either change the Copy Archive Logs to DASD field to 0, or enter a tape device in the Unit for Copying Archive Logs field.

---

**ARYR422W**      **There are no registered systems defined to the product.**

**Explanation:**  
A list of subsystems that were defined in setup was requested, however there are no registered systems defined to the product.

**User response:**  
Subsystems must be defined in setup to use Db2 Recovery Expert. Refer to the user documentation for information on subsystem setup.

---

**ARYR423E**      **Invalid value - Edit Recovery Options should be "Y" or "N"**

**Explanation:**  
An invalid value was entered in the Edit Recovery Options field.

**User response:**  
Enter Y in this field to update the recovery options to be used for the Recover Pending and Rebuild Pending job.

---

**ARYR424I**      **Backup Scope has changed, the volume mappings may also need**

**to be changed to reflect the Backup Scope change.**

**Explanation:**

The backup scope has been changed; therefore, the volume mappings may also need to be changed.

**User response**

Change volume mappings as follows:

- If the scope changed from Full to Data only, the log volumes may need to be removed. One method of removing volumes is to clear out all the mappings using the CLEAR primary command, and then enter the VOLUME primary command to bring in only data volumes.
- If the scope changed from Data Only to Full, you may need to add the log volumes. One method is to enter the VOLUME primary command, which will add the log volumes

---

**ARYR425E      The Recover/Rebuild Pending Member name can not be the same as the other member names.**

**Explanation:**

The Recover/Rebuild Pending Member name that you specified is the same as another member name.

**User response:**

Change the Recover/Rebuild Pending Member name.

---

**ARYR426E      No Clone found for object.**

**Explanation:**

No clone was found for the object being recovered.

**User response:**

Specify a different clone object.

---

**ARYR427E      An error occurred while reading the Control File.**

**Explanation:**

An error occurred while reading the Control File.

**User response:**

Verify that control file was created correctly.

---

**ARYR428E      The SSID is a required field. Please enter a valid SSID.**

**Explanation:**

The SSID field was not specified.

**User response:**

Enter a valid SSID.

---

**ARYR430E      Invalid Value - Enter an "O" to generate the report online or "B" to generate the report in Batch.**

**Explanation:**

An invalid value was entered in the Build Online or Batch field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR431E      Invalid value - Enter a "Y" to validate the Image Copy Dataset, otherwise enter "N".**

**Explanation:**

An invalid value was entered in the Validate IC Datasets field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR432E      The Image Copy Dataset can only be validated when building the report in batch.**

**Explanation:**

A Y was entered in the Validate IC Datasets field, but the Build Online or Batch field contains O for online build. Image copy data sets can only be validated when building the health check report in batch.

**User response:**

If you want to validate image copy data sets, enter B in the Build Online or Batch field and Y in the Validate IC Datasets field.

---

**ARYR433E      This backup does not support object restore. You must set the option to support object restore in the backup profile before creating the backup.**

**Explanation:**

The backup selected does not support the restoring of individual objects from the backup.

**User response:**

Objects cannot be recovered from this backup. You must set the "Enable Obj Restore" option to "Y" in the backup profile before creating the backup to enable this support.

---

**ARYR434E      At least one backup type must be selected with a Y.**

**Explanation:**

No backup type is selected. At least one backup type is required.

**User response:**

At least one backup type must be selected with a Y. Select the Local Primary, Local Backup, Remote Primary or Remote Backup with a Y.

---

**ARYR435E      The start unit is a duplicate of the end unit.**

**Explanation:**

The start unit is a duplicate of the end unit.

**User response:**

Change either the start unit or the end unit.

---

**ARYR436E      A target pool must be specified.****Explanation:**

A target pool must be specified to use automapping.

**User response:**

Enter a Y in the Update Target Pool field; then enter either ranges of target units or stogroups.

---

**ARYR437E      Your region size must be greater than 1000K.****Explanation:**

Your region size must be greater than 1000K.

**User response:**

Increase your region size and try again.

---

**ARYR438E      The SSID of the application profile selected does not match the SSID of the backup profile selected.****Explanation:**

You selected an application profile that has a different SSID than the system backup you selected. The application profile must have the same SSID as the backup selected.

**User response:**

Select a different application profile that has the same SSID as the system backup.

---

**ARYR439E      Invalid value - Edit Image Copy Options should be "Y" or "N".****Explanation:**

An invalid value was entered in the Edit Image Copy Options field.

**User response:**

Enter Y in this field to update the image copy options to be used when creating image copies from the selected system backup.

---

**ARYR440E      Invalid value - The maximum tapes value must be numeric.****Explanation:**

The maximum tapes value must be numeric.

**User response:**

Enter a numeric value.

---

**ARYR441E      Invalid value - The maximum tapes value must be between 1 and 256.****Explanation:**

The maximum tapes value must be between 1 and 256.

**User response:**

Enter a valid value as listed in the message text.

---

**ARYR442E      Invalid Entry - The Date entered is invalid.****Explanation:**

An invalid date was entered.

**User response:**

Enter a valid date in the form of CCYYMMDD.

---

**ARYR443E      Invalid entry - Enter Cancel or End to return to System Restore.****Explanation:**

An invalid primary command was entered.

**User response:**

Please correct and retry the operation.

---

**ARYR444E      Invalid value - The tape stack limit must be between 1 and 999.****Explanation:**

The tape stack limit must be between 1 and 999.

**User response:**

Enter a valid value as listed in the message text.

---

**ARYR445E      Invalid Value - Enter a "G" if the time you are entering is machine time (GMT) or enter an "L" if you are entering a Local Time.****Explanation:**

An invalid value was entered in the Timestamp is in GMT or Local Time field.

**User response:**

Enter a valid value as listed in the message text.

---

**ARYR446E      Invalid Value - The number of offload generations must be numeric and must be between 1 and 99.****Explanation:**

An invalid value was entered for the number of offload generations.

**User response:**

Enter a valid value.

---

**ARYR447E      Invalid Value - The number of tasks must be numeric and must be between 1 and 99.****Explanation:**

An invalid value was entered for the number of tasks. The number of tasks controls how many tasks Db2 Recovery Expert will run simultaneously to offload the backup to tape. It will control how quickly the offload operation completes.

**User response**

Enter a valid value for the number of tasks.

**Note:** You must have enough tape units to satisfy the mount requests that will result. For example, if you specify 4 tasks, and are making both Local Primary and

Remote Primary copies, you must have EIGHT tape units available. If you specify 2 tasks and are making Local Primary and Remote Primary copies, you must have FOUR tape units available.

---

**ARYR448E**      **A Db2 backup method is not valid for a Db2 Version 7 subsystem. The backup method has been changed to Flash.**

**Explanation:**

A Db2 backup method is not valid for a Db2 Version 7 subsystem. The backup method has been changed to Flash.

**User response:**

None required.

---

**ARYR449E**      **"From Offload" is only valid when recovering an object from a system-level backup.**

**Explanation:**

An I was entered in the Recovery Resources field to select image copies as a recovery resource, and Y was entered in the From Offload field.

**User response:**

Change the Recovery Resources field to A(II) or S(LB), or change the From Offload field to N.

---

**ARYR450E**      **Image copies can not be created from an offloaded backup created using FDR.**

**Explanation:**

Image copies cannot be created from an offloaded backup when the backup was created using FDR.

**User response:**

Select a different backup from which to make image copies.

---

**ARYR451E**      **The Backup Type should be LP for Local Primary, LB for Local Backup, RP for Remote Primary or RB for Remote Backup.**

**Explanation:**

An invalid backup type was entered in the Backup Type field.

**User response:**

Enter a valid value as described in the message text.

---

**ARYR452E**      **Invalid Value - Please Enter a "Y" if you want the image copies to be registered in SYSCOPY otherwise enter "N".**

**Explanation:**

An invalid value was entered in the Register in SYSCOPY field.

**User response:**

If you want the image copies created by ARY to be registered in SYSCOPY, enter Y.

---

**ARYR453E**      **A work volume must be specified.**

**Explanation:**

No value was entered in the Work Volume field.

**User response:**

A work volume must be specified. Enter the volume serial number of a volume that can be used as a work volume.

---

**ARYR454E**      **Image copies cannot be created from a System Backup that did not have Object Collection set to Yes.**

**Explanation:**

An "I" was entered next to a system backup that did not have object restore enabled when the backup was taken. No image copies can be created from this system backup.

**User response:**

Select a different backup with object restore enabled.

---

**ARYR455E**      **JCL generation failed.**

**Explanation:**

Object restore job generation failed.

**User response**

Possible reasons and responses are:

- No objects found in application profile: Verify that the job profile contains objects.
- The application profile not found in repository: Verify that the application profile is listed on the Application Profile Display. If it is listed, contact IBM Customer Support.
- User is not authorized to use the application profile: Ensure that the share option for the application profile allows access.
- An error occurred connecting to Db2: Ensure that the Db2 subsystem is up, the plan is bound, and that you have authority to execute the plan.

---

**ARYR456E**      **The work volume is invalid or not online.**

**Explanation:**

The work volume that was entered is either invalid or not online.

**User response:**

Ensure that the correct work volume is entered and that the volume is online.

---

**ARYR457E**      **If the work volume(s) are SMS-managed, an SMS storage class must also be specified.**

**Explanation:**

The work volume(s) entered are SMS-managed work volumes.

**User response:**

Enter the SMS storage class for the work volume(s) in the Work Storage Class field(s).

---

**ARYR458E      Only one application profile can be selected.**

**Explanation:**

An S was entered next to more than one application profile. Only one application profile can be selected at a time.

**User response:**

Enter S next to the profile you want to use to make image copies, and deselect the other profiles.

---

**ARYR459E      A storage class must not be specified if the work volume(s) are not SMS-managed.**

**Explanation:**

A non SMS-managed work volume(s) were entered in the Work Volume field(s).

**User response:**

Remove SMS storage classes from the Work Storage Class field(s).

---

**ARYR460E      A duplicate volume was entered.**

**Explanation:**

The same volume serial was entered more than once in the Work Volume fields.

**User response:**

Ensure that each work volume is only specified once in the Work Storage Class fields.

---

**ARYR461E      The specified work volume(s) cannot be a mixture of SMS-managed and non-SMS-managed.**

**Explanation:**

A mixture of SMS-managed and non-SMS managed volumes was entered in the Work Volume fields.

**User response:**

Ensure that the work volumes are either all SMS-managed or all non-SMS managed.

---

**ARYR462E      The requested backup was in use by another process. Please try again later.**

**Explanation:**

The backup was not available for rename or delete processing.

**User response:**

Retry the process again later.

---

**ARYR464E      The first character of the Db2 subsystem id must be alphabetic or a national character.**

**Explanation:**

An invalid value was entered for the Db2 subsystem ID. A Db2 subsystem ID can be from 1 to 4 characters in length and must be specified as follows: the first character must be an alphabetic or a national character and the remaining characters must be alphabetic, numeric or a national character.

**User response:**

Correct the invalid value.

---

**ARYR465E      All characters after the first character must be alphabetic, numeric or a national character.**

**Explanation:**

An invalid value was entered for the Db2 subsystem ID. A Db2 subsystem ID can be from 1 to 4 characters in length and must be specified as follows: the first character must be an alphabetic or a national character and the remaining characters must be alphabetic, numeric or a national character.

**User response:**

Correct the invalid value.

---

**ARYR466E      From Offload must be "Y" or "N".**

**Explanation:**

An invalid value was entered for the From Offload field.

**User response:**

Enter Y to indicate that any data sets that need to be restored from a system backup should be done using an offload copy of the system backup. Enter N to have the data sets restored using the system backup on disk.

---

**ARYR467E      Update catalog tables None is not valid with Report messages No.**

**Explanation:**

Update catalog tables = None is not valid when Report messages is set to No.

**User response:**

You can change the Update catalog tables option to another value, such as All, Path, or Space, or you can change the Report messages option to Yes.

---

**ARYR468E      MAXRO, LONGLOG and DELAY are not valid with ShareLevel reference.**

**Explanation:**

The MAXRO, LONGLOG and DELAY options are not valid when the SHRLEVEL option is set to REFERENCE.

**User response:**

You can either blank out the MAXRO, LONGLOG and DELAY options or change the SHRLEVEL option to CHANGE.

---

**ARYR469E**      **The Recover to RBA/LRSN must be equal to the RBA/LRSN of the Backup which is *backup\_RBA*.**

**Explanation:**

The Recover to RBA/LRSN must be equal to the RBA/LRSN of the backup RBA, which is listed in the messages.

**User response:**

Change the Recover to RBA/LRSN.

---

**ARYR470E**      **The GDG symbolic can only be used once in a dataset mask.**

**Explanation:**

The GDG symbolic can only be used once in a data set mask. The second GDG symbolic is removed from the mask.

**User response:**

Enter a different symbolic.

---

**ARYR471E**      **When a GDG symbolic is used it must be the last symbolic specified.**

**Explanation:**

The GDG symbolic must be the last symbolic in the data set mask.

**User response:**

Ensure that the GDG symbolic is the last symbolic in the string.

---

**ARYR472I**      **A reanalysis should be performed to refresh the displayed information.**

**Explanation**

A reanalyze should be performed to update the displayed information. One of the following functions was selected:

- Rename/Move Boot Strap Datasets
- Rename/Move Active Log Datasets
- Merge Catalog entries
- Rename an Alias
- Moved datasets

**User response:**

If the batch job for this function has been submitted, once the batch job has completed, a reanalyze should be performed to reflect the recent changes. If Db2 is not started, it must be started before performing the reanalyze.

---

**ARYR473E**      **No alias with this name was found on this system. The dataset with this highlevel may be cataloged in the main catalog.**

**Explanation:**

No alias with the specified name was found on this system.

**User response:**

Check the main catalog to see if data sets starting with the high level qualifier are already cataloged in the main catalog. If so, determine if the data sets exist.

---

**ARYR474E**      **This command is not supported for data sets with no alias or data sets cataloged in the main catalog.**

**Explanation:**

There is no alias entry for this data set. The entered command is not supported in this case

**User response:**

Clear the command from the line command area.

---

**ARYR475E**      **"Like" fields must not have imbedded blanks, all profiles will be displayed.**

**Explanation:**

When specifying the fields for filtering you have included a blank space. As a result all the profiles are displayed.

**User response:**

Remove the blank from the filter field.

---

**ARYR476E**      **Invalid value. The Source Stogroup selection field should be either Y, U, or N.**

**Explanation:**

The value entered in the **Source Stogroup** selection field is invalid. You must specify either a Y to enter a new **Source Stogroup** selection, a U to update the **Source Stogroup** selection, or an N to specify that a **Source Stogroup** selection does not exist.

**User response:**

Enter a valid value.

---

**ARYR480E**      **Invalid value. The Update Image Copy Options should be either Y or N.**

**Explanation:**

The value entered in the Update Image Copy Options field is invalid. You must specify either a Y to update the image copy options or a N which indicates that you will not update the image copy options.

**User response:**

Enter a valid value.

---

**ARYR481E** Invalid value. Valid values for the Local Primary Image Copy field are Y or N.

**Explanation:**

The value entered in the Local Primary Image Copy field is invalid. You must specify either a Y to take a local primary image copy or a N if you do not want to take an image copy.

**User response:**

Enter a valid value.

---

**ARYR482E** Invalid value. Valid values for the Local Backup Image Copy field are Y or N.

**Explanation:**

The value entered in the Local Backup Image Copy field is invalid. You must specify either a Y to take a local backup image copy or a N if you do not want to take an image copy.

**User response:**

Enter a valid value.

---

**ARYR483E** Invalid value. Valid values for the Recovery Primary Image Copy field are Y or N.

**Explanation:**

The value entered in the Recovery Primary Image Copy field is invalid. You must specify either a Y to take a recovery primary image copy or a N if you do not want to take an image copy.

**User response:**

Enter a valid value.

---

**ARYR484E** Invalid value. Valid values for the Recovery Backup Image Copy field are Y or N.

**Explanation:**

The value entered in the Recovery Backup Image Copy field is invalid. You must specify either a Y to take a recovery backup image copy or a N if you do not want to take an image copy.

**User response:**

Enter a valid value.

---

**ARYR485E** A Local Backup Image Copy cannot be selected unless a Local Primary Image Copy is selected.

**Explanation:**

You cannot create a local backup image copy without also creating a local primary image copy.

**User response:**

In addition to the Y specified in the Local Backup Image Copy field, specify a Y in the Local Primary Image Copy field.

---

**ARYR486E** A Recovery Backup Image Copy cannot be selected unless a Recovery Primary Image Copy is selected.

**Explanation:**

You cannot create a recovery backup image copy without also creating a recovery primary image copy.

**User response:**

In addition to the Y specified in the Recovery Backup Image Copy field, specify a Y in the Recovery Primary Image Copy field.

---

**ARYR487E** An image copy unit and an image copy symbolic data set name must be entered when selecting this type of image copy.

**Explanation:**

The unit and symbolic data set name specified for the image copy are invalid.

**User response:**

Specify a valid unit and symbolic data set name for the image copy.

---

**ARYR488E** Invalid value has been specified for the fast replication method.

**Explanation:**

You have specified an invalid fast replication method. Valid fast replication methods can be either an S for EMC Snap fast replication or a D for DFSMSdss fast replication.

**User response:**

Specify a valid fast replication method. You can specify an S for EMC Snap fast replication or a D for DFSMSdss fast replication.

---

**ARYR489E** Invalid value has been specified for the fast replication update option.

**Explanation:**

You have specified an invalid fast replication update option. You can specify a Y to update using fast replication or N if you do not want to do a fast replication update.

**User response:**

Specify a valid fast replication update value.

---

**ARYR490E** Invalid value has been specified for the Sharelevel field.

**Explanation:**

You have specified an invalid valid for the sharelevel. You can specify a R for sharelevel reference or C for sharelevel change.

**User response:**

Specify a valid sharelevel value.



---

**ARYR491E** Invalid value has been specified for the Scope field.

**Explanation:**

You have specified an invalid valid for the scope. You can specify an A for all or a P for pending.

**User response:**

Specify a valid value for scope.

---

**ARYR492E** Invalid value has been specified for the Register VSAM Copy field.

**Explanation:**

You have specified an invalid valid for the **Register VSAM Copy** field. You can specify a Y to register a VSAM copy or an N to not register the VSAM copy.

**User response:**

Specify a valid value.

---

**ARYR493E** Invalid value has been specified for the Stack tapes field.

**Explanation:**

You have specified an invalid valid for the **Stack tapes** field. You can specify a Y to stack tapes or an N to not stack the tapes.

**User response:**

Specify a valid value.

---

**ARYR494E** Invalid value has been specified for the stack limit.

**Explanation:**

You have specified a value that is not numeric for the stack limit.

**User response:**

Specify a valid numeric value.

---

**ARYR495E** Invalid value has been specified for the Number of tasks field.

**Explanation:**

You have specified an invalid valid for the **Number of tasks** field. The value that you specify must be numeric and must be between 1 and 99.

**User response:**

Specify a valid value.

---

**ARYR496E** Invalid value - All parts in one copy should be Y or N.

**Explanation:**

You have specified an invalid valid for the **All parts in one copy** field. You can specify a value of Y to include all parts in one copy or an N to indicate separate copies.

**User response:**

Specify a valid value.

---

---

**ARYR497E** Invalid value has been specified for the Edit Image Copy Options field.

**Explanation:**

You have specified an invalid valid for the **Edit Image Copy Options** field. You can specify a value of Y to edit the image copy options or an N to not edit the image copy options.

**User response:**

Specify a valid value.

---

**ARYR498E** At least one image copy type must be selected.

**Explanation:**

You must select at least one image copy type. The types that are available are Local Primary Image Copy or Remote Primary Image Copy.

**User response:**

Select at least one image copy type.

---

**ARYR499E** An invalid value has been specified for the number of VSAM generations.

**Explanation:**

Your value specified for the **Number of VSAM generations** field is invalid. The value specified must be numeric and be between the numeric values of 1 and 9999.

**User response:**

Specify a valid value for the number of VSAM generations.

---

**ARYR500E** An invalid value has been specified for the Use SLBs for recovery field.

**Explanation:**

Your value specified for the **Use SLBs for recovery** field is invalid. The value specified must be a Y to specify that a system level backup will be used for recovery or an N to specify that a system level backup is not available for use as a backup.

**User response:**

Specify a valid value.

---

**ARYR501E** An invalid value has been specified for the Use ICs for recovery field.

**Explanation:**

Your value specified for the **Use ICs for recovery** field is invalid. The value specified must be a Y to specify that an image copy will be used for recovery or an N to specify that an image copy is not available for use as a backup.

**User response:**

Specify a valid value.

---

**ARYR502E**      **An invalid value has been specified for the Use VSAM ICs for recovery field.**

**Explanation:**

You value specified for the **Use VSAM ICs for recovery** field is invalid. The value specified must be a Y to specify that a VSAM image copy will be used for recovery or an N to specify that a VSAM image copy is not available for use as a backup.

**User response:**

Specify a valid value.

---

**ARYR503E**      **At least one of the types of recovery resources must be selected.**

**Explanation:**

You must select at least one of the types of recovery resources. The recovery resource fields from which you can select are the **Use SLBs for recovery**, the **Use ICs for recovery** field, and the **Use VSAM ICs for recovery** fields. You may select all three if they are available to use for recovery.

**User response:**

Select one or more of the types of recovery resources.

---

**ARYR504E**      **At least one object could not be recovered.**

**Explanation:**

At least one object could not be recovered.

**User response:**

Recreate the recovery resource.

---

**ARYR505E**      **A VSAM Image Copy symbolic data set name must be entered when selecting this type of Image Copy.**

**Explanation:**

A VSAM Image Copy symbolic data set name must be specified when selecting this type of Image Copy.

**User response:**

Specify a VSAM Image Copy data set name.

---

**ARYR506E**      **Offload options must be specified when the number of backup generations is set to 0.**

**Explanation:**

When the number of backup generations is set to 0 a valid backup does not exist on disk and so the backup must be offloaded to be valid.

**User response:**

Specify the offload options or change the number of backup generations.

---

**ARYR507E**      **Source stogroups must be specified.**

**Explanation:**

When creating this type of automap profile, at least one source storage group must be specified.

**User response:**

Update the profile and add at least one source storage group.

---

**ARYR508E**      **Stogroup mapping is not valid for Db2 type targets, BCV type targets, or phased SNAP type targets.**

**Explanation:**

The Source/Target mapping option Stogroup discover/auto mapping is not valid when creating Db2, BCV, or phased SNAP backup profiles.

**User response:**

Change the value of the Source/Target mapping field to M when creating Db2, BCV, or phased SNAP backup profiles.

---

**ARYR509E**      **The range you selected is too large, please reduce the selection range and try again.**

**Explanation:**

The Target Range specified on the Enter Target Selection Range panel is too large.

**User response:**

Reduce the Target Selection Range and try again.

---

**ARYR511E**      **Recovery from image copies is not allowed when an external subsystem is specified.**

**Explanation:**

Coordinated Db2 and IMS disaster recovery can only be performed when the selected recovery method is using System Backup (SLB) disaster recovery.

**System action:**

None.

**User response:**

You must update either or both of the Db2 and IMS disaster recovery profiles to use SLB or remove the external subsystem and turn off coordinated recovery.

---

**ARYR517I**      **ISPF client passwords were reset.**

**Explanation:**

The ISPF client passwords are no longer saved. Users will have to enter their passwords the next time they access the ISPF client.

**System action:**

None

**User response:**

None

---

**ARYR546E**      **Unique dump class name should be specified for each backup copy type**

**Explanation:**

Unique dump class name is not specified for the backup copy types. With HSM, offload copy of only one tape can be created for each DFSMSHsm dump class.

**User response:**

To process the offload for different backup copy types, specify a unique dump class name for each copy.

---

**ARYR547E**      **Invalid Entry - Enter a "Y" if you would like to restore from offload, else enter "N".**

**Explanation:**

An invalid value was entered in the field.

**User response:**

Enter a valid value as instructed in the message text.

---

**ARYR554E**      **Recovery method is not allowed for specified Redirected Recovery options.**

**Explanation:**

Specified recovery method is not allowed. For Redirected Recovery to different target subsystem, only Change Accumulation method is allowed.

**User response:**

Please correct the recovery method or Redirected Recovery options. If you want to perform Redirected Recovery using the RECOVER method, the source and target SSID must be the same.

---

**ARYR600E**      **Invalid value - Enter Y if you want to use multiple jobs for performing an offload and restore, or N if you want to use a single job.**

**Explanation:**

An invalid value was specified for the Use Multiple Jobs option.

**System action:**

None.

**User response:**

You must specify either a Y if you want to use multiple jobs for performing an offload, or N if you want to use a single job.

---

**ARYR601E**      **Invalid value - The number of jobs must be numeric.**

**Explanation:**

The value specified for the maximum number of jobs that can be submitted to an LPAR is not valid. This value is specified when setting up the Multijob Options for offload and restore processing.

**System action:**

None.

**User response:**

You must specify a number between 01 and 99.

---

**ARYR602E**      **Invalid Value - The number of jobs must be between 01 and 99.**

**Explanation:**

The value specified for the maximum number of jobs that can be submitted to an LPAR is not valid. This value is specified when setting up the Multijob Options for offload and restore processing.

**System action:**

None.

**User response:**

You must specify a number between 01 and 99.

---

**ARYR603E**      **Invalid value - The number of tasks must be numeric.**

**Explanation:**

The value specified for the maximum number of tasks that can be used per job submitted to an LPAR is not valid. This value is specified when setting up the Multijob Options for offload and restore processing.

**System action:**

None.

**User response:**

You must specify a number between 01 and 99.

---

**ARYR604E**      **Invalid Value - The number of tasks must be between 1 and 99.**

**Explanation:**

The value specified for the maximum number of tasks that can be used per job submitted to an LPAR is not valid. This value is specified when setting up the Multijob Options for offload and restore processing.

**System action:**

None.

**User response:**

You must specify a number between 01 and 99.

---

**ARYR605E**      **Invalid Value - Update Multijob Options value must be Y or N.**

**Explanation:**

The value specified for the Update Multijob option is not valid.

**System action:**

None.

**User response:**

You must specify Y (Yes) to update the Multijob options or N (No) if you do not want to update the options.

---

**ARYR606E**      **You must specify both RECON Copy 1 and RECON Copy 2.**

**Explanation:**

A value was not specified for both the RECON Copy 1 field and the RECON Copy 2 field.

**System action:**

None.

**User response:**

You must specify valid data set names for both the RECON Copy 1 and RECON Copy 2 fields.

---

**ARYR607E Invalid Value – The value for the Use Multijob for DR Restore option must be Y, N, or U.**

**Explanation:**

The value specified for the Use Multijob for DR Restore option is not valid.

**System action:**

None.

**User response:**

You must specify Y (Yes) to use multiple jobs for performing the DR restore, N (No) if you do not want to use multiple jobs, or U (Update) to update the multiple job options.

---

**ARYR608E The first character of the Multijob Prefix must be an alphabetic or national character.**

**Explanation:**

The first character specified for the Multijob Prefix option must begin with either an alphabetic character or a national symbol (#, @, or \$) so that when the multijob job name is generated it will be a valid z/OS job name.

**System action:**

None.

**User response:**

Specify an alphabetic character or a national symbol (#, @, or \$) as the first character for the Multijob Prefix option.

---

**ARYR700E The specified dataset could not be found in the MVS catalog.**

**Explanation:**

The specified data set could not be found in the MVS catalog.

**User response:**

Ensure that the data set name is correct.

---

**ARYR701E An unexpected return code from VSAM was encountered while doing an add operation to the control file. RC1=return\_code RC2=return\_code\_2.**

**Explanation:**

A VSAM error occurred while attempting to perform an add operation to the specified Db2 control dataset.

**User response:**

The RC1 and RC2 (VSAM return codes) are provided for investigation. Refer to the z/OS DFSMS Macro Instructions for Data Sets documentation for more information.

---

**ARYR702E A Db2 subsystem ID has to be entered for processing.**

**Explanation:**

There was no valid value entered for Db2 subsystem ID.

**User response:**

Enter a valid subsystem ID and continue.

---

**ARYR704E The specified dataset could not be opened for I/O.**

**Explanation:**

A VSAM open error occurred while attempting to open the data set specified for the Db2 control data set.

**User response:**

Verify that the VSAM data set is accessible and continue.

---

**ARYR705E An unexpected return code from VSAM was encountered while doing a read of the control file. RC=return\_code.**

**Explanation:**

A VSAM READ error occurred while attempting to access the data set specified for the Db2 control data set.

**User response:**

The return code (VSAM return code) is provided for investigation. Refer to the z/OS DFSMS Macro Instructions for Data Sets documentation for more information.

---

**ARYR706I The control file record for subsystem *subsystem\_ID* has been successfully updated.**

**Explanation:**

The control file named in the field Db2 Control Dataset has been successfully updated to include the specified changes and definitions for the specified Db2 subsystem.

**User response:**

None required.

---

**ARYR707E An unexpected return code from VSAM was encountered while doing an update operation of the control file. RC1=return\_code\_1 RC2=return\_code\_2**

**Explanation:**

A VSAM update error occurred while attempting to update the data set specified for the Db2 control data set.

**User response:**

The RC1 and RC2 (VSAM return codes) are provided for investigation. Refer to the z/OS DFSMS Macro Instructions for Data Sets documentation for more information.

**ARYR708I      The control file record for Db2 subsystem *subsystem\_ID* has been successfully added.**

**Explanation:**

The control file named in the field Db2 Control Dataset has been successfully updated to include the new record, based on the specified definitions for the specified Db2 subsystem.

**User response:**

None required.

**ARYR709E      Invalid value. Valid options are 1 and 2.**

**Explanation:**

An invalid panel option was entered.

**User response:**

Valid options are 1 and 2.

**ARYR720E      File tailoring open returned a file tailoring already in progress condition.**

**Explanation:**

An attempt to perform file tailoring for utility customization failed. There was file tailoring session already in progress. File tailoring sessions cannot be performed concurrently.

**User response:**

None required.

**ARYR721E      File tailoring open returned the output file already in use condition -- ENQ failed.**

**Explanation:**

An attempt to open the Db2 control data set failed with an ENQ error. The data set is already open for output.

**User response:**

Verify that you are the only user attempting to access this file.

**ARYR722E      File tailoring open returned the skeletal file or output file not allocated condition.**

**Explanation:**

An attempt to perform file tailoring failed because either the tailoring skeleton file or output file is not allocated.

**User response:**

Verify that all required files are allocated prior to performing file tailoring.

**ARYR723E      File tailoring open returned a severe error condition.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on open.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

**ARYR724E      File tailoring open returned an unknown code -- severe error.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on open.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

**ARYR725E      File tailoring close returned a file not open condition -- severe error.**

**Explanation:**

An attempt to perform file tailoring failed because a file-not-open condition was encountered on close.

**User response:**

Verify that all required files are allocated and accessible, and that there are no other tailoring sessions running concurrently with your session.

**ARYR726E      File tailoring close returned an output file in use condition.**

**Explanation:**

An attempt to perform file tailoring failed because an output-file-in-use condition was encountered on close.

**User response:**

Verify that all required files are allocated and accessible, and that there are no other tailoring sessions running concurrently with your session.

**ARYR727E      File tailoring close returned a skeletal file or output file not allocated condition**

**Explanation:**

An attempt to close file tailoring failed because either a tailoring skeleton file or output file was not allocated.

**User response:**

Verify that all required files are allocated and accessible, and that there are no other tailoring sessions running concurrently with your session.

---

**ARYR728E**      **File tailoring close returned a severe error.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on close.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARYR729E**      **File tailoring close returned an unknown code -- severe error.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on close.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARYR730E**      **File tailoring close returned a output member exists in the output library and NOREPL was specified.**

**Explanation:**

An attempt to perform file tailoring failed because the close process could not replace the pre-existing tailored member in the output file.

**User response:**

Change the output member name to a new name or ensure that the output library allows for member replacement.

---

**ARYR731E**      **File tailoring include returned a skeleton does not exist condition.**

**Explanation:**

An attempt to perform file tailoring failed because the tailoring process could not locate a required tailoring skeleton.

**User response:**

Ensure that all required files are allocated to perform file tailoring.

---

**ARYR732E**      **File tailoring include returned a skeleton in use -- ENQ failed condition.**

**Explanation:**

An attempt to access a tailoring skeleton failed with an ENQ error (member in use).

**User response:**

Verify that all required tailoring files are allocated, and that there are no other tailoring sessions running concurrently.

---

**ARYR733E**      **File tailoring include returned a data truncation or skeleton**

**library or output file not allocated condition.**

**Explanation:**

An attempt to perform file tailoring failed because either the tailoring skeleton file or output file is not allocated.

**User response:**

Verify that all required files are allocated prior to performing file tailoring.

---

**ARYR734E**      **File tailoring include returned a severe error condition.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on an include operation.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARYR735E**      **File tailoring include returned an unknown condition -- severe error.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on an include operation.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARYR739E**      **The server port number must be numeric.**

**Explanation:**

An invalid number was detected for the server port number.

**User response:**

Specify the port number as a numeric value in the range of 1 to 65,535.

---

**ARYR740E**      **Invalid port number. Valid port numbers range from 1 to 65535.**

**Explanation:**

An invalid port number was detected.

**User response:**

Specify a valid port number that is within the range of 1 to 65,535.

---

**ARYR471E**      **When a GDG symbolic is used it must be the last symbolic specified.**

**Explanation:**

The GDG symbolic must be the last symbolic in the data set mask.

**User response:**

Ensure that the GDG symbolic is the last symbolic in the string.

---

**ARYR755W Specified RBA/LRSN was not found in BSDS.**

**Explanation:**

A checkpoint that is greater than specified RBA/LRSN was not found on the subsystem. To restore to current point in time or avoid truncating the logs, you can specify FFFFFFFFFFFFFFFFFF RBA/LRSN.

**User response:**

Make sure you select the correct restore RBA/LRSN.

---

**ARYR756E Coordinated Application Profile is incomplete. One Db2 Application Profile and one IMS Application Profile must be associated with the Coordinated Application Profile.**

**Explanation:**

The Coordinated Application Profile that you are creating is incomplete. At least one Db2 Application Profile and one IMS Application Profile must be associated with the Coordinated Application Profile.

**User response:**

Edit the Coordinated Application Profile and associate either a Db2 Application Profile or an IMS Application Profile. If neither has been assigned, you must assign one of each.

---

**ARYR785E Job names must be different.**

**Explanation:**

Batch utility job and recovery job names must be different.

**User response:**

Either edit the utility job name or the recovery job name.

---

**ARYR787E SMS class name is invalid.**

**Explanation:**

SMS class name contains invalid characters.

**User response**

Enter a valid value for the SMS class name. The first character must be alphabetic or a national character. The remaining characters can be alphabetic, numeric or a national character.

---

**ARYR788I Too many records. Number of displayed Recovery History Events is truncated.**

**Explanation:**

There are more Recovery History Event records available than displayed in the list.

**User response:**

Use Start Timestamp and End Timestamp filters to search records between a specific time period.

---

**ARYR800E Insufficient storage size. Region size of at least 30000 is required.**

**Explanation:**

Your region size must be greater than 30000.

**System action:**

None.

**User response:**

Increase your region size and try again.

---

**ARYR802E The PRDSHDR Db2 control file does not exist.**

**Explanation:**

The Db2 control file does not exist.

**System action:**

None

**User response:**

Verify the existence of the Db2 control file data set.

---

**ARYR803I No profiles were found that match your selection criteria. Press enter to create a new profile or change the selection criteria.**

**Explanation:**

No profiles were found that match the values that you entered in the Creator or Name fields as search criteria.

**System action:**

None.

**User response:**

Retry with different search criteria.

---

**ARYR804I Operation completed successfully.**

**Explanation:**

The operation performed completed successfully.

**System action:**

None.

**User response:**

None required.

---

**ARYR805I No subsystems were found.**

**Explanation:**

No Db2 subsystems were found.

**System action:**

None.

**User response:**

Verify that one or more Db2 subsystems have been defined in the Db2 control file data set.

---

**ARYR806I**      **No objects were found that match your selection criteria.**

**Explanation:**

No objects were found that match your filter criteria.

**System action:**

None.

**User response:**

Retry with different filter criteria.

---

**ARYR807E**      **Application profile or group *profileorgroupname* already exists. Enter a unique *profileorgroupname* name and press enter.**

**Explanation:**

The profile or group that you are trying to create already exists.

**System action:**

None.

**User response:**

Retry creating the profile or group using a different name.

---

**ARYR808E**      **Profile *profilename* was not created.**

**Explanation:**

The profile that you are attempting to create was not created

**System action:**

None.

**User response:**

Verify that you have specified all information correctly.

---

**ARYR809I**      **No selected objects were found in this profile. Press enter to add new selected objects.**

**Explanation:**

No objects that you selected were found in this profile.

**System action:**

None.

**User response:**

Press enter to add a new object or select another object. You can also press CANCEL to exit the profile.

---

**ARYR810E**      **Invalid CNUM parm. Valid parms are ON, OFF, or blank.**

**Explanation:**

CNUM was issued with an invalid parameter. Issuing CNUM with no parameter acts as an ON/OFF toggle. ON and OFF are the only parameters accepted. ON turns the CNUM display on. OFF turns the CNUM display off.

**System action:**

None.

**User response:**

Reissue CNUM using a valid CNUM parameter. Valid parameters are ON, OFF, or blank.

---

**ARYR811E**      **Invalid COLS parm. Valid parameters are ON, OFF, or blank.**

**Explanation:**

An invalid parameter was entered with the COLS command.

**System action:**

None.

**User response:**

Enter a valid value as indicated in the message text.

---

**ARYR812I**      **The FIND command requires specification of a target string.**

**Explanation:**

The FIND command was used without specifying a target string.

**System action:**

None.

**User response:**

Retry FIND command specifying a target string.

---

**ARYR813E**      **The RFIND key works only after a FIND character string is entered.**  
**Explanation: System Response:**  
**User Response:**

**Explanation:**

RFIND is not available for use until after a FIND command with specified criteria has been issued.

**System action:**

None.

**User response:**

Retry the RFIND after issuing a FIND command that has search criteria specified.

---

**ARYR814E**      **An unknown column *columnname* was specified.**

**Explanation:**

The column specified on the line command is unknown.

**System action:**

None.

**User response:**

Specify a valid column name to continue.

---

**ARYR815E**      **SORT is not supported for the specified column.**

**Explanation:**

The SORT command is not supported for the specified column .



**System action:**

None.

**User response:**

None required.

**ARYR816E**      **Max Sort Columns exceeded.  
Sorting first 9 columns.**

**Explanation:**

More columns were selected for sorting than are supported. Nine columns can be selected. Under certain circumstances the limit is less than nine, due to internal constraints. For example, sorting a date field can be implemented by three sorts of partial column fields. In that case, the column would count as three toward the maximum of nine, not one.

**System action:**

None.

**User response:**

Specify the allowable maximum number of sort columns.

**ARYR817E**      **Invalid column selection. Set  
cursor to valid column.**

**Explanation:**

An invalid column selection was detected.

**System action:**

None.

**User response:**

Enter a valid column selection to continue.

**ARYR818E**      **Invalid command parameters.**

**Explanation:**

Invalid line command was issued.

**System action:**

None.

**User response:**

Enter a valid line command to continue.

**ARYR819E**      **Invalid place for moved column.  
Cannot move source column to the  
new position.**

**Explanation:**

Unable to move the selected column to the desired new position.

**System action:**

None.

**User response:**

Chose a different location for the new position of the column.

**ARYR820E**      **Not enough space for scrolling  
unfixed columns.**

**Explanation:**

Fixing the columns requested would cause at least one unfixed column to not be displayed.

**System action:**

None.

**User response**

Shrink the requested fixed area by either:

- Requesting fewer fixed columns.
- Unfixing one or more fixed columns.
- CANCEL out of CFIX and invoke CSIZE to shrink one or more fixed columns enough so that all unfixed columns have the space to display.

**ARYR821E**      **Operation not valid for specified  
column.**

**Explanation:**

Operation against column is not allowed.

**System action:**

None.

**User response:**

None required.

**ARYR822E**      **Unable to hide fixed columns.**

**Explanation:**

The fixed column cannot be hidden.

**System action:**

None.

**User response:**

None required.

**ARYR823E**      **Invalid value entered for column  
size: non-numeric data.**

**Explanation:**

A value that is not numeric was entered for the column size. Column size must be a number between the values that are specified in the MIN and MAX fields.

**System action:**

None.

**User response:**

Retry entering a valid number for the column size.

**ARYR824E**      **Invalid value entered for column  
size: out of range.**

**Explanation:**

A value was entered for the column size that is out of the minimum to maximum range. The value specified must be a number between the values that are specified in the MIN and MAX fields. MIN is the smallest acceptable value. MAX is the largest acceptable value.

**System action:**

None.

**User response:**

Retry entering a valid number that falls within the MIN and MAX range.

---

**ARYR825E**      **SIZE is not supported for the specified column.**

**Explanation:**

The SIZE command cannot be used on the specified column.

**System action:**

None.

**User response:**

Choose another column to size with the SIZE command.

---

**ARYR830E**      **File tailoring open returned a file tailoring already in progress condition.**

**Explanation:**

An attempt to perform file tailoring for utility customization failed. There was a file tailoring session already in progress. File tailoring sessions cannot be performed concurrently.

**System action:**

None.

**User response:**

Wait until the first session completes before starting the next file tailoring session.

---

**ARYR831E**      **File tailoring open returned the output file already in use condition -- ENQ failed.**

**Explanation:**

An attempt to open the Db2 control data set failed with an ENQ error. The data set is already open for output.

**System action:**

None.

**User response:**

Verify that you are the only user attempting to access this file.

---

**ARYR832E**      **File tailoring open returned the skeletal file or output file not allocated. Condition = condition.**

**Explanation:**

An attempt to perform file tailoring failed because either the tailoring skeleton file or the output file is not allocated.

**System action:**

None.

**User response:**

Verify that all required files are allocated prior to performing file tailoring.

---

**ARYR833E**      **File tailoring open returned a severe error condition.**

**Explanation: System Response: User Response:**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on open.

**System action:**

None.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARYR834E**      **File tailoring open returned an unknown code -- severe error.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on open.

**System action:**

None.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARYR835E**      **File tailoring close returned a file not open condition -- severe error.**

**Explanation:**

An attempt to perform file tailoring failed because a file not open condition was encountered on close.

**System action:**

None.

**User response:**

Verify that all required files are allocated and accessible and that there are no other tailoring sessions running concurrently with your session.

---

**ARYR836E**      **File tailoring close returned an output file in use condition.**

**Explanation:**

An attempt to perform file tailoring failed because an output file in use condition was encountered on close.

**System action:**

None.

**User response:**

Verify that all required files are allocated and accessible and that there are no other tailoring sessions running concurrently with your session.

---

**ARYR837E**      **File tailoring close returned a skeletal file or output file not allocated condition.**

**Explanation:**

An attempt to close file tailoring failed because either a tailoring skeleton file or output file was not allocated.

**System action:**

None.

**User response:**

Verify that all required files are allocated and accessible and that there are no other tailoring sessions running concurrently with your session.

---

**ARYR838E**      **File tailoring close returned a severe error.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on close.

**System action:**

None.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARYR839E**      **File tailoring close returned an unknown code -- severe error.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on close.

**System action:**

None.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARYR840E**      **File tailoring close returned an output member exists in the output library and NOREPL was specified.**

**Explanation:**

An attempt to perform file tailoring failed because the close process could not replace the pre-existing tailored member in the output file. System Response:  
User Response:

**System action:**

None.

**User response:**

Change the output member name to a new name or ensure that the output library allows for member replacement.

---

**ARYR841E**      **File tailoring include returned a skeleton does not exist condition.**

**Explanation:**

An attempt to perform file tailoring failed because the tailoring process could not locate a required tailoring skeleton.

**System action:**

None.

**User response:**

Assure that all required files are allocated to perform file tailoring.

---

**ARYR842E**      **File tailoring include returned a skeleton in use -- ENQ failed condition.**

**Explanation:**

An attempt to access a tailoring skeleton failed with an ENQ error which indicate the requested member is being used.

**System action:**

None.

**User response:**

Verify that all required tailoring files are allocated and that there are no other tailoring sessions running concurrently.

---

**ARYR843E**      **File tailoring include returned a data truncation or skeleton library or output file not allocated condition.**

**Explanation:**

An attempt to perform file tailoring failed because either the tailoring skeleton file or output file is not allocated.

**System action:**

None.

**User response:**

Verify that all required files are allocated prior to performing file tailoring.

---

**ARYR844E**      **File tailoring include returned a severe error condition.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on an include operation.

**System action:**

None.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARYR845E**      **File tailoring include returned an unknown condition -- severe error.**

**Explanation:**

An attempt to perform file tailoring failed because a severe error condition was encountered on an include operation.

**System action:**

None.

**User response:**

Verify that all required files are allocated and accessible prior to performing file tailoring.

---

**ARYR846E**      **Allocation Error - An error was encountered allocating the ISPF FILE DD. Process not completed.**

**Explanation:**

The ISPF FILE DD allocation failed. The DD is already allocated and cannot be deallocated for this TSO session. The process did not complete successfully.

**System action:**

None.

**User response:**

None required.

---

**ARYR847E**      **Allocation Error - An error was encountered reading the ISPF FILE DD. Process not completed.**

**Explanation:**

The ISPF FILE DD allocation failed. The DD is already allocated and cannot be deallocated for this TSO session. The process did not complete successfully.

**System action:**

None.

**User response:**

None required.

---

**ARYR849E**      **Invalid Value. The number of VSAM generations must be numeric and must be between 1 and 9999.**

**Explanation:**

An invalid value was detected for VSAM generations

**System action:**

None.

**User response:**

Specify a valid value between 1 and 9999 to continue.

---

**ARYR852E**      **Invalid Command. Please enter a valid command.**

**Explanation:**

An invalid line command was entered.

**System action:**

None.

**User response:**

Enter a valid line command to continue.

---

**ARYR853E**      **Invalid Line Command. Please enter a valid line command.**

**Explanation:**

An invalid line command has been detected.

**System action:**

None.

**User response:**

Refer to acceptable line commands on the panel. Select a valid line command to continue.

---

**ARYR854E**      **Invalid Selection. Please enter a valid option.**

**Explanation:**

An invalid selection was entered.

**System action:**

None.

**User response:**

Provide a valid selection to continue.

---

**ARYR855E**      **Invalid Value.**

**Explanation:**

An invalid value was entered or the input field is empty.

**System action:**

None.

**User response:**

Provide an appropriate value to continue.

---

**ARYR856I**      **Move is pending. Enter A(After) or B(Before).**

**Explanation:**

A move operation has not completed.

**System action:**

None.

**User response:**

You must specify an A (After) or a B (Before) to continue.

---

**ARYR857E**      **Result not found.**

**Explanation:**

The FIND operation has completed and the value specified was not found.

**System action:**

None.

**User response:**

None required.

---

**ARYR858I**      **No item(s) selected.**

**Explanation:**

No item(s) were selected on selection panel.

**System action:**

None.

**User response:**

Select one or more items to continue.

---

**ARYR859I**      **No LBDR Scanned Log Ranges were found. Press enter to create new LBDR Scanned Log Range.**

**Explanation:**  
No previously recorded LBDR scanned log ranges have been recorded.

**System action:**  
None.

**User response:**  
Press enter to create a new LBDR scanned log range.

---

**ARYR860E**      **You do not have access rights to this profile.**

**Explanation:**  
This profile was created with no access rights extended to any user other than the creator. Therefore only the creator may modify this profile.

**System action:**  
None.

**User response:**  
Verify with the creator and see if UPDATE rights should be given to this profile.

---

**ARYR861E**      **You only have rights to view this profile.**

**Explanation:**  
This profile was created with only view access extended to any user other than the creator. Therefore only the creator may modify this profile.

**System action:**  
None.

**User response:**  
Verify with the creator and see if UPDATE rights should be given to this profile.

---

**ARYR862E**      **Profile was not deleted.**

**Explanation:**  
The profile was not deleted.

**System action:**  
None.

**User response:**  
Verify that you have permission to delete the profile.

---

**ARYR863E**      **Profile was not opened.**

**Explanation:**  
The profile was not opened.

**System action:**  
None.

**User response:**  
Verify that you have permission to rename the profile.

---

**ARYR864E**      **Profile was not opened. Explanation: System Response: User Response: None required.**

**Explanation:**  
The profile was not opened.

**System action:**  
None.

**User response:**  
Verify that you have permission to open the profile.

---

**ARYR865E**      **Profile was not closed.**

**Explanation:**  
The profile was not closed.

**System action:**  
None.

**User response:**  
Verify that the profile is in fact open.

---

**ARYR866II**      **LBDR Scanned Log Range was deleted.**

**Explanation:**  
The LBDR scanned ranged marked for deletion has been deleted.

**System action:**  
None.

**User response:**  
This message is informational and requires no user action.

---

**ARYR867E**      **You cannot select more than one profile.**

**Explanation:**  
Selection of more than one profile is not permitted.

**System action:**  
None.

**User response:**  
Select only one profile to continue.

---

**ARYR868I**      **Validation was successful for plan *plannname*. (Note that this is not a guarantee of successful execution.)**

**Explanation:**  
The selected recovery plan that was generated was successfully validated.

**User response:**  
Proceed with the previously generated recovery plan. Validation does not guarantee successful execution.

---

**ARYR869E**      **Invalid value. Please enter data set name.**

**Explanation:**

An invalid value was entered for the data set name.

**System action:**

None.

**User response:**

Provide a valid data set name to continue.

---

**ARYR870E Error during data set creation.**

**Explanation:**

An error was encountered during data set creation.

**System action:**

None.

**User response:**

Refer to errors in SDSF logs to determine why data set creation failed.

---

**ARYR871E Cannot open the data set *datasetname*.**

**Explanation:**

Unable to open specified data set.

**System action:**

None.

**User response:**

Verify that the data set exists and is currently allocated.

---

**ARYR872E Invalid value. Please enter member name.**

**Explanation:**

An invalid value was specified for the member name.

**System action:**

None.

**User response:**

You must supply a valid member name to continue processing.

---

**ARYR874E Profile was not copied.**

**Explanation:**

Profile failed to copy due to a memory allocation failure.

**System action:**

None.

**User response:**

Increase the TSO region size.

---

**ARYR875E Profile was not exported.**

**Explanation:**

An error has occurred while exporting an application profile.

**System action:**

None.

**User response:**

Verify that you have specified a valid export data set name and that the data set is not currently in use.

---

**ARYR876E Profile was not imported.**

**Explanation:**

An error has occurred while importing an application profile.

**System action:**

None.

**User response:**

Verify that you have specified a valid import data set name and that the data set contains valid profile information.

---

**ARYR877E Cannot establish connection to server.**

**Explanation:**

Unable to establish a connection to the server.

**System action:**

None.

**User response:**

Verify that you have specified the correct server and port information. Server and port information are specified using the User Settings selection (0) from the main ISPF panel.

---

**ARYR878E Db2 subsystem was not found.**

**Explanation:**

The Db2 subsystem was not found.

**System action:**

None.

**User response:**

Verify that the Db2 subsystem is available for your use and was specified correctly.

---

**ARYR879I Recover job group completed with MAXCC = MAXCCcode**

**Explanation:**

The recover job group completed with a specified return code.

**System action:**

None.

**User response:**

None required.

---

**ARYR881E Error on file *filename* I/O Handler: *iohandlername*.**

**Explanation:**

An error occurred that is documented in the message.

**System action:**

None.

**User response:**

Correct the error described in the message and retry.

---

**ARYR882E Update is only valid for wildcard selections.**

---

**Explanation:**

Wildcards may only be edited in object list.

**System action:**

None.

**User response:**

Wildcards may only be edited in the object list.

---

**ARYR883E You cannot submit this job because some jobs were saved to data set with errors.**

---

**Explanation:**

An error occurred while saving the recovery plan job.

**System action:**

None.

**User response:**

Use SUBMIT to Recover Job Group or try to edit the jobs and resubmit the jobs.

---

**ARYR886E The start timestamp must be less than the end timestamp.**

---

**Explanation:**

The start timestamp that was specified is not less than the end timestamp.

**System action:**

None.

**User response:**

To continue specify a valid start timestamp that is less than the end timestamp.

---

**ARYR887E The start timestamp must be less than the current Db2 location timestamp.**

---

**Explanation:**

The start timestamp that was specified is not less than the current Db2 location timestamp.

**System action:**

None.

**User response:**

To continue specify a valid start timestamp that is less than the current Db2 location timestamp.

---

**ARYR888E The end timestamp cannot be more than the current Db2 location timestamp.**

---

**Explanation:**

The end timestamp that was specified cannot be more than the current Db2 location timestamp.

**System action:**

None.

**User response:**

To continue specify a valid end timestamp that is not more than the current Db2 location timestamp.

---

**ARYR889E The data set *datasetname* is not partitioned.**

---

**Explanation:**

The data set listed in the message is not a partitioned data set.

**System action:**

None.

**User response:**

Specify a partitioned data set to continue.

---

**ARYR890E The member *membername* is not found.**

---

**Explanation:**

The member listed in the message was not found.

**System action:**

None.

**User response:**

Verify member name and resubmit with correct member name to continue.

---

**ARYR891E The data set *datasetname* is not sequential.**

---

**Explanation:**

The data set listed in the message is not a sequential data set.

**System action:**

None.

**User response:**

Specify a sequential data set and resubmit to continue.

---

**ARYR894E Quiet Time Analysis is not allowed for Log Based Dropped Object Recovery profiles.**

---

**Explanation:**

You have requested Quiet Time Analysis on a Log Based Dropped Object Recovery profile. Quiet Time Analysis is not allowed for Log Based Dropped Object Recovery profiles.

**System action:**

None.

**User response:**

None required.

---

**ARYR895E No included objects were found in this profile.**

---

**Explanation:**

The application profile that you have selected does not include any objects.

**System action:**

None.

**User response:**

You must add one or more objects to the application profile.

**ARYR896R****Explanation:**

Only one selection is allowed.

**System action:**

None.

**User response:**

Selection of more than one item is not permitted. Select only one item to continue.

---

**ARYR897I**      **No profiles were found that match your selection criteria. Please change your selection criteria or exit from this screen and create a new application profile.**

**Explanation:**

No profiles were found that match your selection criteria.

**System action:**

None.

**User response:**

Change your selection criteria or exit from this screen and create a new application profile.

---

**ARYR909E**      **Out of memory error occurred. Please exit from the application.**

**Explanation**

An out of memory error was encountered.

**User response**

Exit from the application.

---

**ARYR912I**      **Recovery plan generation for *planname* has completed successfully.**

**Explanation:**

Recovery plan generation has successfully completed for the specified recovery plan.

**User response:**

No action required.

---

**ARYR913W**      **No usable Recovery Plans have been generated.**

**Explanation:**

The objects in the list are unrecoverable.

**User response:**

See [No usable recovery plans generated](#). If you are unable to resolve the issue, contact IBM Software Support.

---

**ARYR920I**      **All objects are translated successfully.**

**Explanation:**

Validate object translation has completed successfully. All objects will be translated to new target names.

**User response:**

No action required.

---

**ARYR938E**      **Disk device type for mini logs is required.**

**Explanation:**

The **Device Type** for user logs must be a disk type (for example, DISK or SYSALLDA).

**User response:**

Specify the disk type (DISK, SYSALLDA, etc.).

---

**ARYR940E**      **Invalid selection character. "F" and "U" are valid.**

**Explanation:**

An invalid selection character was detected.

**System action:**

None.

**User response:**

Specify a valid value of "F" or "U" to continue.

---

**ARYR941E**      **Invalid place for moved column.**

**Explanation:**

An invalid location has been specified as the new location for a column that you are moving.

**System action:**

None.

**User response:**

You must specify a number that is not greater than the number of columns.

---

**ARYR942E**      **Invalid value entered for column size: non-numeric data.**

**Explanation:**

An invalid value that is not numeric has been entered for the column size. The number must be between the values in the MIN and MAX fields.

**System action:**

None.

**User response:**

You must enter a valid numeric value that falls within the range of values specified in the MIN and MAX fields.

---

**ARYR943E**      **Invalid value entered for column size: out of range.**

**Explanation:**



An invalid value has been entered for the column size. The value specified is out of the MIN and MAX field range.

**System action:**

None.

**User response:**

You must enter a valid numeric value that falls within the range of values specified in the MIN and MAX fields. MIN is the smallest acceptable value. MAX is the largest acceptable value.

---

**ARYR944E Total fixed column sizes cannot exceed screen size.**

**Explanation:**

The values entered would result in the sum of the fixed column sizes to exceed the screen size. This is not allowed. Fixed columns are always displayed, and so must fit on the screen.

**System action:**

None.

**User response:**

You must either change the fixed column sizes so that the total is less than the screen size or cancel to return to the previous panel.

---

**ARYR945E New configuration makes column size invalid.**

**Explanation:**

At least one unfixed column cannot be displayed based on the requested column sizes. The cursor is positioned on the value where the problem was detected. The unfixed area on the screen would be too small to show the column where the cursor is placed.

**System action:**

None.

**User response**

To correct the problem do one of the following:

- Make the column where the cursor is pointing smaller so that it can fit in the available unfixed area.
- Set the unfixed area to its maximum size (width)
- Set the fixed area smaller
- Cancel to return to the previous panel

---

**ARYR946E Column does not fit in unfixed area in new configuration.**

**Explanation:**

The unfixed column where the cursor is positioned cannot be displayed based on the requested column sizes. The unfixed area on the screen would be too small to show this column.

**System action:**

None.

**User response:**

You must shrink the fixed area by either unfixing columns or making fixed columns smaller. The column where the cursor is positioned cannot be partially displayed (min-max) so its size cannot be changed.

---

**ARYR947E New configuration makes this column size invalid.**

**Explanation:**

Fixing the requested columns would shrink the available area for unfixed columns so that some may not display. The cursor is placed on a row that represents one such column. Therefore, the requested configuration is not allowed.

**System action:**

None.

**User response:**

To change column sizes, cancel out of the CFIX function and invoke the CSIZE function. Either cancel to exit CFIX with no change or blank out one or more FIX selections until an allowable fixed size is reached.

---

**ARYR948E Invalid fixed selections. Would not leave enough space for this column.**

**Explanation:**

At least one unfixed column cannot be displayed based on the requested fixed selections for the columns. The cursor is positioned on the row that represents one such unfixed column, whose minimum displayable size would not fit in the available screen area.

**System action:**

None.

**User response**

You must shrink the requested fixed area by either:

- Requesting fewer fixed columns.
- Unfixing one or more fixed columns.
- Cancel out of CFIX and invoke CSIZE in order to shrink one or more fixed columns enough so that all unfixed columns have the space they require.

---

**ARYR949E Duplicate Cmd values entered.**

**Explanation:**

Duplicate values have been specified in the Cmd line.

**System action:**

None.

**User response:**

Re-enter the Cmd values.

---

**ARYR950E Invalid sort number. Enter a valid digit.**

**Explanation:**

An invalid character was entered in the sort column. Valid characters are the digits 1, 2, 3,... up to 9, or the number of sortable columns, whichever is less.

**System action:**

None.

**User response:**

Specify a valid sort number.

---

**ARYR951E Same sort number entered twice.**

**Explanation:**

The same sort number was entered for more than one column. The screen is positioned to the second instance. Sort sequence numbers must be unique.

**System action:**

None.

**User response:**

Specify a valid sort number.

---

**ARYR952E Sort sequence skips a number.**

**Explanation:**

The selected sorting sequence skips a number. This is not allowed. The screen is positioned to a selection whose number is lacking an immediate predecessor. The sort sequence is completely rebuilt from the Cmd (and Dir) information. Any previously existing sort sequence is entirely replaced. It is not added to or extended by the new entries.

**System action:**

None.

**User response:**

You must specify a valid sort sequence that does not skip a number.

---

**ARYR953E Invalid sort direction entered. Must be A or D (ascending/descending)**

**Explanation:**

The selected sorting direction is invalid. Only an A (ascending) or D (descending) can be specified. A blank indicates ascending (default).

**System action:**

None.

**User response:**

You must specify a valid sorting direction.

---

**ARYR954E Dir not valid without Ord.**

**Explanation:**

The selected sorting direction is invalid. Only an A (ascending) or D (descending) can be specified. A blank indicates ascending (default).

**System action:**

None.

**User response:**

You must specify a valid sorting direction.

---

**ARYR955E Fix columns cannot exceed screen size.**

**Explanation:**

More columns were selected to be fixed than will fit on the screen.

**System action:**

None.

**User response:**

Remove the (F) selection character from one or more columns.

---

**ARYR956E Invalid entry. Must be numeric.**

**Explanation:**

The entry for this field must be a numeric value.

**System action:**

None.

**User response:**

Specify a numeric value.

---

**ARYR957E Invalid entry for permanent column.**

**Explanation:**

You have made an invalid entry for a permanent column.

**System action:**

None.

**User response:**

Specify a valid entry for the permanent column.

---

**ARYR958E Invalid entry for fixed column.**

**Explanation:**

You have made an invalid entry for a fixed column.

**System action:**

None.

**User response:**

Specify a valid entry for the fixed column.

---

**ARYR959E Invalid entry for unfixed column.**

**Explanation:**

You have made an invalid entry for a unfixed column.

**System action:**

None.

**User response:**

Specify a valid entry for the unfixed column.

---

**ARYR960E Invalid Column Function value. Valid values: 1, 2, 3, 4**

**Explanation:**

An invalid column function value was detected.

**System action:**

None.

**User response:**

Specify a valid value of 1, 2, 3 or 4 to continue.

---

**ARYR961E Invalid Permanent View value.  
Valid values: Y, N**

**Explanation:**

An invalid Permanent View value was detected.

**System action:**

None.

**User response:**

You must specify a valid value of Y or N to continue.

---

**ARYR962E Invalid Reset View value. Valid values are Y, N**

**Explanation:**

An invalid Reset View value was detected.

**System action:**

None.

**User response:**

You must specify a valid value of Y or N to continue.

---

**ARYR963E Invalid Stop Sorting value. Valid values: Y, N**

**Explanation:**

An invalid Stop Sorting value was detected.

**System action:**

None.

**User response:**

You must specify a valid value of Y or N to continue.

---

**ARYR968E Invalid Line Command for a wildcard item. Please enter a valid line command.**

**Explanation:**

An invalid line command has been detected for a wildcard item.

**User response:**

Refer to the message help panel for clarification. Select a valid line command to continue.

---

**ARYR970E TBCREATE failed. RC=returncode**

**Explanation:**

TBCREATE was issued to create a view. It failed with a (hex) return code as indicated in the message.

**System action:**

None.

**User response:**

Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the *ISPF Services Guide*.

---

**ARYR971E TBOPEN failed. RC=returncode**

**Explanation:**

TBOPEN was issued to open a view. It failed with a (hex) return code as indicated in the message.

**System action:**

None.

**User response:**

Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the *ISPF Services Guide*.

---

**ARYR972E TBCLOSE failed. RC=returncode**

**Explanation:**

TBCLOSE failed with a (hex) return code as indicated in the message.

**System action:**

None.

**User response:**

Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the *ISPF Services Guide*.

---

**ARYR973E TBDELETE failed. RC=returncode**

**Explanation:**

TBDELETE failed with a (hex) return code as indicated in the message.

**System action:**

None.

**User response:**

Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the *ISPF Services Guide*.

---

**ARYR974E TBMOD failed. RC=returncode**

**Explanation:**

A TBMOD produced a (hex) return code as indicated in the message.

**System action:**

None.

**User response:**

Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the *ISPF Services Guide*.

---

**ARYR975E TBGET failed. RC=returncode**

**Explanation:**

TBGET failed with a (hex) return code as indicated in the message.

**System action:**

None.

**User response:**

Review ISPTLIB allocation and data set characteristics. Review security controlled access to ISPTLIB data sets. For information about return codes, refer to the *ISPF Services Guide*.

---

**ARYR976E      View table in use.****Explanation:**

A view input library is in use. Views are read from the ISPTLIB data set(s) and saved to the ISPTABL data set. To save and use report customizations that are created via the CSET command, ISPTABL and ISPTLIB must be allocated. The TBSTATS service has indicated that ISPTLIB is not allocated. Only temporary views will be available.

**System action:**

None.

**User response:**

Issue the CSET command and access online help for details on the online report customization options available through the CSET command. In addition, review the ISPTLIB and ISPTABLE allocations. For information about ISPTLIB and ISPTABL, refer to the ISPF user guides for your version of ISPF. Refer to the configuration chapter of this user guide for the recommended method of allocating ISPTLIB and ISPTABL.

---

**ARYR977E      View library not allocated.****Explanation:**

A view input library has not been allocated. Views are read from the ISPTLIB data set(s) and saved to the ISPTABL data set. To save and use report customizations that are created via the CSET command, ISPTABL and ISPTLIB must be allocated. The TBSTATS service has indicated that ISPTLIB is not allocated. Only temporary views will be available.

**System action:**

None.

**User response:**

Issue the CSET command and access online help for details on the online report customization options available through the CSET command. In addition, review the ISPTLIB and ISPTABLE allocations. For information about ISPTLIB and ISPTABL, refer to the ISPF user guides for your version of ISPF. Refer to the configuration chapter of this user guide for the recommended method of allocating ISPTLIB and ISPTABL.

---

**ARYS001I      Db2 Recovery Expert Starting.****Explanation:**

The Db2 Recovery Expert job has been started.

**User response:**

None required.

---

**ARYS002I      Db2 Recovery Expert complete.  
RC=return code.****Explanation:**

The ARY job has completed. The highest return code is listed in the message.

**User response:**

The response depends on the return code: RC = 0 -- Successful completion RC = 4 -- Successful with warnings. The warning messages will end in "W" and can be reviewed in the SYSPRINT DD. RC > 4 -- Error. The error messages will end in "E" and can be reviewed in the SYSPRINT DD.

---

**ARYS003I      Control Cards:****Explanation:**

This message is a header message used to indicate that the successive messages list the control cards.

**User response:**

None required.

---

**ARYS004I      blank or message text****Explanation:**

This message can be blank (for spacing purposes) or can contain a general information message.

**User response:**

None required.

---

**ARYS005E      The first control card  
must be "BACKUP",  
"BACKGROUND-COPY", "BACKUP-  
CSLB", "OFFLOAD", "OFFLOAD-  
CSLB", "RESTORE", "RESTORE-  
CSLB", "ORESTORE",  
"OREPORT", "OREPORT-CSLB",  
"IMAGE-COPY", "LOG-ANALYSIS",  
"OBJ-IREST", "HEALTH-CHECK"  
or "CRCR"****Explanation:**

An error occurred when validating the control card. The first control card must be the BACKUP, BACKGROUND-COPY, BACKUP-CSLB, OFFLOAD, OFFLOAD-CSLB, RESTORE, RESTORE-CSLB, ORESTORE, OREPORT, OREPORT-CSLB, IMAGE-COPY, LOG-ANALYSIS, OBJ-IREST, HEALTH-CHECK or CRCR control card.

**User response:**

Ensure that the first control card on the SYSIN DD is a valid control card.

---

**ARYS007E      Error opening SYSIN DD.**

---

**Explanation:**

An attempt to open the data set defined for the SYSIN DD failed. A WTO is also issued with this message.

**User response:**

The JCL must specify a SYSIN DD. Check the JCL for the presence of the SYSIN DD. Rebuild the job if necessary.

---

**ARYS008E      Invalid profile creator creator name specified. Profile creator must be 8 bytes or less.**

---

**Explanation:**

The profile creator name is more than 8 characters.

**User response:**

Correct the profile creator name and retry.

---

**ARYS009E      Invalid profile name profile name specified. Profile name must be 30 bytes or less.**

---

**Explanation:**

The profile name is more than 30 characters.

**User response:**

Correct the profile name and retry.

---

**ARYS010E      Invalid profile name specified. It must be in the format "CREATOR.NAME".**

---

**Explanation:**

The profile name and/or creator name specified is invalid. The profile must be in the format: *profile creator.profile name*.

**User response:**

Correct the profile name.

---

**ARYS011E      Invalid token name specified.**

---

**Explanation:**

One of the options on the backup control cards is invalid. The option is listed in the message.

**User response:**

Correct the invalid option and resubmit.

---

**ARYS012E      Unmatched quotes found in input.**

---

**Explanation:**

A control card is missing a quote from a required set of quotes.

**User response:**

Correct the control cards to add a matching quote and resubmit.

---

**ARYS013I      Backup profile profile creator.profile name was read from the repository.**

---

**Explanation:**

The backup profile listed in the message was successfully read.

**User response:**

None required.

---

**ARYS014E      Backup profile profile creator.profile name was not found in the repository.**

---

**Explanation:**

The backup profile listed in the message probably has been renamed or deleted.

**User response:**

Check for the presence of the profile. Rename or recreate the backup profile if necessary.

---

**ARYS015E      Fatal error fetching backup profile profile creator.profile name from the repository.**

---

**Explanation:**

An internal error occurred when attempting to retrieve the backup profile from the ARY repository.

**User response:**

Contact IBM Customer Support.

---

**ARYS016E      Call attach error connecting to Db2 SSID subsystem ID. Check installation and authorization.**

---

**Explanation:**

ARY cannot connect to the specified subsystem. The call attach facility has failed.

**User response:**

Confirm that the Db2 subsystem is active and that authorizations are properly granted.

---

**ARYS017E      Db2 SSID subsystem ID was not found in the Backup/Recovery control file.**

---

**Explanation:**

The subsystem ID listed in the message was not found in the ARY control file.

**User response:**

Ensure that the subsystem was defined in Db2 Recovery Expert using the Setup option from the main menu. Refer to the configuration documentation for information.

---

**ARYS018E      Db2 SSID subsystem ID will not be backed up in this execution.**

---

**Explanation:**

There was an error with the listed subsystem ID. Db2 Recovery Expert cannot back up the subsystem.

**User response:**

Check the SYSPRINT DD for error messages explaining why the SSID could not be backed up.

---

**ARYS019E**      **You are not authorized to execute backup profile profile creator.profile name.**

**Explanation:**

The user ID under which the backup job is being built does not have sufficient RACF authority.

**User response:**

Check with your systems administrator to ensure the proper authorizations. Refer to the installation documentation for information about configuring RACF authority for Db2 Recovery Expert.

---

**ARYS020I**      **IBM System Backup Utility Complete. Token =**

**Explanation:**

The System Backup Utility has completed.

**User response:**

None required.

---

**ARYS021E**      **The following volumes are being used by Subsystem *subsystem ID* but are not being backed up:**

**Explanation:**

Db2 Recovery Expert validation processing found volumes that are in use by the specified subsystem that were not included in the backup profile. The backup will not be taken.

**User response:**

Update the profile and use the VOLUME command to find all volumes associated with the subsystem.

---

**ARYS022E**      **Profile profile creator.profile name is currently being used by another user or process.**

**Explanation:**

The profile is being used by someone else. Db2 Recovery Expert must have exclusive use of the profile during the backup and restore processes.

**User response:**

Clear the contention on the backup profile and resubmit the job.

---

**ARYS023E**      **Subsystem *subsystem ID* is currently being backed up or recovered by another process.**

**Explanation:**

Another backup of this subsystem is running. Only one Db2 Recovery Expert backup can be running at a time.

**User response:**

You can resubmit the job when the other backup has completed.

---

**ARYS024E**      **Failed to initialize ARY Command processor.**

**Explanation:**

An internal error occurred when attempting to start the Db2 Recovery Expert command processor.

**User response:**

Contact IBM Customer Support.

---

**ARYS025E**      **The job steplib is not APF authorized.**

**Explanation:**

The Db2 Recovery Expert step libraries are not APF authorized. APF authorization for the step libraries is required.

**User response:**

APF authorize the step libraries. Refer to the installation documentation for more information.

---

**ARYS026E**      **Error loading module module name.**

**Explanation:**

An internal error occurred when attempting to load the listed module.

**User response:**

Contact IBM Customer Support.

---

**ARYS029E**      **Last command = command name  
Error = error message.**

**Explanation:**

An error occurred in the Db2 Recovery Expert command processor. The errant command and any associated message are listed in the message.

**User response:**

Contact IBM Customer Support.

---

**ARYS030E**      **Source volser volume serial is not a valid online MVS volume.**

**Explanation:**

The source volume listed in the message is now offline. Db2 Recovery Expert requires the source volume to be online to perform the backup.

**User response:**

Contact your systems programmer for help bringing the volume online.

---

**ARYS031E**      **Source volser volume serial is not on an EMC Symmetrix array.**

**Explanation:**

The listed source volume is not on an EMC Symmetrix array. The source volume cannot be backed up or restored.

**User response:**

Move the data on the volume to a EMC Symmetrix array and update the profile.

---

**ARYS032E**      **Target unit *target\_unit* is not a valid MVS UCB unit.**

**Explanation:**

The target unit specified is not valid on this z/OS system.

**User response:**

Rerun the system restore job with the RESTORE-TO-VOLSERS keyword added to the system restore job JCL at the disaster recovery site. If the problem persists, consult with your system programmer.

---

**ARYS033E**      **Target unit target unit is not on an EMC Symmetrix array.**

**Explanation:**

The listed target unit does not reside on an EMC Symmetrix.

**User response:**

Move the target unit to a Symmetrix or change the profile to specify a target unit located on the Symmetrix.

---

**ARYS034E**      **Source volser volume serial is not on the same EMC Symmetrix array as target unit target unit.**

**Explanation:**

The source volume and its specified target unit are not located on the same Symmetrix array. The source volume and target unit must be on the same array.

**User response:**

Edit the backup profile and select a different target unit that is on the same array.

---

**ARYS035E**      **Source volser volume serial is not on the same device type as target unit target unit.**

**Explanation:**

The listed source volume is not the same device type as its associated target unit. The source volume and target unit must be of the same device type.

**User response:**

Update the profile and specify a target unit of the same device type.

---

**ARYS036E**      **Target unit target unit is not an EMC BCV device.**

**Explanation:**

The backup profile specified a BCV type backup, but the target unit is not a BCV device.

**User response:**

Edit the backup profile and select a different target unit that is a BCV device.

---

**ARYS037E**      **The profile contains blank target units.**

**Explanation:**

The backup profile contains source volumes that do not have target volumes mapped to them.

**User response:**

Update the backup profile and specify a target volume for each source volume.

---

**ARYS038I**      **Performing profile setup...**

**Explanation:**

This informational message states that profile setup is under way.

**User response:**

None required.

---

**ARYS039I**      **Volume map validation complete.**

**Explanation:**

This informational message states that the volume validation has completed.

**User response:**

None required.

---

**ARYS041W**      **BCV Establish Bypassed due to previous error.**

**Explanation:**

No more establishes will be performed due to the previous error.

**User response:**

None required.

---

**ARYS047W**      **MVS UCB Scan Bypassed due to previous error.**

**Explanation:**

No more UCB scans of source or target units will be performed due to the previous error.

**User response:**

None required.

---

**ARYS048E**      **MVS UCB scan failed for source volume: *source\_volume* with Return code: *rc*.**

**Explanation**

An internal error occurred.

For an invalid source volume, the message may appear: MVS UCB scan failed for source volume with Return code: *rc*

**User response:**

Rerun the system restore job with the RESTORE-TO-VOLSERS keyword added to the system restore job JCL at the disaster recovery site. If the problem persists, contact IBM Customer Support.

---

**ARYS052E**      **MVS UCB Scan failed for BCV Unit unit name.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Customer Support.

---

**ARYS054E**      **MVS UCB scan failed for *unit\_type*  
*unit\_name*.**

**Explanation:**

An internal error occurred.

**User response:**

Rerun the system restore job with the RESTORE-TO-VOLSERS keyword added to the system restore job JCL at the disaster recovery site. If the problem persists, contact IBM Customer Support.

---

**ARYS057I**      **MVS UCBSCAN will continue  
because Continue on Errors Flag  
has been set.**

**Explanation:**

A UCB scan failed for a unit, but Db2 Recovery Expert has determined the information through another means.

**User response:**

None required.

---

**ARYS061E**      **EMC FC01 Call failed on unit  
device name with return codes.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Customer Support.

---

**ARYS065W**      **BCV Re-Establish Bypassed due to  
previous error.**

**Explanation:**

No more BCV re-establishes will be performed due to the previous error.

**User response:**

None required.

---

**ARYS072W**      **Target Unit target unit is also being  
used in backup profile profile  
creator. profile name.**

**Explanation:**

The listed target unit is also being used as a target unit in the listed profile name. At backup time, if this target unit has been used by the other profile, the backup will fail.

**User response:**

Select a different target unit.

---

**ARYS073E**      **Error error code with reason *reason*  
code occurred executing Db2  
Command *command* on subsystem  
*SSID*.**

**Explanation:**

An error occurred while executing the listed Db2 command on the subsystem. The command and the Db2 error will be displayed.

**User response:**

Verify if the user who submitted the job has proper Db2 authority to issue the listed command.

---

**ARYS074I**      **Target target unit is still  
synchronizing to source volume  
source volume.**

**Explanation:**

The listed target unit has been established to the listed source volume, but the target volume is still in the process of synchronizing. A backup cannot be taken until this process is completed.

**User response:**

None required.

---

**ARYS075I**      **Performing Db2 source volume  
validation...**

**Explanation:**

Db2 Recovery Expert is in the process of ensuring all the volumes in the Db2 subsystem are included in the backup profile.

**User response:**

None required.

---

**ARYS076I**      **Db2 source volume validation  
complete. All Db2 volumes are in  
this profile.**

**Explanation:**

Db2 Recovery Expert validated all volumes in the Db2 subsystem and all have been included in the backup profile.

**User response:**

None required.

---

**ARYS078E**      **Profile setup is needed. Place  
"SETUP" control card after the  
profile name.**

**Explanation:**

The profile requires profile setup before a backup can be taken.

**User response:**

Add the SETUP card to the job as follows and resubmit the job: //SYSIN DD \* BACKUP profile creator:"profile name" SETUP

---

**ARYS079I**      **Profile setup is complete. Remove  
the "SETUP" control card to run  
the backup.**

**Explanation:**

The profile has been successfully set up.

**User response:**

Remove the SETUP control card and run the backup.



---

**ARYS080I**      **Backup with timestamp timestamp, generation generation number was saved in the repository.**

**Explanation:**

The information from the backup listed in the message has been successfully saved in the Db2 Recovery Expert repository.

**User response:**

None required.

---

**ARYS081I**      **Backup with timestamp timestamp, generation generation number was removed from the repository.**

**Explanation:**

The listed backup has been removed from the Db2 Recovery Expert repository.

**User response:**

None required.

---

**ARYS082I**      **Performing BCV splits to create backup...**

**Explanation:**

Db2 Recovery Expert is splitting the BCVs required to create the backup.

**User response:**

None required.

---

**ARYS083I**      **Performing Snap Volumes to create backup...**

**Explanation:**

Db2 Recovery Expert is snapping the volumes to create the backup.

**User response:**

None required.

---

**ARYS084I**      **Backup of profile profile creator.profile name has been created.**

**Explanation:**

The backup based on the information in the listed profile has been successfully created.

**User response:**

None required.

---

**ARYS085I**      **Performing BCV establish on next generation of BCVs.**

**Explanation:**

The backup has been successfully created.

**User response:**

None required.

---

**ARYS089E**      **An Error has occurred obtaining ZPARM information from Db2 Subsystem ssid.**

**Explanation:**

An error occurred when attempting to obtain the DSNZPARMS load module for the listed SSID. See ARYS910E message for more details.

**User response:**

Check that the SETUP information was entered correctly for the SSID you are attempting to back up.

---

**ARYS091E**      **Error splitting BCV BCV device name from Standard unit standard unit.**

**Explanation:**

An error occurred when splitting the BCV device from the standard unit. This message appears with ARYS141E, which provides the reason for the failure.

**User response:**

Refer to the EMC TimeFinder OS/390 and z/OS Product Set Message and Code Guide to resolve the error.

---

**ARYS092E**      **Error calling SymDevice on Standard volser standard unit.**

**Explanation:**

An error occurred when attempting to access the listed Symmetrix device.

**User response:**

Refer to the EMC TimeFinder OS/390 and z/OS Product Set Message and Code Guide to resolve the error.

---

**ARYS093E**      **Standard Volser volser (Unit unit name) has an active file level snap session.**

**Explanation:**

The SNAP session must complete or be stopped before completing the operation.

**User response:**

Refer to the configuration instructions for information about how to configure Db2 Recovery Expert to automatically clean old SNAP sessions.

---

**ARYS094I**      **Volser volser (Unit: unit) is still online/offline.**

**Explanation:**

This informational message appears while Db2 Recovery Expert is checking the volume status. The volume listed in the message is either online or offline. Db2 Recovery Expert will continue to check the volume status until the required status is set.

**User response:**

None required.

---

**ARYS095I**      **Waiting seconds seconds for volumes to go online|offline...****Explanation:**

This informational message appears while Db2 Recovery Expert is checking the volume status. Db2 Recovery Expert is waiting the specified amount of time for the volume to go online or offline. The amount of seconds (listed in the message) that Db2 Recovery Expert will wait is set in the Db2 Recovery Expert PARMLIB.

**User response:**

None required.

---

**ARYS096E**      **Volumes are pending online|offline. Make sure they are not in use on any MVS system.****Explanation:**

Db2 Recovery Expert has been waiting for a volume to go online or offline. The amount of wait time has exceeded the wait time specified in the Db2 Recovery Expert PARMLIB.

**User response:**

If Db2 Recovery Expert is waiting for the volume to go offline, it may be in use by some other z/OS or VM system; check with your systems programmer. You might need to configure Db2 Recovery Expert to route the offline/online commands to all members of the sysplex. This is controlled by the ROUTE\_ALL\_ON\_CONSOLE\_CMDS parameter in the PARMLIB member. Refer to documentation for configuring the PARMLIB member for information about the parameter.

---

**ARYS097W**      **At least one SYM device in this backup does not support "Consistency" commands.****Explanation:**

One or more of the devices in the backup is not at the required code level to support Engenuity Consistency Assist (ECA). To use ECA, certain microcode levels are required; refer to software and hardware requirements.

**User response:**

None required; Db2 Recovery Expert will manage log suspends without using ECA.

---

**ARYS098E**      **Repository dataset data set name cannot reside on source volume volser.****Explanation:**

During validation checking, Db2 Recovery Expert determined that its repository is located on one of the volumes that is being backed up. This is not allowed. The backup will not be taken.

**User response:**

Move the repository data sets to a volume that is not being backed up, and retry the backup.

---

**ARYS099E**      **Call to fetch active and archive logs has failed. RC=return code.****Explanation:**

An error occurred while reading the BSDS for the subsystem being backed up.

**User response:**

Ensure that the information entered for the subsystem is correct in the Db2 Recovery Expert setup section of the ISPF interface.

---

**ARYS100E**      **BCV Query command failed. R15 = register contents. Return code = return code. Reason Code = reason code.****Explanation:**

An internal error occurred.

**User response:**

Contact IBM Customer Support.

---

**ARYS102W**      **Source volume volume contains both object|object usercat data and active log|active log usercat data.****Explanation:**

IBM Customer Support detected log data sets on the same volume as object data sets. The backup will continue but the backup will be marked as "Mixed Data", and any restores done from this backup must include data and logs. The message lists the type of mixed data found on the volume.

**User response:**

None required.

---

**ARYS103W**      **All recoveries of this backup must include log recovery.****Explanation:**

IBM Customer Support detected log data sets on the same volume as object data sets. The backup will continue but the backup will be marked as "Mixed Data", and any restores done from this backup must include data and logs.

**User response:**

None required.

---

**ARYS104E**      **Source volser volser is currently established to BCV unit target unit which is not in this profile.****Explanation:**

This listed source volume is established to the listed target unit. However, the target unit is not included in the backup profile. Db2 Recovery Expert cannot establish another BCV to this source unit until the currently established BCV has been split. Since the

currently established BCV is not specified in this profile, it cannot be split. The backup will not be taken.

**User response:**

Use EMC Timefinder utilities to split this BCV from the source volume if you still want to back up the source volume.

---

**ARYS105E**      **Target BCV target unit is not currently paired to Volser source unit.**

**Explanation:**

The target unit listed in the message is not paired to the source unit that is in the profile. The backup will not be taken.

**User response:**

Run the setup process on this profile to correct the error.

---

**ARYS106E**      **Target BCV *target\_unit* is currently established to Unit *source\_unit* which is not in this profile.**

**Explanation:**

The BCV target unit specified is currently established to a source volume that is not included in this profile.

**User response:**

Use the EMC Timefinder utilities to split this BCV from its currently established standard unit.

---

**ARYS107E**      **Source volser source volume is a BCV.**

**Explanation:**

The source volume listed in the message is a BCV. For a BCV backup profile, the source volume cannot reside on a BCV volume.

**User response:**

Either use a SNAP backup profile or copy the data to a non-BCV volume and update the profile.

---

**ARYS108E**      **Error saving profile *profile\_creator.profile\_name*.**

**Explanation:**

An internal error occurred when attempting to save the backup profile.

**User response:**

Contact IBM Customer Support.

---

**ARYS109E**      **Target BCV target unit is expected to be split from source volume source volume and is not.**

**Explanation:**

Db2 Recovery Expert expected to find a different BCV established to the specified source volume specified. The current generation is out of sync.

**User response:**

Run profile setup on the profile.

---

**ARYS110E**      **Target BCV target unit is expected to be established to source volume source volume and is not.**

**Explanation:**

Db2 Recovery Expert expected the listed target BCV to be established to the source unit.

**User response:**

Run profile setup on the profile.

---

**ARYS111E**      **Target BCV target unit is still synchronizing to source volume source volume. Backup not available.**

**Explanation:**

The specified BCV generation has not fully synchronized with the listed source volume. The backup will not be taken.

**User response:**

You might want to configure IBM Customer Support to retry the synchronization or to issue a WTOR. This is controlled by the WAIT\_FOR\_VOLUME\_SYNC parameter in the PARMLIB member. Refer to configuration instructions for the PARMLIB member for information about the parameter.

---

**ARYS112E**      **SSID *ssid* was not found on this MVS LPAR.**

**Explanation:**

The Db2 subsystem ID listed in the message is not found.

**User response:**

Contact IBM Customer Support.

---

**ARYS113E**      **Unknown error determining datasharing status of SSID *ssid*.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Customer Support.

---

**ARYS116E**      **Abnormal termination has been detected. Resuming log activity on SSID *ssid*.**

**Explanation:**

An internal error occurred while the Db2 logs were suspended. Logging will be resumed.

**User response:**

Contact IBM Customer Support.

---

**ARYS117E**      **Error saving backup information in the repository datasets.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Customer Support.

---

**ARYS118E** *error text*

**Explanation:**

Internal error. Some action is necessary as normal processing has ended unsuccessfully.

**User response:**

Contact IBM Customer Support. Please provide the text of this message, along with the preceding or following messages.

---

**ARYS119E** **BCV hold|release|establish|re-establish failed on unit target unit. Additional information.**

**Explanation:**

The BCV process failed on the listed target unit. Additional information is provided in the message text as to the cause of the error.

**User response:**

Note the error message contents and contact IBM Customer Support.

---

**ARYS120E** **Invalid generation specified. It must be numeric between 1 and 99 inclusive.**

**Explanation:**

An invalid generation number was found in the control card for the restore.

**User response:**

Correct the control card and resubmit.

---

**ARYS121E** **Backup profile creator.profile name generation generation was not found in the repository.**

**Explanation:**

The profile and/or its backups were not found in the repository. Either the profile name was mistyped or the backups have been deleted.

**User response:**

Ensure the profile creator and name are correct. Contact IBM Customer Support if necessary.

---

**ARYS122E** **Fatal error fetching backup profile creator.profile name generation generation from the repository.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Customer Support.

---

**ARYS123I** **Backup profile creator.profile name generation generation was read from the repository.**

**Explanation:**

The backup information for the listed generation was successfully read.

**User response:**

None required.

---

**ARYS124E** **R15 = register contents. Return code = return code. Reason reason code.**

**Explanation:**

This message is used in conjunction with other messages to report return code, reason code, and register contents for debugging purposes.

**User response:**

None required.

---

**ARYS125E** **Source volume source volume contains log data. This profile specifies "Data Only".**

**Explanation:**

Db2 Recovery Expert detected that the specified source volume contains log data, but the backup profile specified data only.

**User response:**

Either separate the log and object data or change the profile to a full backup to include all data and log volumes.

---

**ARYS126E** **Waiting seconds seconds for background splits to complete...**

**Explanation:**

The BCV volumes are still in the process of being split. IBM Customer Support will wait the number of seconds specified in the PARMLIB for the split to complete.

**User response:**

None required.

---

**ARYS128I** **Requesting wait status from operator...**

**Explanation:**

The target BCV is still synchronizing to the source volume. The WAIT\_FOR\_VOLUME\_SYNC parameter in the IBM Customer Support PARMLIB is set to prompt with a WTOR if any BCVs are not fully synchronized to their standard volumes. IBM Customer Support is issuing a WTOR to ask if it should continue waiting or quit.

**User response:**

Reply to the WTOR.

---

**ARYS129E** **Reply was to "NOT WAIT". Backup will terminate.**

**Explanation:**

The target BCV was synchronizing to the source volume. Db2 Recovery Expert issued a WTOR to ask

if it should continue waiting or quit. The reply was N to not wait. The backup will be terminated.

**User response:**  
None required.

---

**ARYS130I**      **Reply was to "WAIT". Waiting 30 seconds for BCVs to synchronize.**

**Explanation:**  
The target BCV was synchronizing to the source volume. IBM Customer Support issued a WTOR to ask if it should continue waiting or quit. The reply was Y to wait. Db2 Recovery Expert will wait 30 seconds and re-issue the WTOR if necessary.

**User response:**  
None required.

---

**ARYS131E**      **Db2 version must be at least version V710 to execute.**

**Explanation:**  
Db2 Recovery Expert detected that the Db2 subsystem is at a version prior to Db2 V7. You can only use Db2 Recovery Expert on subsystems that are Db2 V7 or later.

**User response:**  
None required.

---

**ARYS132E**      **User is not authorized to execute a System Backup Utility/Restore System Utility for Db2 SSID ssid.**

**Explanation:**  
The TSO user ID attempting to execute a Db2 Recovery Expert system backup or system restore does not have sufficient authority to do so.

**User response:**  
Refer to the installation instructions for information about how to set up RACF authority for a TSO user ID.

---

**ARYS133I**      **BCV|Snap unit device name is still online.**

**Explanation:**  
The listed volume is still online. Db2 Recovery Expert will continue attempting to take the volume offline.

**User response:**  
None required.

---

**ARYS134I**      **Splitting current generation of BCVs.**

**Explanation:**  
Db2 Recovery Expert is in the process of splitting the current generation of BCVs.

**User response:**  
None required.

---

**ARYS135I**      **Profile profile creator.profile name has been marked as "Setup Needed".**

**Explanation:**  
This message appears after a BCV restore is complete. The setup process must be re-run in order to re-establish a generation of BCVs.

**User response:**  
Run profile setup on the profile.

---

**ARYS136I**      **Disconnecting user catalogs.**

**Explanation:**  
In preparation for a restore, Db2 Recovery Expert is disconnecting the user catalogs.

**User response:**  
None required.

---

**ARYS137I**      **Varying volumes online|offline.**

**Explanation:**  
Db2 Recovery Expert is in the process of varying volumes online or offline.

**User response:**  
None required.

---

**ARYS138I**      **Restoring volumes.**

**Explanation:**  
Db2 Recovery Expert is in the process of varying volumes online or offline.

**User response:**  
None required.

---

**ARYS140E**      **SYM of volume volume serial is lower than 5x67. It must be at least 5x67.**

**Explanation:**  
The device listed in the message is not at the appropriate microcode level. Db2 Recovery Expert requires all devices to be at microcode 5x67 or higher. Refer to software and hardware requirements for specifics.

**User response:**  
Contact EMC to update your Symmetrix devices to the latest microcode version.

---

**ARYS141E**      **EMC ECA\_Qry|ECA\_SET|BCV\_InSplit failed. Error message text.**

**Explanation:**  
An EMC command failed. Additional information is provided in the message text as to the cause of the error.

**User response:**  
Note the error message contents and Contact IBM Customer Support.

---

**ARYS142E**      **EMC ECA\_Clr failed on unit volume serial. Error message text.**

**Explanation:**

An EMC command failed on the listed unit. Additional information is provided in the message text as to the cause of the error.

**User response:**

Note the error message contents and contact IBM Customer Support.

---

**ARYS143E**      **Open|Closed ECA window already exists on volser volume\_serial..**

**Explanation:**

One of the source volumes has an existing hold on the I/O (ECA window).

**User response:**

If the window is closed, you can set CLEAN\_OLD\_CONSIST\_WINDOWS to Y in the Db2 Recovery Expert PARMLIB member and resubmit the job.

---

**ARYS144E**      **Target Unit target unit is a volume in an existing backup for profile profile creator.profile name.**

**Explanation:**

The target unit listed in the message is listed in another profile as a backup volume. Therefore, this unit cannot be used as a target unit.

**User response:**

Update the profile and select a different target unit.

---

**ARYS145E**      **Subsystem *subsystem ID* is still online. The Subsystem must be taken offline before running this job.**

**Explanation:**

Db2 Recovery Expert has detected that the Db2 subsystem you are attempting to restore is online. The subsystem must be offline before running the restore.

**User response:**

Issue the -STOP Db2(subsystem ID) command to take the subsystem offline.

---

**ARYS146I**      **Removing volser volume serial from this restore. It contains only log data.**

**Explanation:**

The volume being restored contains only log data, but you specified to restore data only. This volume will not be restored.

**User response:**

None required.

---

**ARYS148I**      **Sym Device volume serial does not support "Consistency" functionality.**

**Explanation:**

The device listed in the message is not at the proper microcode level to support ECA. Refer to the software and hardware requirements section for software requirements for ECA support.

**User response:**

None required.

---

**ARYS149E**      **EMC ECA\_Clr failed on SYM Device volume serial. Error message text.**

**Explanation:**

An EMC command failed. Additional information is provided in the message text as to the cause of the error.

**User response:**

Note the error message contents and contact IBM Customer Support.

---

**ARYS151E**      **Snap target *target unit* is an established BCV.**

**Explanation:**

The target unit associated with the SNAP source volume is an established BCV.

**User response:**

Choose a different target unit of the same device type.

---

**ARYS152I**      **Suspending|Resuming log activity to subsystem *subsystem ID*.**

**Explanation:**

Db2 Recovery Expert is issuing either the SET LOG SUSPEND or SET LOG RESUME command to manage log activity.

**User response:**

None required.

---

**ARYS153I**      **Enque of user cat *user catalog* failed. Will retry in 2 seconds...**

**Explanation:**

Db2 Recovery Expert requires exclusive use of the listed user catalog while performing the restore. It will wait again and retry in 2 seconds.

**User response:**

None required.

---

**ARYS154E**      **Enque of user cat *user catalog* failed.**

**Explanation:**

Db2 Recovery Expert requires exclusive use of the listed user catalog while performing the backup. Another z/OS system might be accessing this catalog.

**User response:**

You might need to set ROUTE\_ALL\_ON\_CONSOLSE\_CMDS to Y in the Db2 Recovery Expert PARMLIB member. This setting will disconnect the catalog from the main catalog on all z/OS systems in the sysplex.

---

**ARYS155E** **BCV target unit is still restoring to standard unit volume serial.**

**Explanation:**

Db2 Recovery Expert needs to wait for the restore to complete before continuing with the next process.

**User response:**

None required.

---

**ARYS156E** **Backup contains volumes with both log and object data. You must specify RESTORE-LOGS.**

**Explanation:**

The control card is missing the RESTORE-LOGS keyword.

**User response:**

Add the RESTORE-LOGS keyword to the control cards for this restore.

---

**ARYS157I** **Release of unit device name bypassed. Unit is not held.**

**Explanation:**

Because the unit is not being held, the BCV or standard volume listed in the message does not need to be released.

**User response:**

None required.

---

**ARYS158I** **Hold of unit device name bypassed. Unit is already held.**

**Explanation:**

The BCV or standard volume listed in the message is already being held.

**User response:**

None required.

---

**ARYS159E** **Target unit device name has an active SNAP session. Wait till complete.**

**Explanation:**

The listed target unit has either a current active SNAP session or too many old completed SNAP sessions to start a new one.

**User response:**

You might need to set CLEAN\_OLD\_SNAP\_SESSIONS to Y in the Db2 Recovery Expert PARMLIB member to remove the old SNAP sessions.

---

**ARYS160E** **Source volser volume serial has an active SNAP session. Wait till complete.**

**Explanation:**

The listed source volume has either a current active SNAP session or too many old completed SNAP sessions to start a new one.

**User response:**

You might need to set CLEAN\_OLD\_SNAP\_SESSIONS to Y in the Db2 Recovery Expert PARMLIB member to remove the old SNAP sessions.

---

**ARYS161E** **EMC PathGroups call failed for unit device name.**

**Explanation:**

An internal error occurred.

**User response:**

Contact IBM Customer Support.

---

**ARYS162I** **Parmlib used for this execution.**

**Explanation:**

This informational message states that the Db2 Recovery Expert PARMLIB member will be utilized in setting default values for the job.

**User response:**

None required.

---

**ARYS163I** **Closed ECA Window is being cleared from Volser volume serial.**

**Explanation:**

An Engenuity Consistency Assist (ECA) window was found on this volume but was not active (no I/O is being held). The ECA window was cleared.

**User response:**

None required.

---

**ARYS165E** **ECA Window has timed out. Backup is not consistent.**

**Explanation:**

The backup operation could not complete in the specified time to hold the I/O on the volumes. The Db2 Recovery Expert PARMLIB member setting of CONSIST\_TIME\_OUT\_SECONDS controls how long the I/O can be held before this error occurs.

**User response:**

Try making the value for CONSIST\_TIME\_OUT\_SECONDS higher.

---

**ARYS166E** **Volume volume is not in this profile. These subsystem datasets reside on this volume:**

**Explanation:**

The relevant volume is missing in the backup

**User response:**

Add the relevant volume to the profile.

---

**ARYS167E** **Dataset: dsname**

**Explanation:**

See message ARYS166E.

**User response:**

See message ARYS166E.

---

**ARYS168E            Background splits wait limit exceeded.**

**Explanation:**

The number of times Db2 Recovery Expert has checked to see if a background split has completed has exceeded the WAIT\_RETRIES wait limit specified in the PARMLIB member.

**User response:**

Increase either the BCV\_WAIT\_SECONDS or WAIT\_RETRIES in the BCV\_SPLIT\_PARAMETERS section of the Db2 Recovery Expert PARMLIB member.

---

**ARYS169I            BCV unit *unit\_name* is not ready. Waiting 2 seconds to retry BCV Establish/Re-establish.**

**Explanation:**

Db2 Recovery Expert is attempting to establish or re-establish the unit listed in the message, but the device is not ready. Db2 Recovery Expert will retry until the BCV is established or the number of retries exceeds the wait limit.

**User response:**

None required.

---

**ARYS170I            Standard unit *volume serial* is not ready. Waiting 2 seconds to retry BCV restore.**

**Explanation:**

Db2 Recovery Expert is restoring a BCV, but the standard device is not ready. Db2 Recovery Expert will retry until the BCV is established or the number of retries exceeds the wait limit.

**User response:**

None required.

---

**ARYS171E            Restore failed on unit *volume serial*. Error message text.**

**Explanation:**

The restore command failed. Additional information is provided in the message text as to the cause of the error.

**User response:**

Note the error message text and contact IBM Customer Support.

---

**ARYS172E            Error obtaining last checkpoint RBA for subsystem *ssid*.**

**Explanation:**

Db2 Recovery Expert could not find the last checkpoint RBA for the listed subsystem.

**User response:**

Contact IBM Customer Support.

---

**ARYS173E            Allocate failed for *data set name*.**

**Explanation:**

Dynamic allocation of the specified file has failed. Db2 Recovery Expert needs to allocate the specified file to complete the operation. This message will be followed by additional messages stating the reason the file could not be allocated.

**User response:**

Use the issued message to determine why the allocate failed and the appropriate remedy.

---

**ARYS174E            Open failed for DSN *data set name*.**

**Explanation:**

The specified data set could not be opened. A z/OS error message on the open failure will also be issued.

**User response:**

Use the z/OS error message to determine the error and the appropriate response.

---

**ARYS175E            Get/Put failed for DSN *data set name*. RC = *return code*. Reason *reason code*.**

**Explanation:**

An error occurred attempting to read or update the header page of DSNDB01 database during restore.

**User response:**

Contact IBM Customer Support.

---

**ARYS176I            HPGRBLP has been updated with RBA/LRSN *rba/lrsn*.**

**Explanation:**

This message informs you the RBA that was placed in the HPGRBLP area of database DSNDB01. This RBA tells the IBM RESTORE SYSTEM utility where to start the log restore process.

**User response:**

None required.

---

**ARYS177I            TimeFinder version 05.05 or higher is required for "Consistency" functions.**

**Explanation:**

The listed version of EMC Timefinder software is required to hold the I/O on the source volumes during backup. Log suspend will be issued instead.

**User response:**

If you do not wish to have Db2 logging suspended during a backup, upgrade to the required level of EMC Timefinder software.

---

**ARYS178I            TimeFinder snap version 05.03 or higher is required for "Consistency" functions.**



**Explanation:**

The listed version of EMC Timefinder software is required to hold the I/O on the source volumes during backup. Log suspend will be issued instead.

**User response:**

If you do not wish to have Db2 logging suspended during a backup, upgrade to the required level of EMC Timefinder software.

**ARYS180I**      **Ready of unit volume serial bypassed. Unit is currently in a ready state.**

**Explanation:**

Db2 Recovery Expert was preparing to place the BCV device in a ready state, but has detected that the unit is currently in the ready state.

**User response:**

None required.

**ARYS181I**      **Not Ready of unit volume serial bypassed. Unit is currently in a not ready state.**

**Explanation:**

Db2 Recovery Expert was preparing to place the BCV device in a not ready state, but has detected that the unit is currently in the not ready state.

**User response:**

None required.

**ARYS183E**      **Ready|Not Ready failed on unit device name. Error message text.**

**Explanation:**

An error occurred during a call to the EMC API.

**User response:**

Contact IBM Customer Support.

**ARYS184I**      **Microcode does not support Protected Restore. Snap restore will be performed.**

**Explanation:**

All EMC Symmetrix arrays involved in the restore must be at microcode level 5x70 or higher to support a protected BCV restore. This type of restore preserves the backup on the BCV. A SNAP restore will be performed instead. Db2 Recovery Expert will issue SNAP commands to copy the BCV devices back to their respective source volumes to complete the restore.

**User response:**

None required.

**ARYS185E**      **Bad return code from EMC Snap API. RC = return code.**

**Explanation:**

Db2 Recovery Expert invoked the EMC SNAP API but the SNAP API issued a return code of 8. There may be several reasons for this return code.

**User response:**

The EMC SNAP messages are written to the ARYSNAPO DD. Examine the messages to determine the error. Contact IBM Customer Support if necessary.

**ARYS186W**      **Error saving backup report to repository.**

**Explanation:**

After completing the backup, Db2 Recovery Expert attempted to save a backup report to its repository. The backup is still valid.

**User response:**

Examine the z/OS error messages issued to determine the reason the backup report could not be saved.

**ARYS187W**      **Profile profile creator.profile name has been marked "Setup Needed".**

**Explanation:**

Db2 Recovery Expert determined the next run of the profile needs the "SETUP" card added. This is the expected behavior for a one generation BCV profile. If the profile contains more than one generation, possible causes may be that BCVs are not established to the expected standard volumes, or there was an error during a backup and the BCV profile needs to undergo profile setup.

**User response:**

Add the SETUP control card to the backup job and resubmit the job.

**ARYS188I**      **Parmlib not Specified in JCL, default values will be used.**

**Explanation:**

No PARMLIB library was specified in the PARMLDSN variable of the startup CLIST. Db2 Recovery Expert will use the default values for the variables that are listed in the PARMLIB member.

**User response:**

None required.

**ARYS189E**      **Parmlib parsing produced errors. Utility cannot continue with Parmlib Errors.**

**Explanation:**

An error occurred when processing the Db2 Recovery Expert PARMLIB member. The backup or restore cannot proceed. A possible reason for this error is an invalid keyword was encountered.

**User response:**

Check the job output for the error encountered.

---

**ARYS190W**      **Volume *volume serial* is not included in this backup. It contains only ARCHIVE log data.**

---

**Explanation:**

The listed volume contains archive logs for this Db2 SSID, but is not included in the backup. This condition is acceptable if you do not want to back up the archive logs of this Db2 subsystem.

**User response:**

If you want to back up the archive logs, add the listed volume to the backup profile and resubmit the job.

---

**ARYS191E**      **Target unit *target unit* is on hold. Parmlib option *RELEASE\_HELD\_VOLUMES* is N.**

---

**Explanation:**

During volume validation, Db2 Recovery Expert determined that the target unit listed in the message is being held. Due to the setting in the PARMLIB member, the volume will not be released for use and the job has been terminated.

**User response:**

Either release the hold on this volume or change the setting of *RELEASE\_HELD\_VOLUMES* to Y in the Db2 Recovery Expert PARMLIB member and resubmit the job.

---

**ARYS192E**      **Target unit *target unit* is "Not Ready". Parmlib option *MAKE\_READY\_NOTREADY\_DEVICES* is N.**

---

**Explanation:**

During volume validation, Db2 Recovery Expert determined that the target unit listed in the message is in a not ready state. Due to the setting in the PARMLIB member, the volume will not be made ready for use and the job has been terminated.

**User response:**

Either release the hold on this volume or change the setting of *MAKE\_READY\_NOTREADY\_DEVICES* to Y in the Db2 Recovery Expert PARMLIB member and resubmit the job.

---

**ARYS193E**      **Target BCV *target unit* is still synchronizing to source volume *volume serial*. Use "FORCE-SPLIT" option.**

---

**Explanation:**

The listed unit is still synchronizing from the last submitted restore job.

**User response:**

Either wait for the synchronization to complete, or change the setting of *FORCE\_SPLIT* to Y in the Db2 Recovery Expert PARMLIB member and resubmit the

job. This will force the split of the BCV pair established by the previous restore job.

---

**ARYS194I**      **Background splits are complete.**

---

**Explanation:**

This message appears when a BCV split has completed.

**User response:**

None required.

---

**ARYS195I**      **Establishing current generation of BCVs...**

---

**Explanation:**

This message appears at the beginning of the process of establishing a current generation of BCVs.

**User response:**

None required.

---

**ARYS196W**      **32K Tablespace *data base.table space* does not have a *CISIZE* of 32K. Consistency is not guaranteed.**

---

**Explanation:**

Db2 Recovery Expert requires that Db2 data sets defined with a page size of 32 KB must have their control interval size defined as 32 KB as well. The table space listed in the message does not have a CI size of 32k and therefore may become inconsistent during restore.

**User response:**

To guarantee consistency of the listed table spaces, you must alter their CI size to 32K and run the IBM REORG utility on them. See "Db2 32 KB table space requirements" on page 5 for further information.

---

**ARYS197W**      **Make sure *DSNZPARM DSVCI* is "NO" and reorganize the above list of tablespaces.**

---

**Explanation:**

This message is used with ARYS196W to provide further information about the issue.

**User response:**

Refer to the Db2 32KB table space requirements for further information.

---

**ARYS198I**      **Backup via Snap Volume Std Vol *volume serial* Dev *standard device* to Dev *SNAP device*.**

---

**Explanation:**

This informational message indicates that the standard device listed has been backed up to the SNAP device.

**User response:**

None required.

---

**ARYS199I**      **Restore via Snap Volume Dev  
standard device to Standard Dev  
standard device Vol volume serial.**

**Explanation:**

This informational message indicates that the SNAP device listed has been restored to the standard device.

**User response:**

None required.

---

**ARYS200E**      *message text.*

**Explanation:**

This message is used to display various message text associated with errors.

**User response:**

Review the message text and other related messages to determine the problem.

---

**ARYS201I**      **Parmlib Override on  
command\_name command  
- parameter\_name Value:  
parameter\_value.**

**Explanation:**

The designated PARMLIB value was specified in the PARMLIB member and has been used to override the default value when calling EMC Snap.

**User response:**

None required.

---

**ARYS202I**      **BSDS update process starting.**

**Explanation:**

The BSDS for the specifying Db2 SSID is being updated with the new Active log data set names that have been renamed.

**User response:**

None required.

---

**ARYS203I**      **-----SSID ssid - BSDS bsds  
Opened---**

**Explanation:**

The BSDS named for the SSID specified has been opened for update.

**User response:**

None required.

---

**ARYS204I**      **-----SSID ssid - BSDS bsds  
Closed---**

**Explanation:**

The BSDS named for the SSID specified has been closed.

**User response:**

None required.

---

**ARYS205I**      **dsn record updated.**

**Explanation:**

The specified record has been updated

**User response:**

None required.

---

**ARYS206I**      **Old Name = old\_name.**

**Explanation:**

The specified data set name has been updated

**User response:**

None required.

---

**ARYS207I**      **New Name = new\_name**

**Explanation:**

The specified old data set name has been changed to this name

**User response:**

None required.

---

**ARYS208I**      **BSDS update process ended.  
Return code = return\_code.**

**Explanation:**

The BSDS update process is complete with the specified return code.

**User response:**

None required.

---

**ARYS209I**      **Keyword NEWHIGHLEVEL must  
follow the BSDSNAME and  
ACTIVENAME keywords.**

**Explanation:**

The keywords passed to the BSDS update process must be in a specific order. The NEWHIGHLEVEL keyword must not precede a BSDSNAME or ACTIVENAME keyword.

**User response:**

Change the order of the keywords and rerun the job.

---

**ARYS210I**      **BSDS change\_type old\_name not  
updated.**

**Explanation:**

The specified BSDS data set name was not changed.

**User response:**

None required.

---

**ARYS211I**      **Db2 Volume validation will not be  
bypassed because setup has never  
been run.**

**Explanation:**

Db2 Volume validation must be run at least one time for each backup profile.

**User response:**

None required.

---

**ARYS212I**      **Db2 Volume validation is being  
bypassed.**

**Explanation:**

As requested. The process to validate that all Db2 volumes are included in the backup will be bypassed.

**User response:**

None required.

---

**ARYS213I** -----SSID *ssid* - ARY Control File Opened-----.

**Explanation:**

The specified control file has been opened for update

**User response:**

None required.

---

**ARYS214I** -----SSID *ssid* -ARY Control File Closed-----.

**Explanation:**

The specified control file has been closed.

**User response:**

None required.

---

**ARYS215I** SSID *ssid* is not data sharing. No group BSDS records will be updated.

**Explanation:**

The SSID specified is not a member of a data sharing group. No updates are needed to rename the BSDS names for other members.

**User response:**

None required.

---

**ARYS216I** Offloaded Backup with timestamp *timestamp* was removed from the repository.

**Explanation:**

The specified offloaded backup has been removed from the repository. This is a normal process when a new offload is taken. Only a user specified number of offloaded backups is maintained in the repository.

**User response:**

None required.

---

**ARYS217I** User catalog *user\_catalog* unallocated.

**Explanation:**

The specified user catalog has been unallocated. This is a required process during a system restore. The ICF catalog data sets are automatically reallocated the next time a data set belonging to that catalog is accessed.

**User response:**

None required.

---

**ARYS218E** Source Unit *unit\_name* is a volume in an existing backup for profile *profile\_creator.profile.name*.

**Explanation:**

The specified source unit is being used as a backup unit in a system-level backup.

**User response:**

If the unit is now being used as a source unit, you must delete the backup specified on the system restore screen before proceeding.

---

**ARYS219E** Bad date specified. Date must be in format MM/DD/YYYY

**Explanation:**

An invalid date has been specified.

**User response:**

Change the control cards to specify the date in the format MM/DD/YYYY.

---

**ARYS220E** Bad time specified. Time must be in format HH:MM:SS.

**Explanation:**

An invalid time has been specified.

**User response:**

Change the control cards to specify the time in the format HH:MM:SS.

---

**ARYS221I** Db2 Alias Rename Process starting...

**Explanation:**

The process to rename the Db2 alias has started.

**User response:**

None required.

---

**ARYS222E** Db2 Alias Rename Process complete. RC = *return\_code*.

**Explanation:**

The process to rename the Db2 alias has completed with the specified return code.

**User response:**

None required.

---

**ARYS223I** Rename of dataset *data\_set\_name* complete.

**Explanation:**

The specified data set has been successfully renamed.

**User response:**

None required.

---

**ARYS224I** Rename of dataset *data\_set\_name* failed. Messages follow:

**Explanation:**

The process to rename the specified data set has failed. This message will be followed by additional diagnostic information indicating why the data set rename has failed.

**User response:**

The additional information specified should identify why the process has failed. The user ID used to submit the job might not have the MVS authorities needed to perform the rename.

---

**ARYS225I**      **Tablespace *database.tablespace* partition *partition* has been stopped|started.**

**Explanation:**

The specified table space has been either stopped or started. The table space needs to be stopped before it can be restored. It will be started automatically after a successful restore process.

**User response:**  
None required.

---

**ARYS226I**      **Indexspace *index\_creator.index\_name* partition *partition* has been stopped|started.**

**Explanation:**

The specified index space has been either stopped or started. The index space needs to be stopped before it can be restored. It will be started automatically after a successful restore process.

**User response:**  
None required.

---

**ARYS227I**      **New dataset name is *data\_set\_name*.**

**Explanation:**

The new name of the renamed Db2 data set name is specified in this message.

**User response:**  
None required.

---

**ARYS228I**      **Processing *tablespace/index database\_name.tablespace\_name /index\_creator.indexspace\_name* partition number *partition*...**

**Explanation:**

The process to restore the specified Db2 object is starting.

**User response:**  
None required.

---

**ARYS229I**      ***tablespace/index database\_name.tablespace\_name /index\_creator.indexspace\_name* partition *partition* has been successfully renamed.**

**Explanation:**

The specified Db2 object has been successfully renamed.

**User response:**

None required.

---

**ARYS230E**      **Rename of *tablespace/index database\_name.tablespace\_name /index\_creator.indexspace\_name* partition *partition* has failed.**

**Explanation:**

The rename process of the specified Db2 object has failed. Messages indicating the reason for the failure will precede this message.

**User response:**  
None required.

---

**ARYS231I**      **Stogroup *stogroup\_name* has been updated to new vcat *vcat\_name*.**

**Explanation:**

The specified storage group has been updated with the VCAT specified.

**User response:**  
None required.

---

**ARYS232W**      **Dataset *data\_set\_name* could not be located. Rename will be bypassed.**

**Explanation:**

The data set specified could not be located to be renamed. This could be normal if the Db2 object was created with the DEFER option.

**User response:**  
None required.

---

**ARYS233W**      **Dataset *data\_set\_name* is migrated and will be bypassed**

**Explanation:**

The specified data set was migrated and will not be renamed.

**User response:**  
Recall the data set and rerun the process.

---

**ARYS234I**      **Volser *volume\_serial* was removed from Stogroup *stogroup\_name*.**

**Explanation:**

The specified volume serial was removed from the storage group.

**User response:**  
None required.

---

**ARYS235I**      **Volser *volume\_serial* was added to Stogroup *stogroup\_name*.**

**Explanation:**

The specified volume serial was added to the storage group.

**User response:**  
None required.

---

**ARYS236W**      **Dataset *data\_set\_name* was not found.**

**Explanation:**

The specified data set was not found in the MVS catalog. It will not be processed.

**User response:**

This could be normal if the object was created with the DEFER option.

---

**ARYS237E**      **Volser *volume\_serial* contains Db2 data but was not found or is not online.**

**Explanation:**

The specified VOLSER contains a data set for the analyzed Db2 but is not online to the MVS system.

**User response:**

Have a systems operator vary the specified VOLSER online.

---

**ARYS238E**      **Source volser *volume\_serial* is not Flashcopy capable**

**Explanation:**

The specified volser is not capable of Flashcopy operations.

**User response:**

Make sure the specified volser is a unit that resides in an array that is capable of executing Flashcopy commands.

---

**ARYS239E**      **Target unit *target\_unit* is not Flashcopy capable.**

**Explanation:**

The specified target unit is not capable of Flashcopy operations.

**User response:**

Make sure the specified target unit resides in an array that is capable of executing Flashcopy commands.

---

**ARYS240I**      **Performing fast replication to create backup...**

**Explanation:**

The fast replication process to create a system backup is commencing.

**User response:**

None required.

---

**ARYS241I**      **Backup via *backup type* from source volser *volume\_serial* to unit *target\_unit* has completed**

**Explanation:**

The specified source volser is being copied to the specified target unit.

**User response:**

None required.

---

**ARYS242I**      **Restore via *restore type* from backup unit *target\_unit* to volser *volume\_serial* has completed**

**Explanation:**

The specified volser is being restored.

**User response:**

None required.

---

**ARYS243E**      **Flash copy of source volser *volume\_serial* to target unit *target\_unit* failed. RC = *return\_code* RS = *reason\_code***

**Explanation:**

The specified Flashcopy operation failed. An error occurred while invocation of ANTRQST macro with REQUEST parameter equal to FCESTABLISH. This message will be followed by additional diagnostic information.

**User response:**

Make sure the source and target volumes of the Flashcopy operation are equal in size. For more information, see the IBM Knowledge Center page with the return/reason codes for the ANTRQST macro.

---

**ARYS244E**      **Checksum for unit *target\_unit* restored to volser *volume\_serial* failed. Volume has changed since backup**

**Explanation:**

The checksum operation for the specified backup unit has failed. This indicates the backup unit has been possibly changed outside of the product.

**User response:**

If you still want to perform the system restore, change the PERFORM\_CHECKSUM PARMLIB value to N.

---

**ARYS245E**      **FCQUERY call failed for unit *target\_unit* RC = *return\_code* RS = *reason\_code***

**Explanation:**

The command to query the Flashcopy relationships for the specified unit has failed.

**User response:**

Make sure the TSO ID used to submit the job has the appropriate MVS authorities to perform the query command.

---

**ARYS248E**      **Task *task\_name* - Error invoking *program*. Please check file *DD\_name* for problem determination.**

**Explanation:**

An error has occurred invoking either DFSMSdss or FDR to perform a volume backup or a data set restore.

**User response:**

Please check the indicated DD (file) for more information on the failure.

---

**ARYS249I**      **Task *task\_name* - Offload process starting for unit *target\_unit* (Source volser *volume\_serial*).**

**Explanation:**

The process to offload the specified unit has started.

**User response:**

None required.

---

**ARYS250E**      **Online/Offline request failed for unit *target\_unit*. RC = *return\_code* RS = *reason\_code*.**

**Explanation:**

Offline or Online request failed for the specified unit.

**User response:**

Make sure the specified unit is not in use by any other MVS process.

---

**ARYS254I**      **Task *task* - Offload process for unit *target\_unit* (Source volser *volume\_serial*) is complete.**

**Explanation:**

The volume offload process for the specified volume is complete.

**User response:**

None required.

---

**ARYS255E**      **Check sum type: *type* - Old = *old\_value* - New = *new\_value***

**Explanation:**

This message is produced if a check sum fails at system restore time. This means that the backup disk has changed since the backup was performed.

**User response:**

Determine if the change made to the backup disk is acceptable. If the backup is valid, the check sum function can be turned off using the PARMLIB entry PERFORM\_CHECKSUM.

---

**ARYS256E**      **Task *task* - message *data\_set\_name hex\_value*.**

**Explanation:**

Dynamic allocation has failed for the specified data set.

**User response:**

Make sure the unit specified for DASD\_ALLOCATION\_UNIT in the PARMLIB is valid for your site.

---

**ARYS257E**      **Task *task* - Process abended. PSW = *program\_status\_word* - Return Code = *return\_code* - Reason Code = *reason\_code*.**

**Explanation:**

The process has abended.

**User response:**

Please contact IBM Customer Support.

---

**ARYS258I**      **SSID *ssid* checkpointed at RBA/LRSN *rba/lrsn*.**

**Explanation:**

A Db2 checkpoint process has completed for the specified Db2 subsystem.

**User response:**

None required.

---

**ARYS259I**      **Waiting for checkpoint to complete on SSID *ssid*.**

**Explanation:**

The product is waiting for a Db2 system checkpoint process to complete.

**User response:**

None required.

---

**ARYS260E**      **Task *task* - Invalid DSN generated for *backup\_type* DSN = *data\_set\_name* - Check DSN Mask**

**Explanation:**

The data set mask to offload a volume is invalid.

**User response:**

The data set mask in the offload options should generate a unique name for each volume serial. It should have the &VOLSER variable in it and some other time or date variable to make it unique for each offload process.

---

**ARYS262E**      **Task *task* - *message\_text*.**

**Explanation:**

This message is used to display various message text associated with errors.

**User response:**

Review the message text and other related messages to determine the problem.

---

**ARYS263I**      **Task *task* - Unit *unit\_name* offloaded to device dataset *data\_set\_name*.**

**Explanation:**

The specified unit was offloaded to the specified data set name.

**User response:**

None required.

---

**ARYS264I**      **Unit *unit\_name* was offloaded by a previous offload job. Use RE-OFFLOAD card to offload again.**

**Explanation:**

The specified backup unit was already offloaded by a previous offload job.

**User response:**

If you wish to replace that previous offload with a new offload backup, rerun the job with the RE-OFFLOAD keyword.

---

**ARYS265E**      **Generation *generation* has not been offloaded. Offload it or run with the BYPASS-OFFLOAD keyword.**

**Explanation:**

This backup process will replace a system backup on disk that has not been offloaded to tape yet.

**User response:**

Since you have specified offload options in the system backup profile, it is assumed each system backup should be offloaded to tape before it is replaced. You can offload the backup by going to the system restore screen and selecting to offload it from there, or you can specify the BYPASS-OFFLOAD keyword if you do not want to offload the backup.

---

**ARYS266I**      **No Tablespaces found for this Pattern. Database: *database\_name* Tablespace: *table\_space\_name* TS Creator: *creator\_name***

**Explanation:**

The wildcard mask specified in an objects profile did not result in any matches during the JCL build process.

**User response:**

None required.

---

**ARYS267E**      **Tablespace excluded because it is a TEMP or WORK database. Type TS/IX Database *database\_name*, Spacename Partition *partition*.**

**Explanation:**

The specified table space has been excluded from the object restore JCL because it is a temporary work space.

**User response:**

None required.

---

**ARYS268E**      **Tablespace excluded because it was created with DEFINE NO and the underlying file has not yet been created. Type *type* Database *database* Spacename *space name* Partition *partition*.**

**Explanation:**

The specified table space has been excluded from the object restore JCL because the space was created using DEFINE NO and the underlying data set has not yet been created.

**User response:**

None required.

---

**ARYS269I**      **No Indexes found for this Pattern. Database: *database name* IX\_Name: *index name* IX\_Creator: *index creator*.**

**Explanation:**

The wildcard mask specified in an objects profile did not result in any matches during the JCL build process.

**User response:**

None required.

---

**ARYS272E**      **Space no longer exists. Type TS/IX Database *database\_name*, Spacename**

**Explanation:**

The specified object no longer exists. It will not be processed.

**User response:**

The object might have existed when the application profile was created. Remove it from the profile.

---

**ARYS275I**      ***message\_text***

**Explanation:**

This message is used to display informational text generated during processing.

**User response:**

None required.

---

**ARYS277I**      **Task *task* - Volser *volume\_serial* was restored from *file\_name* file seq nbr *file\_sequence\_number***

**Explanation:**

The specified volume serial was restored from an offloaded backup.

**User response:**

None required.

---

**ARYS278I**      **Task *task* - Unit *unit\_name* was initialized with volser *volume\_serial***

**Explanation:**

The specified unit was initialized with the specified volume serial.

**User response:**

None required.

---

**ARYS279I**      **Task *task* - Unit *unit\_name* with old volser *volume\_serial* was clipped to volser *volume\_serial*.**

**Explanation:**

The specified unit was clipped to a new volume serial name.

**User response:**



None required.

---

**ARYS280E**      **An error has occurred obtaining SMS information for *copy\_pool/storage\_group copy\_pool\_name/storage\_group\_name*.**

**Explanation:**

An error has occurred trying to obtain SMS information for the specified object.

**User response:**

Either the object no longer exists or its SMS definition is invalid. Please check with your systems programmer.

---

**ARYS281E**      **Requested storage needed for SMS call is not available.**

**Explanation:**

The MVS storage requested was not available.

**User response:**

Increase the region size on the job and rerun.

---

**ARYS282E**      **Storage used for SMS call could not be released.**

**Explanation:**

The MVS storage used for SMS calls could not be released.

**User response:**

Please contact IBM Customer Support.

---

**ARYS283I**      **HSM backup with token *token\_name message*.**

**Explanation:**

The message indicates a HSM backup (by its token) and states if it is on DASD or tape.

**User response:**

None required.

---

**ARYS284E**      **Performing HSM DUMP of copypool *copy\_pool***

**Explanation:**

The specified SMS copy pool is being offloaded (dumped) to tape.

**User response:**

None required.

---

**ARYS285E**      **HSM Command failed. RC = *return\_code* RC = *return\_code*.**

**Explanation:**

The specified HSM command has failed.

**User response:**

Please check the system or DFSMSHSM job log for more information.

---

**ARYS286E**      **Source volser *volume\_serial* is in an active Flashcopy relationship.**

**Explanation:**

The specified source volume serial is in a current Flashcopy relationship. This message is issued on a restore when a backup of the source unit has not completed.

**User response:**

Re-submit the job when the Flashcopy session is complete.

---

**ARYS287E**      **Target unit *target\_name* is in an active Flashcopy relationship.**

**Explanation:**

The specified target unit is in a current Flashcopy relationship. This message is issued when the previous backup to this unit has not completed.

**User response:**

Resubmit the job when the Flashcopy session is complete.

---

**ARYS288E**      **Dataset for *object* did not exist at the time of system backup.**

**Explanation:**

The data set for the specified object did not exist at the time of the system backup. The object could be defined DEFER YES.

**User response:**

None required.

---

**ARYS291I**      ***object* was successfully restored.**

**Explanation:**

The specified object was successfully restored from the system backup.

**User response:**

None required.

---

**ARYS292E**      **No backups for profile *profile\_creator.profile\_name* were found in repository.**

**Explanation:**

No system backups for the specified profile were found.

**User response:**

It is possible they were deleted or replaced by a more recent backup since the JCL was generated. Please generate the object JCL again.

---

**ARYS293E**      ***object* no longer exists or was dropped and re-created since the backup.**

**Explanation:**

The specified object no longer exists in this Db2 subsystem or it was dropped and re-created since the backup.

**User response:**

A dropped object (or a re-created object) cannot be restored.

---

**ARYS294I**      **Module *module\_name* returning with RC= *return\_code*.**

**Explanation:**

The specified module has completed with the specified return code.

**User response:**

A previous error message gives more detail on the specific error that occurred.

---

**ARYS296E**      **No suitable target could be found for source volser: *source\_volser*.**

**Explanation:**

A target cannot be found for the listed source volume.

**User response:**

Update the backup profile and ensure the source volume is mapped to a valid target volume.

---

**ARYS298E**      **No objects were found in Profile *profile\_creator.profile\_name* Db2 subsystem *ssid*.**

**Explanation:**

The application profile was empty or resulted in no objects being resolved from the wildcards.

**User response:**

Add objects to the application profile.

---

**ARYS299E**      **There are no Objects to process due to prior errors, the Build Process was terminated.**

**Explanation:**

The JCL build process has been terminated because no objects can be successfully restored.

**User response:**

None required.

---

**ARYS303E**      **File tailoring *open/close/include* error, RC=*return\_code*.**

**Explanation:**

A file tailoring error has occurred.

**User response:**

Make sure there is enough space on the target data set to hold the JCL being generated.

---

**ARYS304I**      **Build JCL will be written to *data\_set\_name*.**

**Explanation:**

Object recovery JCL will be written to the specified data set.

**User response:**

None required.

---

**ARYS305I**      **Build JCL member *member\_name* successfully written.**

**Explanation:**

The object recovery JCL was successfully written to the specified member.

**User response:**

None required.

---

**ARYS306E**      **No recovery information was found in SYSCOPY for object:**

**Explanation:**

No recovery information was found in SYSCOPY for the specified object and no system-level backup was found that is capable of restoring the object.

**User response:**

No recovery resources exist for the object. It is recommended you back up the system on which this object resides, or take an image copy of this object.

---

**ARYS307E**      **Required full image copy *IC\_data\_set* could not be found for object:**

**Explanation:**

The specified image copy was not found in the MVS catalog for the specified object. The object will not be recoverable using this image copy.

**User response:**

Recovery to the specified point may not be possible. Either choose a different recovery point or catalog the missing image copy.

---

**ARYS308E**      **A valid starting point could not be found for the RECOVER utility for object:**

**Explanation:**

Recovery of Db2 objects requires finding an appropriate copy or appropriate log records to recover the object. A starting point might be a system backup, and image copy, or log records used to recreate the object. If a "non-logged" event is found at a certain point in time before a starting point is found, the object cannot be restored to the point in time requested.

**User response:**

Either back up the object or choose a different restore point.

---

**ARYS309E**      **Recovery point could not be found for object:**

**Explanation:**

The recovery point is the stopping point of a recovery. If you chose to restore the object to the latest image copy, and none was found, this error could occur.

**User response:**

Chose a different recovery point.

---

**ARYS311E**      **An Alter has been done on the object:****Explanation:**

A DDL ALTER has been performed against the specified object. It cannot be restored.

**User response:**

It is recommended that you take another system backup or an image copy of this object.

---

**ARYS312W**      **This index has been rebuilt which prohibits recovery. Index will be rebuilt for object:****Explanation:**

The specified index has been rebuilt since its last copy. It will be rebuilt again since it cannot be restored from the previous system backup or image copy.

**User response:**

None required.

---

**ARYS313E**      **Space is not recoverable to desired point. A CHECK DATA with LOG NO prohibits recovery for object:****Explanation:**

The specified object cannot be recovered because a LOG NO utility has been run since the last system backup or image copy.

**User response:**

It is recommended that you take another system backup or an image copy of this object.

---

**ARYS315E**      **Space is not recoverable to desired point. A LOAD REPLACE with LOG NO prohibits recovery for object:****Explanation:**

The specified object cannot be recovered because a LOAD REPLACE utility with LOG NO has been run since the last system backup or image copy.

**User response:**

It is recommended that you take another system backup or an image copy of this object.

---

**ARYS316E**      **Space is not recoverable to desired point. A REORG with LOG NO prohibits recovery for object:****Explanation:**

The specified object cannot be recovered because a REORG utility with LOG NO has been run since the last system backup or image copy.

**User response:**

It is recommended that you take another system backup or an image copy of this object.

---

**ARYS317E**      **Space is not recoverable to desired point. A LOAD RESUME with LOG NO prohibits recovery for object:****Explanation:**

The specified object cannot be recovered because a LOAD RESUME utility with LOG NO has been run since the last system backup or image copy.

**User response:**

It is recommended that you take another system backup or an image copy of this object.

---

**ARYS319W**      **The following Index has been excluded due to the exclusion of the associated tablespace:****Explanation:**

The specified index will not be recovered in the JCL stream because its associated table space could not be recovered.

**User response:**

None required.

---

**ARYS320I**      ***Tablespace/Indexspace has been stopped/started.*****Explanation:**

The specified Db2 object has been either stopped or started.

**User response:**

None required.

---

**ARYS321E**      ***Tablespace/Indexspace was not restored.*****Explanation:**

The specified Db2 object was not restored. A previous error will detail why this object could not be restored.

**User response:**

None required.

---

**ARYS322I**      ***Dataset data\_set\_name was restored via method*****Explanation:**

The specified data set was restored via DFDSS, FDR, or SNAP data set.

**User response:**

None required.

---

**ARYS323E**      ***Dataset data\_set\_name failed restore\_type restore.*****Explanation:**

The specified data set failed restore using the specified method.

**User response:**

A previous error message will indicate the reason for the failure.

---

**ARYS324I**      *Tablespace/Indexspace  
dbname.spacename*

**Explanation:**

This message indicates the index space or table space that was referenced in a previous error message

**User response:**

None required.

---

**ARYS326E**      **Error cataloging dataset  
data\_set\_name.**

**Explanation:**

The specified data set has been restored to the specified volumes, but the MVS catalog operation has failed.

**User response:**

Please review the IDCAMS catalog output shown to determine the cause of the error.

---

**ARYS327E**      **Task task - Generated DSN  
data\_set\_name already exists.**

**Explanation:**

The data set mask specified in the offload options has been resolved to a data set name that already exists.

**User response:**

Please change the data set mask in the offload options so each generated data set name will be unique. A suggestion is to add the timestamp variable.

---

**ARYS329E**      **Task task - No space for  
dataset data\_set\_name Needs  
number\_of\_tracks tracks.**

**Explanation:**

No space could be found on a source volume to restore the specified data set. The amount of space needed is shown.

**User response:**

Either add volumes to the target storage group, compress the volumes to free up space, or delete some unneeded data sets from the volume.

---

**ARYS330I**      **Volume: volume Tracks:  
number\_of\_tracks.**

**Explanation:**

The specified data set has been restored to this volume. The amount of space the data set is on this volume is also displayed.

**User response:**

None required.

---

**ARYS331I**      **Copy Pending status has been  
reset for the selected object types.**

**Explanation:**

COPY PENDING status has been reset for the listed objects.

**User response:**

None required.

---

**ARYS332I**      **Resetting copy pending status for  
TABLESPACE/INDEXSPACE/INDEX  
object\_name.**

**Explanation:**

COPY PENDING will be reset for the listed object.

**User response:**

None required.

---

**ARYS333E**      **function failed for member  
member\_name RC = return\_code.**

**Explanation:**

VDEFINE or VDELETE has failed for the ISPF member listed in the message.

**User response:**

The necessary ISPF libraries are missing from the agent JCL.

---

**ARYS335I**      **Dataset data\_set\_name has been  
renamed to data\_set\_name.**

**Explanation:**

The specified data set has been renamed.

**User response:**

None required.

---

**ARYS336E**      **Backup backup\_name timestamp  
timestamp has not been offloaded.**

**Explanation:**

The specified backup has not yet been offloaded.

**User response:**

The target units of this backup cannot be reused until it has been offloaded.

---

**ARYS337E**      **Offload it or run with the BYPASS-  
OFFLOAD keyword.**

**Explanation:**

This is a continuation of message ARYS336E.

**User response:**

You can also choose to specify the BYPASS-OFFLOAD keyword and rerun the job.

---

**ARYS338W**      **Backup backup timestamp  
timestamp has been deleted and  
replaced by this backup.**

**Explanation:**

The target units for the specified backup has been replaced by this backup. The specified backup will be removed from the repository.

**User response:**

None required.

---

**ARYS339I Backup backup timestamp timestamp was marked as no longer on disk.**

**Explanation:**

The specified backup has been offloaded to disk and will be replaced by this backup. It will be marked as no longer on disk in the repository.

**User response:**

None required.

---

**ARYS340E Tablespace not found: spacename**

**Explanation:**

The installation verification procedure has detected that the required table space was not found. Required objects are part of the Schema Level Repository (SLR).

**User response**

Verify that the installation job used to create the Schema Level Repository completed successfully.

TCz jobname ssDDL1dd, template ARYDDL1.

---

**ARYS341E Error fetching system backup information. Check the agent JCL.**

**Explanation:**

The system backup could not be fetched from the repository.

**User response**

Please check the agent JCL to make sure all the required data sets have been specified. These libraries are:

```
//ARYBPROF DD DISP=SHR,
DSN=datalevel.PROFILES
//ARYSBACK DD DISP=SHR,
DSN=datalevel.SYSBACK
//ARYSBOBJ DD DISP=SHR,
DSN=datalevel.SYSBACK.OBJS
//ARYSBVOL DD DISP=SHR,
DSN=datalevel.SYSBACK.VOLS
//ARYSBSSD DD DISP=SHR,
DSN=datalevel.SYSBACK.SSIDS
```

Where *datalevel* is the high level used to create these data sets during install.

---

**ARYS342E ARY System Backup and Restore control record not found.**

**Explanation:**

The control record for the ARY system backup and restore utility was not found.

**User response:**

Refer to the installation section on how to create this record.

---

**ARYS343E FCWithdraw failed on target unit unit\_name RC = return\_code RS = reason\_code.**

**Explanation:**

The FCWithdraw operation failed on the specified target unit.

**User response:**

Make sure the TSO ID that submitted the job has the authority necessary to execute the FCWithdraw command.

---

**ARYS344W Data set collection has ended with warning conditions:**

**Explanation:**

The process to collect information about where data sets resided at the time of the system backup has completed with warning conditions. These will be listed after this message.

**User response:**

None required.

---

**ARYS345W Error creating catalog entry for data\_set\_name. FDRInstant will not be used.**

**Explanation:**

An error has occurred creating a data set required by FDRInstant. FDRInstant will not be used. FDR will be used to perform the volume offload.

**User response:**

Make sure the appropriate steps have been taken at your shop to create data sets that start with FDR.USE.\*

---

**ARYS346I Source Volser: volume\_serial Target Unit: target\_unit Remaining Tracks: number\_of\_tracks.**

**Explanation:**

This is an informational message showing the total number of tracks that need to be copied inside the array from source to target volumes.

**User response:**

None required.

---

**ARYS348E These Db2 datasets reside on this volume:**

**Explanation:**

The specified Db2 data sets reside on a volume that has not been included in the system backup.

**User response:**

You must include the specified volume in the system backup profile.

---

**ARYS349I Dataset: data\_set\_name.**

**Explanation:**

This is a continuation of ARYS348I and will list a data set.

**User response:**

None required.

---

**ARYS350I**      **Remaining tracks to be copied:  
number\_of\_tracks.**

**Explanation:**

This is an informational message showing the total number of tracks that need to be copied inside the array from source to target volumes

**User response:**

None required.

---

**ARYS351E**      **An error has occurred obtaining  
Db2 location for subsystem ssid.  
Make sure the correct BSDS files  
are specified.**

**Explanation:**

The Db2 location is needed to construct the HSM copy pool names for the Db2 subsystem.

**User response:**

The BSDS names for the Db2 SSID are most likely incorrect. Enter the Setup section of the product and check the BSDS names there.

---

**ARYS352E**      **The following object *objectname*  
was selected but no longer exists.**

**Explanation:**

The object no longer exists. It will not be processed.

**User response:**

The object might have existed when the application profile was created but it now no longer exists. The object should be removed from the profile.

---

**ARYS353E**      **Unable to stop *table\_space/*  
*index\_space*.**

**Explanation:**

The product was unable to stop the specified Db2 object.

**User response:**

Make sure the Db2 object is not being used by any Db2 process.

---

**ARYS354I**      **Waiting for *table\_space/*  
*index\_space* to stop...**

**Explanation:**

The product is waiting for the specified object to enter the STOPPED state.

**User response:**

None required.

---

**ARYS355W**      **Build of application profile has  
resulted in no selected objects.**

**Explanation:**

The build of the application profile produced no selected objects.

**User response:**

Check the profile to make sure an object is selected or the object mask(s) specified are correct.

---

**ARYS356I**      **Task *task\_name* - Copying source  
volser *source volser* to target  
volser *target volser*.**

**Explanation:**

The DFSMSDss copy from the source volume to the target volume is being performed by the specified subtask.

**User response:**

None required.

---

**ARYS358E**      **Source volume *volser* contains  
user catalog data. This volume  
cannot be excluded.**

**Explanation:**

The source volume that you selected for exclusion contains user catalog data that needs to be included in the backup. The volume must be included in the backup.

**User response:**

Edit the backup profile and ensure the volume is not excluded.

---

**ARYS359E**      **SNAP group operation *operation*  
failed.**

**Explanation:**

The listed SNAP operation failed. The error messages from the SNAP operation will follow this message.

**User response:**

Examine the error messages from the SNAP. Make sure that the user who submitted the job has the proper authority to issue the SNAP command.

---

**ARYS360W**      **The following migrated datasets  
were found, backup will continue.**

**Explanation:**

This message is used with message ARYS361I and describes HSM migrated data sets that were encountered during the backup.

**User response:**

None required; depending on the settings in the PARMLIB member, IBM Customer Support may either recall the data sets or not recall the data sets and mark the backup as partial.

---

**ARYS361I**      ***message\_text*.**

**Explanation:**

This message is used with message ARYS360W and lists HSM migrated data sets that were encountered during the backup.

**User response:**

None required.

---

**ARYS362W Backup marked as partial, and can only be used for object restore.****Explanation:**

The settings in the PARMLIB member dictate that migrated data sets will not be recalled. However, object restore was enabled; therefore the backup will be saved and marked as partial.

**User response:**

None required.

---

**ARYS363W Backup cannot be used for system restore. Deleting backup.****Explanation:**

The settings in the PARMLIB member dictate that migrated data sets will not be recalled. In addition, object restore was not enabled for this profile. Since the backup cannot be used for system restore or object restore, the backup is stopped and deleted.

**User response:**

None required.

---

**ARYS364I Recalling migrated datasets.****Explanation:**

Db2 data sets that have been migrated by DFSMSHsm are being recalled.

**User response:**

None required.

---

**ARYS365I Waiting for recalled datasets.****Explanation:**

The backup is waiting for data sets to be recalled.

**User response:**

None required.

---

**ARYS366I Waiting number of minutes minutes for recalled datasets.****Explanation:**

The backup is waiting the specified number of minutes for data sets to be recalled.

**User response:**

None required.

---

**ARYS367W Invalid SMS return code for volume *volser*, rc=*return\_code*.****Explanation:**

An error occurred when attempting to determine the SMS storage group for a volume.

**User response:**

Make sure the volume serial is online, is included in an SMS storage group, and is properly configured in SMS.

---

**ARYS368I *Volser volume\_serial* was restored in a previous restore job. It will be bypassed.****Explanation:**

This message may appear when a restore job is re-run using the RESTART parameter. The volume listed in the message was successfully restored during the previous run and will not be restored again.

**User response:**

None required.

---

**ARYS369E *Volser volume\_serial* was restored in a previous restore job. It will be bypassed.****Explanation:**

This message may appear when a restore job is re-run using the RESTART parameter. The volume listed in the message was successfully restored during the previous run and will not be restored again.

**User response:**

None required.

---

**ARYS370I Performing target volume validation...****Explanation:**

This informational message indicates that target volume validation is in progress.

**User response:**

None required.

---

**ARYS371I Target volume validation complete.****Explanation:**

This informational message indicates that target volume validation is complete.

**User response:**

None required.

---

**ARYS372E All source volumes could not be matched to an appropriate target volume.****Explanation:**

One or more of the source volumes could not be matched to a target volume. The backup is stopped.

**User response:**

Ensure that there are enough targets specified for the desired number of backup generations. The target units/volumes must match the size of the source volumes. Also, make sure the specified target units are not in use for a system backup of another subsystem. This will make them ineligible for pairing with volumes in this profile.

---

**ARYS373E No target volumes were found, check the target pool volumes entered for this profile.****Explanation:**

The target volumes were not specified in the profile, or the storage groups specified did not contain any valid volumes.

### User response

Verify whether any of the following issues might be causing the target volumes to not be found:

- Verify that valid ranges of target units or storage groups are specified in the backup profile.
- Verify that the target volume is not excluded from the target volume list because it is already in a relationship.
- Verify that the target volume is not excluded from the target volume list because it is offline.
- Verify that the source volume is not mapped to the target volume because the source volume size is greater than the target volume size.
- Verify that the source volume is not mapped to the target volume because the source volume size is less than the target volume size.
- Verify that the source volume is not mapped to the target volume because the source and the target volumes are not in same storage device.
- Verify that the source volume is not mapped to the target volume because the target volume holds a backup for another backup profile.
- Source volume not mapped to target volume because devices not on the same control unit.

---

**ARYS374I**      **Task *task\_name* - Restoring source volser *source\_volser* from backup volser *backup\_volser*.**

### Explanation:

This informational message lists the source volume being restored and the backup volume being used to restore it.

### User response:

None required.

---

**ARYS375E**      **ShadowImage *action mode* of source volser *source\_volser* to target unit *target\_unit* failed.**

### Explanation:

The specified Shadow Image operation has failed.

### User response:

Ensure the user ID has the proper authorization to execute the command. Also, make sure the specified volumes reside on a storage array that is capable of executing ShadowImage commands and is properly licensed.

---

**ARYS376E**      **Return Code = *return\_code* - Reason Code = *reason\_code***

### Explanation:

This message displays the return and reason codes affiliated with a prior message.

### User response:

Examine the return and reason codes. Determine and correct the source of the problem.

---

**ARYS377E**      **ShadowImage delete of pair *source\_volser* and *target\_volser* failed. RC = *return\_code*. RS = *reason\_code*.**

### Explanation:

The specified ShadowImage operation has failed.

### User response:

Ensure the user ID has the proper authorization to execute the command. Also, make sure the specified volumes reside on a storage array that is capable of executing ShadowImage commands and is properly licensed.

---

**ARYS378E**      **Invalid Subsystem ID *subsystem\_ID* entered. The SSID must be defined in the Setup section of the product.**

### Explanation:

The subsystem listed in the message has not been configured using the product setup screen.

### User response:

From the product main menu, enter 0 to set up the subsystem. Refer to the configuration documentation for information about the setup parameters.

---

**ARYS379E**      **An SSID was not passed to the Health Check program.**

### Explanation:

The subsystem ID for the health check is not specified or was not found.

### User response:

Ensure that an SSID parameter is passed to the Health Check program.

---

**ARYS380E**      **A Start RBA/LRSN was not passed to the Health Check program.**

### Explanation:

A starting RBA or LRSN for the health check is not specified or was not found.

### User response:

Ensure that a start RBA/LRSN parameter is passed to the Health Check program.

---

**ARYS381E**      **An End RBA/LRSN was not passed to the Health Check program.**

### Explanation:

An ending RBA or LRSN for the health check is not specified or was not found.



**User response:**

Ensure that an End RBA/LRSN parameter is passed to the Health Check program.

---

**ARYS382E**      **An LCB was not passed to the Health Check program.**

**Explanation:**

An internal error has occurred; a list control block was not passed to the Health Check program.

**User response:**

Contact IBM Customer Support.

---

**ARYS383E**      **An invalid SSID was specified, it must be between 1 and 4 characters in length.**

**Explanation:**

An invalid Db2 subsystem ID was specified.

**User response:**

Verify that the subsystem ID selected is a valid SSID and is online.

---

**ARYS384E**      **An invalid RBA/LRSN was specified, it must be 12 chars in length and contain valid hexadecimal chars.**

**Explanation:**

An invalid RBA or LRSN was specified.

**User response:**

Correct the starting or ending RBA or LRSN.

---

**ARYS386E**      **An invalid Image Copy Check option was specified, the valid options are "Y" or "N"**

**Explanation:**

The image copy check option is invalid.

**User response:**

Enter Y or N for the IC-CHECK parameter in the control cards.

---

**ARYS399E**      **This profile is in incremental status already.**

**Explanation:**

The backup profile contains the **START - INCREMENTAL** keyword, but the backup profile has previously been submitted and an incremental relationship established.

**User response:**

Remove the **START - INCREMENTAL** keyword from the backup profile.

---

**ARYS400E**      **This profile not in incremental status.**

**Explanation:**

The backup profile contains the **END - INCREMENTAL** keyword, but the backup profile has not previously

been submitted with a **START - INCREMENTAL** keyword. No incremental relationship has been established.

**User response:**

Remove the **END - INCREMENTAL** keyword from the backup profile.

---

**ARYS401E**      **The current backup generation is not in incremental status.**

**Explanation:**

For a system backup that has enough target volumes for multiple generations, only one generation can be in incremental status. This message is produced when END-INCREMENTAL was specified when the next backup generation is not for a generation that is in incremental status. .

**User response:**

You can only enter the END-INCREMENTAL card when the backup generation you are about to replace is in incremental status.

---

**ARYS402E**      **There are not enough target volumes specified based on the number of source volumes and generations.**

**Explanation:**

There are not enough target volumes specified in the profile to backup all source volumes for the specified number of generations.

**User response:**

Edit the backup profile and either add more target volumes or specify less backup generations.

---

**ARYS403E**      **An input card cannot extend beyond two input cards.**

**Explanation:**

An input control card contains a continuation character on the second line of the card. This is not allowed. Only 2 lines are allowed for a control card.

**User response:**

Ensure the control card does not extend past two lines. Remove the continuation character from the second line.

---

**ARYS404I**      *message\_text.*

**Explanation:**

This informational message indicates that a process is starting or completing.

**User response:**

None required.

---

**ARYS406E**      **The work volume *work\_volser* cannot be the same volume that the object resides on.**

**Explanation:**

The object being copied is located on the volume that is also specified as a work volume. This is not allowed.

**User response:**

Edit the application profile and change the work volume(s) to different work volume(s).

---

**ARYS407E**      **At least one source of work volumes must be specified with an input card.**

**Explanation:**

No one source of work volumes is specified with an input card.

**User response:**

Specify at least one of the following input cards: COPY-WORK-STORGROUP, COPY-WORK-VOLSER, COPY-WORK-HLQ.

---

**ARYS408E**      **Task *subtask\_name* - Image copy of object *object\_name* has failed**

**Explanation:**

The subtask named in the message failed. The image copy for the specified object was not created. There will be one or more additional messages that provide more detail about the error.

**User response:**

Review additional error messages to determine course of action.

---

**ARYS409I**      **Task *task\_name* - Image copy created for *object\_name*.**

**Explanation:**

This informational message states that the image copy for the listed object has been successfully created.

**User response:**

None required.

---

**ARYS410I**      **Task *subtask\_name*- Type: *image\_copy\_type* DSN: *data\_set\_name*.**

**Explanation:**

This informational message indicates that the image copy was successfully created. It lists the image copy type as local primary (LP), local backup (LB), remote primary (RP), or remote backup (RB), and displays the associated data set name.

**User response:**

None required.

---

**ARYS411I**      **Task *task\_name*- Unit: *unit* Fileseq: *file\_sequence\_num* Cataloged: *Yes/No*.**

**Explanation:**

This informational message indicates that the image copy was successfully created. It lists the type of device the image copy was written to; if the image

copy was written to tape, the file sequence number of the image copy on the tape volser; and indicates whether the image copy data set was cataloged.

**User response:**

None required.

---

**ARYS412I**      **Task *subtask\_name*- Volser(s): *vols\_sers*.**

**Explanation:**

This informational message indicates that the image copy was successfully created. If the image copy was not cataloged, this message displays the volume serial name(s) where the image copy resides.

**User response:**

None required.

---

**ARYS413I**      **Task *subtask\_name*- Start\_RBA: *starting\_rba* Pit\_RBA: *ending\_rba*.**

**Explanation:**

This informational message indicates that the image copy was successfully created. It lists the starting RBA and the ending RBA of the image copy.

**User response:**

None required.

---

**ARYS414I**      **Task *subtask\_name*- Registered in SYSCOPY: *Yes/No* Number of Pages: *number\_of\_pages*.**

**Explanation:**

This informational message indicates that the image copy was successfully created. It indicates whether the image copy is recorded in SYSIBM.SYSCOPY, and the number of pages (in size) of the image copy data set.

**User response:**

None required.

---

**ARYS415E**      **Image copies cannot be created from an offloaded backup created using FDR.**

**Explanation:**

The offloaded backup from which the image copies were to be made was created using FDR. Image copies cannot be created from FDR offloaded backups.

**User response:**

If you want to create image copies from a system backup on tape, you must use DFSMSdss to create the tape copy of the system backup. You can also try selecting another offloaded backup that was not created using FDR, or use a backup that is still on disk.

---

**ARYS417W**      ***message text will vary.***

**Explanation:**

This message is used to display various message text associated with errors.

**User response:**

Review the message text and other related messages to determine the problem..

---

**ARYS418E** *error text will vary.*

**Explanation:**

Internal error. Normal processing has ended unsuccessfully.

**User response:**

Contact IBM Customer Support. Please provide the text of this message, along with the preceding or following messages.

---

**ARYS420E** **Space is not recoverable to desired point.**

**Explanation:**

A MODIFY RECOVERY utility was performed on the space. The space cannot be recovered.

**User response:**

Select a recovery point before the MODIFY RECOVERY utility was performed.

---

**ARYS421E** **An ICTYPE=*copy type* STYPE= *type* row in SYSCOPY with RBA *rba* was found and prohibits processing for object:**

**Explanation:**

A MODIFY RECOVERY utility was performed on the space. The space cannot be recovered. *copy type* is the type of operation (M for MODIFY RECOVERY); *type* is a subtype, (when *copy type* = M and the MODIFY RECOVERY utility was executed to delete SYSCOPY and/or SYSLGRNX records, the value is R).

**User response:**

Select a recovery point before the MODIFY RECOVERY utility was performed.

---

**ARYS422W** **Indexspace *index creator.index name* is not defined COPY YES. This object will be bypassed.**

**Explanation:**

The index space listed in the message was defined with COPY NO. The index space will not be copied.

**User response:**

None required.

---

**ARYS423E** **The following object was selected but does not exist in the Backup:**

**Explanation:**

The specified object was in the application profile, but the selected system backup did not contain information for it. An image copy will not be created for this object.

**User response:**

Take a new system backup that includes the object, then select the new system backup for image copy processing.

---

**ARYS424E** **The following object was dropped and recreated after the Backup:**

**Explanation:**

The object was dropped after the system backup was taken and then recreated; therefore, the object cannot be recovered using the SLB selected.

**User response:**

None required.

---

**ARYS425E** **A Db2 control file DD was not passed to the Health Check program.**

**Explanation:**

A Db2 control file containing information on all the Db2 subsystems registered was not passed to the Health Check program.

**User response:**

If Health Check was executed in batch, make sure a Db2PARMS DD card is present in the JCL. If Health Check was executed online, contact IBM Customer Support.

---

**ARYS426E** ***message text* RC=*return code*, RS=*reason code*.**

**Explanation:**

This message is used to provide additional error message explanation. It contains the message text, return code and reason code.

**User response:**

None required.

---

**ARYS427E** **An error occurred obtaining SMS Copypool information.**

**Explanation:**

When configuring a Db2 subsystem to work with the BACKUP SYSTEM utility, an error occurred attempting to obtain information about the SMS copypools.

**User response:**

Contact IBM Customer Support.

---

**ARYS429E** **Backup unit *nnnn* is no longer valid. *reasoncode***

**Explanation:**

The specified space efficient backup volume is no longer valid. The reason is stated in the message.

**User response**

One of the following instances caused this message to be issued:

- The space efficient pool filled up

After a system backup is taken on a SE volume, when Db2 updates a track, the original version of that track is written to the pool of disk space that is associated with the SE volumes. If this pool of disk space becomes filled, the system backup on the space efficient volumes will become invalidated. To free up space in the pool, users can either delete the system backup or take another backup using the same set of space efficient volumes. Each time the volumes are used, the space used to hold the original version of changed tracks from the previous backup will be freed.

- Some other process cleared the relationship between this volume and the source volume

The SE volumes may need to be re-initialized before being re-used by IBM Customer Support.

---

**ARYS431E**      **Space is not recoverable to the desired point. A space defined as LOG NO prohibits recovery of the object.**

**Explanation:**

The table space or index space listed is not recoverable to the desired point. The specified space is defined as LOG NO. It can only be restored to the point of a copy.

**User response:**

Redefine the table or index space.

---

**ARYS432E**      ***inputcardvariable* is invalid in combination with LAST-BACKUP card.**

**Explanation:**

You cannot specify TIME, DATE, or GENERATION if LAST-BACKUP follows the IMAGE-COPY card. You also cannot specify TIME or DATE if LAST-BACKUP follows the GENERATION card.

**User response:**

Remove the invalid TIME, DATE, or GENERATION parameters from the control cards.

---

**ARYS433E**      **The LAST-BACKUP card must follow IMAGE-COPY or GENERATION card.**

**Explanation:**

The LAST-BACKUP card must follow either the IMAGE-COPY card or the GENERATION card.

**User response:**

Correct the order of the control cards.

---

**ARYS434I**      **Temporary data set *datasetname* has been deleted.**

**Explanation:**

The listed VSAM dataset is no longer needed and has been deleted. Since the user chose not to register VSAM copy, it is no longer needed and was deleted.

**User response:**

None.

---

**ARYS435I**      **Task *taskname* - Registered in *datasetname* Total Tracks: *numberoftracks***

**Explanation:**

This message provides information about the image copy data set that is produced.

**User response:**

None.

---

**ARYS436I**      **Task *taskname* - DSN: *datasetname* to DSN: *datasetname***

**Explanation:**

This message will provide information about the image copy data set produced.

**User response:**

None.

---

**ARYS437E**      ***Spacename* cannot be copied because it is in *currentstatus* status.**

**Explanation:**

The specified table space or index space cannot be image copied because it is in an invalid status.

**User response:**

Correct the status condition and resubmit the job.

---

**ARYS438E**      **Copy data set *datasetname* was not found for *recoveryjob*.**

**Explanation:**

A recovery from a VSAM copy has been generated, but the image copy data set is missing.

**User response:**

Regenerate the recovery JCL for this object as the JCL generation will detect the missing VSAM copy and generate recovery in another manner.

---

**ARYS439I**      **VSAM copy DSN *datasetname* was deleted.**

**Explanation:**

The specified VSAM data set was deleted because it was the oldest VSAM copy for this object and was outside of the specified number of generations to keep.

**User response:**

None.

---

**ARYS440I**      ***Objectname* is not in copy pending status and not be copied due to Scope Pending status.**

**Explanation:**

The image copy options specified to only copy object in COPY PENDING status. The specified object was not processed because it was not in COPY PENDING status.

**User response:**

Change the Scope Pending status of the object.

**ARYS441W**      **Image copy *datasetname* not found. Searching for prior recovery asset for object: *objectname*.**

**Explanation:**

While generating recovery JCL for the specified object, the specified image copy data set was not found in the ICF catalog. A recovery for the specified object might still be possible using a prior recovery asset.

**User response:**

Check to see if the image copy data set was specified correctly and saved in the ICF catalog.

**ARYS442I**      **The COPY PENDING status has been reset for *objectname*.**

**Explanation:**

The specified object was in COPY PENDING status and the status has been cleared because a successful image copy has been taken.

**User response:**

None.

**ARYS443E**      **Fast replication failed for data set *datasetname*.**

**Explanation:**

Fast replication (either SNAP or Flash) has failed for the specified data set.

**User response:**

Check the output for other specific message that indicate the reason for the failure.

**ARYS444W**      ***dsname* allocation failed.**

**Explanation:**

System backups objects VSAM repository file allocation failed.

**User response:**

Check your installation to make sure the System backups objects VSAM repository file is specified correctly.

**ARYS446I**      **The *objectname* was image copied from this system backup on a previous job.**

**Explanation:**

This message indicates that restart processing is occurring and the specified object name already has an image copy created for it. As a result the object will be bypassed and not copied in the current job.

**User response:**

None.

**ARYS448E**      **Object was in a restricted state at the time of the system backup. It will not be included recovery.**

**Explanation:**

The object was in a restricted state at the time of the system backup. It will not be included in the recovery and it will be listed in the Restricted Objects Report. An object is considered in a restricted state if its status is CHKP, GRECP, LPL, RBDP, RECP, UTUT, or WEPR.

**User response:**

Change the status of the object to a non-restricted state.

**ARYS449E**      **Object was in a restricted state at the time of the system backup. It will not be image copied.**

**Explanation:**

The object was in a restricted state at the time of the system backup. It will not be included in the image copy and it will be listed in the Restricted Objects Report. An object is considered in a restricted state if its status is CHKP, GRECP, LPL, RBDP, RECP, UTUT, or WEPR.

**User response:**

Change the status of the object to a non-restricted state.

**ARYS451I**      **Volume *volname* was found in storage group but has been excluded in the profile.**

**Explanation:**

The specified volume was found in a source storage group but it will not be copied because it has been specifically entered as a volume to be excluded from the system backup.

**User response:**

If you do not want this volume excluded, update the backup profile and remove the volume from the list of excluded volumes.

**ARYS452I**      **Db2 volume validation is turned off. Volumes discovered on the last SETUP run will be backed up.**

**Explanation:**

This system backup profile has **Validate Db2 Volumes** set to "N". This means that Db2 volumes discovered when the profile was first setup will be backed up.

**User response:**

You can either add the SETUP control card or update the profile and change **Validate Db2 Volumes** to Y if you want Db2 Recovery Expert to discover the Db2 volumes.

---

**ARYS455E**      **Error fetching volumes from storage group *stogroupname*.****Explanation:**

This error can occur when a storage group that does not exist has been specified in the system backup profile or when some unidentifiable SMS problem causes the volume fetch to fail.

**User response:**

Correct the storage group that has been specified in the system backup profile. If the storage profile is correct, verify that no other SMS problem could be causing the volume fetch to fail.

---

**ARYS457E**      **Target unit *targetunitname* is online with volume *volumeserialnumber*. It must be offline for this type of backup.****Explanation:**

When performing a system backup using Flash or Snap profiles that use UCB numbers as targets, IBM Customer Support will issue this error message if the UCB volumes are online during the backup.

**System action:****User response:**

---

**ARYS458I**      **Optional LBDR TS not found: *spacename*****Explanation:**

The installation verification procedure has detected that the Log Based Data Recovery (LBDR) table space was not found.

**User response**

If Log Based Data Recovery is not used, no further action is required. If LBDR is used, verify that the installation job used to create the Schema Level Repository completed successfully.

TCz jobname ssDDL1dd, template ARYDDL1.

---

**ARYS467E**      **INCLUDE-ARCHIVE\_VOLS conflicts with PARMLIB option ARCHIVE-WARNINGS.****Explanation:**

A system level backup cannot execute if the backup control cards include the keyword INCLUDE-ARCHIVE-VOLS and the setting for the ARCHIVE\_WARNINGS parameter is N.

**User response:**

Either remove the INCLUDE-ARCHIVE-VOLS keyword from the backup control cards in the system level backup job JCL, or set the ARCHIVE\_WARNINGS parameter to Y in the ARY#PARM member.

---

**ARYS469E**      **Error fetching STOGROUP information.****Explanation:**

Error fetching STOGROUP volumes from SYSIBM.SYSVOLUMES for non-SMS managed spaces during dataset fast replication restore for TS/IX.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS470E**      **Open failed for *ddname*.****Explanation:**

Internal error during *ddname* dataset opening.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS471E**      **Error text will vary depending on the cause of the error.****Explanation:**

Call attachment facility calling error. Error text describes the error.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS472E**      ***dsname* allocation failed.****Explanation:**

Internal error allocating *dsname* dataset.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS473E**      **Attach failed for *module name*. Check STEPLIB.****Explanation:**

*module name* has not been attached.

**User response:**

Check whether the LOADLIB dataset is correct in the STEPLIB DD.

---

**ARYS474E**      ***Module name* error text will vary depending on the source of the error.****Explanation:**

In the *module name* module, an error occurred when calling the z/OS System Data Mover API. The error text describes the error.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS475E**      **Module name error returned from ARY#RIO, function *function name*.**

**Explanation:**

In the *module name* calling of ARY#RIO has ended with the error during the *function name* function.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS476E**      **No Db2 objects.**

**Explanation:**

There are no Db2 objects after Db2 object discovery during collection of dataset information for object level recovery.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS477E**      **Module name Attach failed for DSNUTILB.**

**Explanation:**

In *module name*, an error occurred during DSNUTILB calling.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS478E**      **Error registering VSAM copy in ARYT\_VSYSCOPY table. Unregistered VSAM copies will be deleted.**

**Explanation:**

Internal error during SQL query to ARYT\_VSYSCOPY table.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS479E**      **Error performing RTS commit. RTS rows have not been updated.**

**Explanation:**

Internal error committing the Real Time Stats Updates.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS480E**      **Error updating Real Time Stats tables.**

**Explanation:**

Internal error during SQL query updating Real Time Stats.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS481E**      **Error fetching ARYT\_VSYSCOPY information.**

**Explanation:**

Internal error occurred while selecting information from VSLAM SYSCOPY table.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS482E**      **No objects are selected to be copied.**

**Explanation:**

Objects for copying not found in ARYT\_VSYSCOPY during object level image copy process.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS483E**      **TS Definition not found.**

**Explanation:**

Workfile tablespace definition not found for recreation during catalog update.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS484E**      **Db2 must be down to rename the catalog.**

**Explanation:**

The Db2 subsystem was not shut down when connected to a subsystem to rename the catalog. The call attach facility failed.

**User response:**

Shut down the Db2 subsystem whose catalog you want to rename.

---

**ARYS485E**      **Error loading module ARYJIMG.**

**Explanation:**

Internal error while calling the ARYJIMG module.

**User response:**

Check your installation. If no problems are found, Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS486E      Error fetching object profile.**

**Explanation:**

Internal error while building image copy from offload job.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS487E      INCREMENTAL only valid for Db2 version 9 and above.**

**Explanation:**

INCREMENTAL only valid for Db2 version 9 and above.

**User response:**

None required.

---

**ARYS488E      *Subsystem must be down before it can be backed up without fast replication.***

**Explanation:**

IMS or Db2 *subsystem* was on when trying to create backup without fast replication DASD.

**User response:**

Shut down the *subsystem* subsystem.

---

**ARYS489E      INCREMENTAL parm not valid in combination with SETUP parm.**

**Explanation:**

INCREMENTAL parm is not valid for Db2/Flash/DFSMSdss backup at the SETUP phase.

**User response:**

Remove the INCREMENTAL parm from the control card.

---

**ARYS490E      MAXTASKS must be numeric between 1 and 8.**

**Explanation:**

MAXTASKS must be numeric between 1 and 8.

**User response:**

Set MAXTASKS to a valid value.

---

**ARYS491E      Error text varies depending on the source of the error.**

**Explanation:**

Internal error running SCMD processor.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS492E      Bad retcode from *module name*.**

**Explanation:**

Internal error running *module name*.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS493E      A FlashCopy relationship already exists.**

**Explanation**

This profile in non-incremental status cannot be built with the START-INCREMENTAL control card while the relationship exists. The relationship exists because:

- There are different profiles using the same source and target volumes. One of the profiles has been built with incremental status, so an incremental relationship is established between source and target volumes.
- The FRBACKUP command, with the FCINCREMENTAL keyword, has been issued, establishing an incremental relationship.

**User response**

If an incremental backup is needed, do one of the following:

- Change to the profile which is already in incremental status and build it; or
- Withdraw the relationship and rerun the build job with the START-INCREMENTAL control card. For non-incremental backup, remove the START-INCREMENTAL control card and rerun the job.

---

**ARYS494E      No VSAM copy was made.**

**Explanation:**

An error occurred during the Fast Replication functions.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS495E      Real image copyies didn't make for: object.**

**Explanation:**

An error occurred while processing an VSAM dataset where the image copy would be saved.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.



---

**ARYS496E      Check DFSMSdss messages for more information.**

**Explanation:**

Internal error during volume copying for DFSMSdss backup.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS497E      Error saving object level restore information.**

**Explanation:**

Internal error saving object level restore information.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS498E      At least one backup volume is in use by another process. Free allocation and restart job.**

**Explanation:**

At least one backup volume is in use by another process.

**User response:**

Free allocation and restart job.

---

**ARYS499E      Please check BSDS names in Product Setup section.**

**Explanation:**

Internal error. Unable to read BSDS datasets.

**User response:**

Check BSDS names in Product Setup section.

---

**ARYS531W      Unable to determine conditional restart for SSID.**

**Explanation:**

The last checkpoint in a BSDS is not a shutdown entry.

**User response:**

Check to see if the SSID is stopped.

---

**ARYS533I      Subsystem SSID does not need a conditional restart.**

**Explanation:**

The SSID has an LRSN lower than the recovery LRSN.

**User response:**

None required.

---

**ARYS612E      Vol dev.address volume was not successfully processed.**

**Explanation:**

Some problems occurred while processing the volume. It could be either during restore or offload process.

**User response:**

Check to see if something is wrong with the volume. Contact IBM Customer Support if the problem persists.

---

**ARYS621E      Task task Unable to get next volume in the stack dev.address volume.**

**Explanation:**

Processing error while volume check in background offload process.

**User response:**

Check if something is wrong with the volume. Contact IBM Customer Support if the problem persists.

---

**ARYS641E      Allocation Error: An error was encountered allocating the ISPWRK1 or ISPWRK2 DD. Process not completed.**

**Explanation:**

The ISPWRK1 or ISPWRK2 DD allocation failed. The process did not complete successfully.

**User response:**

Verify TSO session parameters are set correctly for your site prior to allocation of these DD statements.

---

**ARYS700E      Previous ACTIVATE is not completing.**

**Explanation:**

Previous ACTIVATE is not completing for phased SNAP backup.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS701E      EMCGROUP DDNAME must be present in JCL.**

**Explanation:**

EMCGROUP control card not found in JCL during phased SNAP backup.

**User response:**

Specify EMCGROUP DD in JCL.

---

**ARYS702E      No source storage groups or source volumes have been specified in the profile.**

**Explanation:**

No source storage groups or source volumes have been specified in the profile.

**User response:**

Specify source storage groups.

---

**ARYS703E      You cannot mix virtual and non-virtual target devices.**

**Explanation:**

You cannot mix virtual and non-virtual target devices during SNAP backup.

**User response:**

Specify only one type of devices.

---

**ARYS704E**      **At least one target volume is Space Efficient. Incremental is invalid.**

**Explanation:**

Incremental DFSMSdss or Flash backup cannot be used if at least one target volume is Space Efficient.

**User response:**

Choose target volumes that are not Space Efficient.

---

**ARYS705E**      **Incremental is not valid when using a Shared Target Pool.**

**Explanation:**

Incremental DFSMSdss or Flash backup cannot be used when you are using a Shared Target Pool.

**User response:**

Do not use a Shared Target Pool with incremental DFSMSdss or Flash backup.

---

**ARYS706E**      **A member of this data sharing group is not active or in a non-quiesced state.**

**Explanation:**

A member of this data sharing group is not active or in a non-quiesced state. The next message, ARYS020I, will contain additional information.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS707E**      **Could not find SSID on member list.**

**Explanation:**

Could not find SSID for checkpoint.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS708E**      **Make sure all data sharing members are defined in Setup section.**

**Explanation:**

An error occurred when attempting to obtain the DSNZPARMS load module for the SSID listed in the ARYS089E message.

**User response:**

Define all data sharing members in the Setup section.

---

**ARYS709E**      **Error parsing token.**

**Explanation:**

The TOKEN value was not obtained from the DSNUTILB output.

**User response:**

Check DSNUTILB output.

---

**ARYS710E**      **BSDS Read error. No backup record was found.**

**Explanation:**

The checkpoint records in the BSDS were not found.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS711E**      **SSID <ssid> Backup System completed with errors. Reason code <reason>**

**Explanation:**

The backup completed with errors. The next message contains additional information.

**User response:**

Check DSNUTILB output.

---

**ARYS712E**      **Error retrieving checkpoint records from BSDS.**

**Explanation:**

Error retrieving checkpoint records from BSDS.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS713E**      **Error obtaining HSM backup information.**

**Explanation:**

There are no target volumes that hold the backup.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS714E**      **Error saving object level restore information.**

**Explanation:**

Internal error during offloading for mixed backup.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS715E**      **DSNJU003 failed, check SYSPRINT for more details.**

**Explanation:**

Internal error calling the DSNJU003 module.

**User response:**

Check SYSPRINT for more details.

---

**ARYS716E            Make sure subsystem was shut down normally.**

**Explanation:**

Internal error allocating BSDS dataset 1.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS717E            TASKLIB Concat failed.**

**Explanation:**

Dataset concatenation has failed for the TASKLIB DD due to internal error.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS718E            TASKLIB deconcatenate failed.**

**Explanation:**

Dataset deconcatenation has failed for the TASKLIB DD due to internal error.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS719E            TASKLIB free failed.**

**Explanation:**

TASKLIB DD has not been freed due to an internal error.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS720E            This space must be removed from the RECOVER LOGONLY step.**

**Explanation:**

Empty VSAM dataset has been found while recovering base RBA.

**User response:**

Remove empty VSAM dataset from the RECOVER LOGONLY step.

---

**ARYS721E            Catalog entry error.**

**Explanation:**

Internal error while correcting data name portion of VSAM DSN.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS722E            Fast Replicate DSN Mask must be specified in image copy options.**

**Explanation:**

Fast Replicate DSN Mask not specified in image copy options.

**User response:**

Specify DSM Mask.

---

**ARYS723E            Check VSAM Dataset Mask.**

**Explanation:**

Duplicates found during Fast Replication Dataset Targets checking.

**User response:**

Check VSM Dataset Mask.

---

**ARYS724E            Fast replication failed for one or more datasets.**

**Explanation:**

Internal error during Object Level Image Copy.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS725E            Error initializing RTS update.**

**Explanation:**

Internal error during Real Time Stats (RTS) table initialization.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS726E            Error performing RTS update.**

**Explanation:**

Internal error during Real Time Stats (RTS) table updating.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS727E            Object explode failed.**

**Explanation:**

Internal error while exploding the objects in the profile.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS728E**      **COPY-TYPE must be LP, LB, RP, or RB.**

**Explanation:**

COPY-TYPE must be LP, LB, RP, or RB in backup control card.

**User response:**

Correct the COPY-TYPE value.

---

**ARYS729E**      **COPY-UNIT-TYPE should be DISK or TAPE.**

**Explanation:**

COPY-UNIT-TYPE should be DISK or TAPE in backup control card.

**User response:**

Correct the COPY-UNIT-TYPE value.

---

**ARYS730E**      **COPY-TYPE must be specified before any other COPY-xxxx parameters.**

**Explanation:**

COPY-TYPE must be located before any other COPY-xxxx parameters in backup control card.

**User response:**

Specify the COPY-TYPE before any other COPY-xxxx parameters.

---

**ARYS731E**      **COPY-MASK is invalid.**

**Explanation:**

Invalid value of COPY-MASK in backup control card.

**User response:**

Correct the COPY-MASK value.

---

**ARYS732E**      **COPY-STACK must be numeric and 3 digits.**

**Explanation:**

Invalid value of COPY-STACK in backup control card.

**User response:**

Correct the COPY-STACK value.

---

**ARYS733E**      **COPY-MAX-TAPES must be numeric and 3 digits.**

**Explanation:**

Invalid value of COPY-MAX-TAPES in backup control card.

**User response:**

Correct the COPY-MAX-TAPES value.

---

**ARYS734E**      **COPY-EXPDT must be numeric and 5 or 7 digits.**

**Explanation:**

Invalid value of COPY-EXPDT in backup control card.

**User response:**

Correct the COPY-EXPDT value.

---

**ARYS735E**      **COPY-RETPD must be numeric and 4 digits.**

**Explanation:**

Invalid value of COPY-RETPD in backup control card.

**User response:**

Correct the COPY-RETPD value.

---

**ARYS736E**      **LAST-COPY or TIMESTAMP keyword expected.**

**Explanation:**

The LAST-COPY or TIMESTAMP value is missing in the backup control card.

**User response:**

Enter the LAST-COPY or TIMESTAMP value.

---

**ARYS737E**      **Expecting timestamp in format "YYYY.MM.DD.HH.MM.SS.NNNNN N" in single quotes or LAST-COPY.**

**Explanation:**

A date value is expected in the backup control card.

**User response:**

Enter the date.

---

**ARYS738E**      **Expected DBNAME.SPACENAME**

**Explanation:**

DBNAME for the TABLESPACE/INDEXSPACE control card is not specified.

**User response:**

Specify DBNAME in the control cards.

---

**ARYS739E**      **DBNAME or SPACENAME cannot exceed 8 bytes.**

**Explanation:**

The DBNAME or SPACENAME in the control card exceeds 8 characters.

**User response:**

Enter a DBNAME or SPACENAME value that does not exceed 8 characters.

---

**ARYS740E**      **PARTITION must be between 1 and 4096 inclusive.**

**Explanation:**

PARTITION value in control card is not in range.

**User response:**

Enter a valid PARTITION value.

---

**ARYS741E**      **MAXTASKS must be numeric between 1 and 8.**

**Explanation:**

MAXTASKS must be numeric between 1 and 8.

**User response:**

Set MAXTASKS to a valid value.

---

**ARYS742E      KEEP-GEN must be numeric between 0 and 9999.**

---

**Explanation:**

The KEEP-GEN value in the backup control card is not in the required range.

**User response:**

Correct the KEEP-GEN value.

---

**ARYS743E      Error fetching object profile. Make sure image copy options have been specified in profile.**

---

**Explanation:**

Error fetching object profile due to internal error.

**User response:**

Make sure image copy options have been specified in profile.

---

**ARYS744E      Unexpected token.**

---

**Explanation:**

The OBJECT-COLLECTION or OBJECT-IMAGE-COPY parameter value is missing in the backup control card.

**User response:**

Enter the value.

---

**ARYS745E      Catalog entry error.**

---

**Explanation:**

Internal error during Object Restore Check Object.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS746E      Error loading backup info.**

---

**Explanation:**

Internal error while loading last backup.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS747E      No backups found for SSID.**

---

**Explanation:**

No backups found for SSID when creating an image copy from the last created system-level backup.

**User response:**

Check SLB backups for specified SSID.

---

**ARYS748E      This backup was not offloaded to Remote Primary or Remote backup files.**

---

**Explanation:**

Internal error during Remote site offload.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS749E      Error text varies depending on cause of error.**

---

**Explanation:**

Invalid SSID entered for IMAGE-COPY card.

**User response:**

Enter valid SSID.

---

**ARYS750E      Error text varies depending on cause of error.**

---

**Explanation:**

Invalid type has been entered for TAPE or COPY-TYPE for IMAGE-COPY card.

**User response:**

Enter valid type.

---

**ARYS751E      Error text varies depending on cause of error.**

---

**Explanation:**

Invalid stype has been entered for SMS-COPY for IMAGE-COPY card.

**User response:**

Enter valid stype.

---

**ARYS752E      COPY-MAX-WORK-VOLUMES must be numeric and 3 digits.**

---

**Explanation:**

Invalid value of COPY-MAX- WORK-VOLUMES in backup control card.

**User response:**

Correct the COPY-MAX- WORK-VOLUMES value.

---

**ARYS753E      The specified work volumes are SMS managed. You must also supply a COPY-WORK-HLQ.**

---

**Explanation:**

The specified work volumes are SMS managed.

**User response:**

Supply a COPY-WORK-HLQ.

---

**ARYS754E      The work volume is invalid or not online.**

---

**Explanation:**

The work volume is invalid or not online.

**User response:**

Check volume state.

---

**ARYS755E      Expected area/part name not found.**

---

**Explanation:**

Expected AREA/PART name not found for IMAGE-COPY card.

**User response:**  
Specify AREA/PART name.

---

**ARYS756E**      **Expected DDNAME name not found.**

**Explanation:**  
Expected DDNAME name not found for AREA/PART field for IMAGE-COPY card.

**User response:**  
Specify DDNAME.

---

**ARYS757E**      **Expected DDNAME name not found.**

**Explanation:**  
Expected DDNAME name not found for IMAGE-COPY card.

**User response:**  
Specify DDNAME.

---

**ARYS758E**      **ENQ from Master not found.**

**Explanation:**  
System ENQ from Master catalog has not been found during offload.

**User response:**  
Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS759E**      **Offload options must be set in backup profile before performing an offload.**

**Explanation:**  
Offload options have not been set in backup profile before performing an offload.

**User response:**  
Set the offload options.

---

**ARYS760E**      **Expecting HSM DUMPCLASS.**

**Explanation:**  
Expecting HSM DUMPCLASS for DUMPC-LP/LB/RP/RB for OFFLOAD card.

**User response:**  
Specify DUMPCLASS.

---

**ARYS761E**      **Control card value is missing.**

**Explanation:**  
The value for *control card* has not been found in offload/restore control card.

**User response:**  
Enter value for *control card*.

---

**ARYS762E**      **Control card is too long, limited to 8 characters.**

**Explanation:**

The value for *control card* exceeds 8 characters in offload/restore control card.

**User response:**  
Correct the value.

---

**ARYS763E**      **VSAM copy wasn't registered.**

**Explanation:**  
The VSAM copy was not registered in the SYSCOPY table.

**User response:**  
Check the joblog for more error messages.

---

**ARYS764I**      **Monitoring of Db2 backup process is running.**

**Explanation:**  
Monitoring of the Db2 backup process was started as a separate step.

**User response:**  
None required.

---

**ARYS766E**      **MULTIJOB-PREFIX is too long, limited to a 6 character name.**

**Explanation:**  
The value for MULTIJOB-PREFIX exceeds 6 characters in offload/restore control card.

**User response:**  
Correct the value.

---

**ARYS767E**      **LPAR-LIST has an invalid format.**

**Explanation:**  
LPAR-LIST has an invalid format in offload/restore control card.

**User response:**  
Correct the value.

---

**ARYS768E**      **LPAR-LIST name greater than 8 characters.**

**Explanation:**  
LPAR-LIST value exceeds 8 characters in offload/restore control card.

**User response:**  
Correct the value.

---

**ARYS769E**      **LPAR-LIST maxjobs greater than 2 characters.**

**Explanation:**  
Maxjob value for LPAR-LIST exceeds 2 characters in offload/restore control card.

**User response:**  
Correct the value.

---

**ARYS770E**      **LPAR-LIST maxtasks greater than 2 characters.**

**Explanation:**

Maxtask value for LPAR-LIST exceeds 2 characters in offload/restore control card.

**User response:**  
Correct the value.

---

**ARYS771E**      **LPAR-LIST is limited to a maximum of four entries.**

**Explanation:**  
LPAR-LIST is limited to a maximum of four entries for OFFLOAD card.

**User response:**  
Specify valid LPAR-LIST value.

---

**ARYS772E**      **USE-MULTIJOB is required for multijob processing.**

**Explanation:**  
Value for the USE-MULTIJOB is required, if there is a value for the MULTIJOB-PREFIX in offload/restore control card.

**User response:**  
Set the USE-MULTIJOB value.

---

**ARYS773E**      **LPAR-LIST is required for multijob processing.**

**Explanation:**  
Value for the LPAR-LIST is required, if there is a value for the MULTIJOB-PREFIX in offload/restore control card.

**User response:**  
Set the LPAR-LIST value.

---

**ARYS774E**      **MASTER-JOBNAME is invalid when USE-MULTIJOB is specified.**

**Explanation:**  
MASTER-JOBNAME is invalid when USE-MULTIJOB is specified in offload/restore control card.

**User response:**  
Remove the MASTER-JOBNAME parameter.

---

**ARYS775E**      **PROCESS-TOKEN is invalid when USE-MULTIJOB is specified.**

**Explanation:**  
PROCESS-TOKEN is invalid when USE-MULTIJOB is specified in offload/restore control card.

**User response:**  
Remove the PROCESS-TOKEN parameter.

---

**ARYS776E**      **MULTIJOB is invalid when USE-MULTIJOB is specified.**

**Explanation:**  
MULTIJOB is invalid when USE-MULTIJOB is specified in offload/restore control card.

**User response:**  
Remove the MULTIJOB parameter.

---

**ARYS777E**      **MASTER-JOBNAME is required for Multijob processing.**

**Explanation:**  
MASTER-JOBNAME is required for Multijob processing.

**User response:**  
Specify the MASTER-JOBNAME value in the offload/restore control card.

---

**ARYS778E**      **PROCESS-TOKEN is required for Multijob processing.**

**Explanation:**  
PROCESS-TOKEN is required for Multijob processing.

**User response:**  
Specify the PROCESS-TOKEN value in the offload/restore control card.

---

**ARYS779E**      **MULTIJOB is required for Multijob processing.**

**Explanation:**  
MULTIJOB is required for Multijob processing.

**User response:**  
Specify the MULTIJOB value in the offload/restore control card.

---

**ARYS780E**      **HSM Dump failed. Check DFSMSshm log for error messages.**

**Explanation:**  
HSM Dump failed.

**User response:**  
Check DFSMSshm log for error messages.

---

**ARYS781E**      **HSM FRDELETE failed. Check DFSMSshm log for error messages.**

**Explanation:**  
HSM FRDELETE failed.

**User response:**  
Check DFSMSshm log for error messages.

---

**ARYS782E**      **HSM FRDELETE failed. Check DFSMSshm log for error messages.**

**Explanation:**  
HSM FRDELETE failed.

**User response:**  
Check DFSMSshm log for error messages.

---

**ARYS783E**      **LAST-BACKUP not supported for object report.**

**Explanation:**  
LAST-BACKUP not supported for OREPORT card.

**User response:**  
Remove the LAST-BACKUP.

---

**ARYS784E**      **SSID-LIST has an invalid format.**

**Explanation:**

SSID-LIST has an invalid format for OREPORT card.

**User response:**

Use valid format: SSID-LIST ({\*}) {ssid[,ssid...]}).

---

**ARYS785E            SSID-LIST SSID name is greater than 4 characters.**

**Explanation:**

SSID-LIST SSID name exceeds 4 characters for OREPORT card.

**User response:**

Correct the SSID-LIST SSID name.

---

**ARYS786E            Rename not supported for this restore. Recovery must be from EMC storage or using FDR. Consider adding the USE-FDR or USE-FDR-INSTANT keywords.**

**Explanation:**

Rename not supported for this restore. Recovery must be from EMC storage or using FDR.

**User response:**

Consider adding the USE-FDR or USE-FDR-INSTANT keywords.

---

**ARYS787E            MVS 1.8 or higher is required to restore datasets from DASD during DFSMSdss.**

**Explanation:**

If you want to restore datasets from DASD using DFSMSdss, you must use MVS version 1.8 or higher.

**User response:**

None required.

---

**ARYS788E            SSID missing.**

**Explanation:**

The SSID value for the PROF-SSID is missing in backup control card.

**User response:**

Specify the SSID value.

---

**ARYS789E            CSLB-SSID value is missing.**

**Explanation:**

The CSLB-SSID value is missing for the ORESTORE card.

**User response:**

Specify the CSLB-SSID value.

---

**ARYS790E            NEW Highlevel missing**

**Explanation:**

NEW Highlevel is missing in RENAME-ALL for the ORESTORE card.

**User response:**

Specify the NEW value.

---

**ARYS791E            NEW Highlevel missing**

**Explanation:**

NEW Highlevel is missing in RENAME-SPACE for the ORESTORE card.

**User response:**

Specify the NEW value.

---

**ARYS792E            Invalid start mode. Must be RW, RO, UT, or FORCE.**

**Explanation:**

The correct start mode value is missing for the START-SPACE-MODE in the backup control card.

**User response:**

Specify the correct start mode value.

---

**ARYS793E            SMS SWAREQ failed.**

**Explanation:**

Initialization failed for SMS object restore.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS794E            HSM Restore failed. Check DFSMSshm log for error messages.**

**Explanation:**

HSM Restore failed.

**User response:**

Check DFSMSshm log for error messages.

---

**ARYS795E            At least one subsystem volume is in use by another process. Free allocation and restart job.**

**Explanation:**

At least one subsystem volume is in use by another process.

**User response:**

Free allocation and restart job.

---

**ARYS796E            All members of a datasharing system must be down before restore can proceed.**

**Explanation:**

Some datasharing members were running during Restore System Volume Validation.

**User response:**

Turn off all datasharing members.

---

**ARYS797E            Tablespace or Indexspace must be specified before COPY-DSN.**

**Explanation:**

Tablespace or Indexspace must be specified before COPY-DSN for OBJ-IREST card.



**User response:**  
Specify Tablespace or Indexspace before COPY-DSN.

---

**ARYS798E COPY-DSN dataset missing.**

**Explanation:**  
COPY-DSN dataset missing for OBJ-IREST card.

**User response:**  
Specify COPY-DSN.

---

**ARYS799E Cannot clip volume because ICKDSF was not loaded. Change parm LOAD\_ICKDSF in ARY#PARM to Y and run the offload.**

**Explanation:**  
Cannot clip volume because ICKDSF was not loaded.

**User response:**  
Change parm LOAD\_ICKDSF in ARY#PARM to Y and run the offload.

---

**ARYS800E Group PRESNAP failed. Please examine the previous SNAP messages for error diagnosis. A CLEAN-SNAP keyword may be needed on the next run.**

**Explanation:**  
Group PRESNAP failed. A CLEAN-SNAP keyword may be needed on the next run.

**User response:**  
Examine previous SNAP messages.

---

**ARYS801E Bad load of EMCSNAP.**

**Explanation:**  
The EMCSNAP has not been loaded.

**User response:**  
Check your installation.

---

**ARYS802E Bad call to EMCSNAP.**

**Explanation:**  
Calling to EMCSNAP failed.

**User response:**  
Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS803E Bad attach of EMCSNAP.**

**Explanation:**  
Attach of EMCSNAP failed.

**User response:**  
Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS804E Snap GROUP command failed.**

**Explanation:**

Snap GROUP command was not executed due to an internal error.

**User response:**  
Check EMCSNAP output messages.

---

**ARYS805E ddname dynalloc failed.**

**Explanation:**  
Dynamic allocation of *ddname* dataset failed.

**User response:**  
Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS806E EMCLIB concatenation failed.**

**Explanation:**  
EMCLIB concatenation failed.

**User response:**  
Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS807E EXCP action error.**

**Explanation:**  
Internal error while relabeling a VOLUME.

**User response:**  
Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS808E Error text varies depending on cause of error.**

**Explanation:**  
Internal error while relabeling a VOLUME.

**User response:**  
Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS809E Attach failed for ADRDSSU.**

**Explanation:**  
Internal error during offload or restore process related to attaching DFSMSdss module.

**User response:**  
Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS810E Open failed to read FDR SYSPRINT.**

**Explanation:**  
A reading of FDR output failed.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS811E      Open failed to write FDR  
                  SYSPRINT.**

**Explanation:**

A write into FDR output failed.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS812E      No offload file exists for this Site-  
                  Type.**

**Explanation:**

Allocating the volume backup for the restore failed because offload dataset name was not found.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS813E      Internal error. Inspected count.**

**Explanation:**

Internal error while invoking the EMC BCV QUERY by device command.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS814E      Wait limit exceeded.**

**Explanation:**

Internal error while invoking the EMC BCV QUERY by device command.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS815E      Invalid API function code.**

**Explanation:**

Internal error while processing API request.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS816E      Offload options are not set in this  
                  backup profile.**

**Explanation:**

Offload options were not found.

**User response:**

Specify offload options for profile.

---

**ARYS817E      Offload options not correctly set  
                  for backup profile.**

**Explanation:**

Offload options are not correctly specified for backup profile.

**User response:**

Specify valid offload options for profile.

---

**ARYS818E      The specified RBA/LRSN is less  
                  than that of the system backup.**

**Explanation:**

The specified RBA/LRSN is less than that of the system backup.

**User response:**

Specify an RBA/LRSN greater than the RBA/LRSN of the system backup.

---

**ARYS819E      Error fetching ZPARM info. Check  
                  control file.**

**Explanation:**

Error fetching ZPARM information about Db2 subsystem.

**User response:**

Check control file.

---

**ARYS820E      Error fetching from BSDS. Check  
                  DB2PARMS.**

**Explanation:**

Error fetching information about active and archive logs from BSDS.

**User response:**

Check DB2PARMS.

---

**ARYS821E      No datasets exist for this alias.**

**Explanation:**

User catalogs have not been found for this alias during Alias Rename process.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS822E      Unable to stop space.**

**Explanation:**

Unable to stop Db2 space during Alias Rename process.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS823E      Invalid UNIT specified.**

**Explanation:**

Invalid UNIT specified for the offload operation.

**User response:**  
Specify valid UNIT.

---

**ARYS824E** *error line will vary.*

**Explanation:**  
Internal error during Alias Rename process.

**User response:**  
Check for correct values in control cards.

---

**ARYS825E** *alias must be specified.*

**Explanation:**  
The *alias* value has not been specified in control cards.

**User response:**  
Specify the *alias* value.

---

**ARYS826E** **No ddname DD found.**

**Explanation:**  
Error while opening the *ddname*.

**User response:**  
Check the *ddname* DD in JCL.

---

**ARYS827E** **BSDS must not be allocated by any other task.**

**Explanation:**  
Allocation of BSDS is not complete after the previous attempt.

**User response:**  
Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS828E** **Error reading VTOC.**

**Explanation:**  
VTOC datasets have not been found.

**User response:**  
Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS829E** **ARY#CVAF: PIN UCB failed.**

**Explanation:**  
Internal error during VTOC dataset reading.

**User response:**  
Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS830E** **ARY#CVAF: CVAF close failed.**

**Explanation:**  
Internal error during VTOC dataset reading.

**User response:**  
Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS831E** **ARY#CVAF: UNPIN UCB failed.**

**Explanation:**  
Internal error during VTOC dataset reading.

**User response:**  
Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS832E** **HSM command**

**Explanation:**  
This message describes the DFSMSHsm command where the error has occurred.

**User response:**  
Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS833E** **The following migrated datasets were found, backup will terminate.**

**Explanation:**  
Migrated datasets found during backup.

**User response:**  
Change the RECALL\_MIGRATED\_DATA value in the ARY#PARM.

---

**ARYS834E** **Unexpected value found for RECALL\_MIGRATED\_DATA.**

**Explanation:**  
The RECALL\_MIGRATED\_DATA field contains invalid value.

**User response:**  
Enter a valid RECALL\_MIGRATED\_DATA value in the ARY#PARM.

---

**ARYS835E** **HSM recall failed. Check DFSMSHsm log for error messages.**

**Explanation:**  
HSM recall failed.

**User response:**  
Check DFSMSHsm log for error messages.

---

**ARYS836E** **The following datasets not yet recalled, please recall and resubmit the backup.**

**Explanation:**  
The following datasets not yet recalled.

**User response:**  
Recall and resubmit the backup.

---

**ARYS837E** **Bad get of volume record.**

**Explanation:**  
Failed to save offload info.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS838E Error fetching volume record.**

---

**Explanation:**

Failed to save offload info.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS839E Bad update of volume record.**

---

**Explanation:**

Failed to save offload info.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS840E It may have been created with the DEFINE NO parameter.**

---

**Explanation:**

A tablespace or other Db2 object may have been created with the DEFINE NO parameter.

**User response:**

None required.

---

**ARYS841E Another process has exclusive control of this backup. Please try again later.**

---

**Explanation:**

Another process has exclusive control of this backup.

**User response:**

Try again later.

---

**ARYS842E Volume record read failed.**

---

**Explanation:**

Internal error while checking volume updates.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS843E IDCAMS failed.**

---

**Explanation:**

IDCAMS ended with an error.

**User response:**

Check IDCAMS output.

---

**ARYS845E #SVOL called with a blank SSID.**

---

**Explanation:**

The SSID was not found from control card while trying to collect subsystem volume and dataset information.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS846E VTOC Open Error.**

---

**Explanation:**

Failed to open dataset from VTOC.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS847E DEVTYPE Macro Error.**

---

**Explanation:**

Failed to get device characteristics.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS848E TRKCALC MACRO ERROR.**

---

**Explanation:**

Failed to calculate number of VTOC records that fit on a track for this dev type.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS849E Getmain error.**

---

**Explanation:**

Failed to allocate memory for CCW.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS850E Getmain error.**

---

**Explanation:**

Failed to allocate memory for CCW buffer.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS851E VTOC UNAVAILABLE OR ENQ FAILURE.**

---

**Explanation:**

Internal error.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS852E      EXCP I/O FAILURE -ECB AND CSW  
ARE: error text**

---

**Explanation:**

Failed to initiate channel program. Actual *error text* will vary.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS853E      Dataset count too low for DB2  
system.**

---

**Explanation:**

DSNINFO DD contains a result of reading metadata information of Db2 subsystem datasets. Line count less than 25 indicates unsuccessful reading of metadata.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS854E      No backup data found.**

---

**Explanation**

After invoking the IBM System Level Backup utility, no backup data exists. Probable reasons:

- The Backup utility terminated.
- The Backup utility SYSPRINT allocation failed. The utility probably terminated.

**User response:**

Check the job log for other error or warning messages. If message ARYS472E is present, make sure that your JCL ARYBACK step does not contain the SYSPRINT DD statement. Check the DFSMSHsm log for error messages..

---

**ARYS855E      Message text varies depending on  
source of error.**

---

**Explanation:**

Internal error during SCMD processor run.

**User response:**

None required. Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS856E      Error saving object level restore  
information for SSID.**

---

**Explanation:**

Failed to save the object level restore information for specified Db2 subsystem.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS857E      Error saving object level restore  
information for SSID.**

---

**Explanation:**

Failed to save the object level restore information for specified IMS subsystem.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS858E      Check VSAM dataset mask.**

---

**Explanation:**

Internal error during reading VSAM datasets for object level image copy creating.

**User response:**

Check VSAM dataset mask. Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS859E      Error starting spaces in RO mode.**

---

**Explanation:**

Error occurred while Db2 space tried to start during object level image copy.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS860E      Error starting spaces in RO mode.**

---

**Explanation:**

Error occurred while Db2 space tried to start during object level image copy.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS861E      Error running QUIESCE utility.**

---

**Explanation:**

Error running QUIESCE utility creating object level image copy.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS862E      Error clearing copy pending status.**

---

**Explanation:**

Error clearing copy pending status while creating object level image copy.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS863E**      **Message text varies depending on source of error.**

**Explanation:**

Drain messages produced by IMS modules.

**User response:**

None required.

---

**ARYS864E**      **Message text varies depending on source of error.**

**Explanation:**

Drain messages produced by IMS modules.

**User response:**

None required.

---

**ARYS865E**      **Message text varies depending on source of error.**

**Explanation:**

Drain messages produced by IMS modules.

**User response:**

None required.

---

**ARYS866E**      **Repair failed.**

**Explanation:**

DSNUTILB ended with error.

**User response:**

Check DSNUTILB output.

---

**ARYS867E**      **Quiesce of catalog spaces failed.**

**Explanation:**

DSNUTILB ended with error.

**User response:**

Check DSNUTILB output.

---

**ARYS868E**      **Utility execution failed.**

**Explanation:**

DSNUTILB ended with error.

**User response:**

Check DSNUTILB output.

---

**ARYS869E**      **number error text**

**Explanation:**

SQL query has ended with the error *error text* - contains the error message. *number* is required for debug purposes.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS870E**      **module name error text**

**Explanation:**

Error in the *module name* module, where *error text* - is the result of IFI command.

**User response:**

Contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS871I**      **Copypool FASTREPLICATIONSTATE status is RECOVERABLE.**

**Explanation:**

The backup process was completed successfully. The backup is recoverable.

**User response:**

None required.

---

**ARYS872E**      **Copypool FASTREPLICATIONSTATE status is Non-recoverable.**

**Explanation:**

Copypool FASTREPLICATIONSTATE status is **FAILED**. It indicates that the DASD version is non-recoverable due to a failure during the FRBACKUP or that WITHDRAW was done before all volumes in the copy pool were successfully copied.

**User response:**

Check the job log for other error or warning messages. Re-run the backup.

---

**ARYS873I**      **Copypool DUMPSTATE status is ALLCOMPLETE.**

**Explanation:**

The offload process was completed successfully. All volumes have been successfully dumped.

**User response:**

None required.

---

**ARYS874I**      **The backup was not completely dumped to tape.**

**Explanation:**

The offload process is still in progress.

**User response:**

None required.

---

**ARYS875W**      **Copypool DUMPSTATE status is NONE.**

**Explanation:**

No dumps are associated with the copypool. The most likely reasons are HSM or tape systems failure.

**User response:**

Check the job log for other error or warning messages. Make sure all problems with HSM and tape systems are fixed. Re-run the offload.

---

**ARYS876W Additional monitoring is available only for Db2 backups.****Explanation:**

The additional monitoring of the backup or offload process is not provided for profiles other than those using the Db2 backup method.

**User response:**

None required.

---

**ARYS877W END-INCREMENTAL will be performed for the next backup. The current generation is not in incremental status.****Explanation:**

The profile is in incremental status, but the current backup generation is non-incremental. Since an incremental process can be ended only with an incremental generation, the end incremental is postponed and will be performed for the nearest incremental backup generation. The profile stays in incremental status until the postponed end incremental process will be performed.

**User response:**

None.

---

**ARYS878W BYPASS-OFFLOAD is omitted but generation *n* has not been offloaded.****Explanation:**

The BYPASS-OFFLOAD (NO-OFFLOAD) control card was not specified but there was no offload copy for the generation *n* found. The PRESNAP phase was skipped for a SNAP backup and the ESTABLISH and REESTABLISH requests were skipped for a BCV backup while post-backup processing.

**User response:**

Specify omitted control card if required.

---

**ARYS879I Checking *v\_version\_* object: *table*, column *column*****Explanation:**

The Installation Verification Program (IVP) has found the required *column* in the *table.version* shows current SSID working level.

**User response:**

None required.

---

**ARYS880E The column was not found: *table* *column*****Explanation:**

The Installation Verification Program (IVP) has detected that the required *column* in the *table* was not found. Required objects are part of the Schema Level Repository (SLR).

**User response:**

Verify that the installation job used to create the Schema Level Repository completed successfully. TCz jobname ssDDL1dd, template ARYDDL1.

---

**ARYS881W Restore from this offload will need RESTORE-TO-VOLSERS control card.****Explanation:**

The offload job was run with the OFFLOAD-TO-VOLSERS control card. The Target units were re-defined for the Target Volumes.

**User response:**

If you run the restore process from this offload, add the RESTORE-TO-VOLSERS control card to the restore job step.

---

**ARYS883W Open failed for HSMOUT. HSM Output is redirected into ARYOUT.****Explanation:**

The OPEN failed for the HSMOUT DDNAME. Instead of the HSMOUT DD, HSM messages will be written out into the ARYOUT DD.

**User response:**

Verify that the DD statement for HSMOUT is defined and valid in the JCL step. Check the job log for system messages (for example, IEC130I) indicating a problem with the DD statement.

---

**ARYS884I Faster single-level alias processing will be performed for this backup.****Explanation:**

The ALIAS\_PROCESS\_METHOD parmlib parameter is set to F and only data sets using single-level aliases found on the Subsystem. Faster alias processing algorithm will be performed.

**User response:**

None required.

---

**ARYS885I Processing <level> aliases...****Explanation:**

Indicates that multi-level or single-level alias processing is being used. This message appears in debug mode only.

**User response:**

None required.

---

**ARYS886W Only single-level aliases found. Next backup will be performed with a faster single-level alias processing.****Explanation:**

The ALIAS\_PROCESS\_METHOD PARMLIB parameter is set to F. The Subsystem Analysis has not been performed. Only data sets using single-level aliases

were found on the Subsystem. Faster alias processing algorithm will be performed for the next and all subsequent backups.

**User response:**

If you do not want to use the faster alias processing, set ALIAS\_PROCESS\_METHOD to S. If you are unsure whether there are multi-level aliases in the subsystem, run Subsystem Analysis.

---

**ARYS887E Unexpected Type <Type>. Object: <Object>.**

**Explanation:**

Expected Tablespace (TS, LS, XS) or Indexspace (IX) objects. Object type <Type> is unexpected.

**User response:**

Contact IBM Customer Support.

---

**ARYS888I DEBUG: Processing Object <Object>. Type: <Type>.**

**Explanation:**

Tablespace or Indexspace in copy pending status is processing.

**User response:**

No action is required.

---

**ARYS889E Multiple incremental is not supported by this backup method.**

**Explanation:**

The profile's Backup Method is not set to D (Db2). Multiple incremental backup is only supported for the Db2 backup method.

**User response:**

Remove the multi-incremental control card from the JCL and run the job again.

---

**ARYS890W START-MULTI-INCREMENTAL control card ignored. This profile is in Multiple incremental status already.**

**Explanation:**

Since this profile is in Multiple incremental status already, it is not necessary to use the START-MULTI-INCREMENTAL control card to further proceed the multiple incremental process. The control card is ignored. The backup is incremental.

**User response:**

None required.

---

**ARYS891E This profile is in Multiple incremental status.**

**Explanation:**

Because this profile is in multiple incremental status, the incremental process cannot be ended by the END-INCREMENTAL control card.

**User response:**

To end multiple incremental process, use END-MULTI-INCREMENTAL control card instead of END-INCREMENTAL.

---

**ARYS892I Performing Multiple incremental flash copy...**

**Explanation:**

This informational message appears in DEBUG mode only. It indicates that the multiple incremental process is running.

**User response:**

None required.

---

**ARYS893I Ending Multiple incremental flash copy process...**

**Explanation:**

This informational message appears in DEBUG mode only. It indicates that the multiple incremental process is ending.

**User response:**

None required.

---

**ARYS894W START-INCREMENTAL control card ignored. This profile is ending Multiple incremental process.**

**Explanation:**

The multiple incremental process is ending now. To avoid unstable operation, it is recommended not to mix simple incremental with multiple incremental processing. A simple incremental process should not be started at this point. Only a multiple incremental process can be started for this generation.

**User response:**

Remove the START-INCREMENTAL control card and proceed with non-incremental backup. If incremental backup is preferred, start a new multiple incremental process with the START-MULTI-INCREMENTAL control card.

---

**ARYS895E Subsystem <SSID> is not eligible for performing Multiple incremental flash copy.**

**Explanation:**

Incremental FlashCopy Version 2 is not supported for the subsystem <SSID>.

**User response:**

Configure the subsystem for performing multiple incremental FlashCopy or choose another subsystem.

---

**ARYS896E This profile is not in Multiple incremental status.**

**Explanation:**

The END-MULTI-INCREMENTAL control card was used to end multiple incremental process. This profile is in simple incremental status, not multiple incremental status.



**User response:**

To end the incremental process, run a backup job with the END-INCREMENTAL control card.

---

**ARYS897W**      **Profile Multi-incremental status will be reset to match HSM COPYPOOL. Or: Profile Incremental status will be reset to match HSM COPYPOOL**

**Explanation:**

When the profile is in simple or multiple incremental status, but all copy pool generations are Incremental=N, the profile status will be reset to match the copy pool.

**User response:**

None required.

---

**ARYS898I**      **Profile Multiple incremental status will be set to match HSM COPYPOOL.**

**Explanation:**

When the profile Multiple Incremental status is N, but all copy pool generations are Incremental=Y, the profile status will be set to Y to match the copy pool.

**User response:**

None required.

---

**ARYS899E**      **Cannot access SLIB member SKELETON\_NAME.**

**Explanation:**

SKELETON\_NAME member is missing in the Skeleton Library.

**User response:**

Check to see if SKELETON\_NAME exists in the Skeleton Library.

---

**ARYS900W**      **Build JCL member MEMBER\_NAME incomplete.**

**Explanation:**

The object recovery JCL was not fully written to the specified member. Not all skeletons were included.

**User response:**

To determine which skeletons were not included in the member, check the log for ARYS899E messages.

---

**ARYS901E**      **Unwanted DD:dd\_name found in step\_name.**

**Explanation:**

Db2 Recovery Expert independently allocates some DDs such as SYSPRINT, SYSIN, and UTPRINT. Explicitly adding those DDs leads to errors.

**User response:**

Remove DD:dd\_name from JCL step\_name.

---

**ARYS902W**      **END-INCREMENTAL was issued for the previous backup generation.**

**Explanation:**

The END-INCREMENTAL keyword was added to the previous backup job. But that backup generation was non-incremental. The current backup generation is incremental. An incremental process will be ended for this backup.

**User response:**

None.

---

**ARYS903W**      **Unexpected error occurred: SMS EXTENSION service invocation failed.**

**Explanation:**

Unexpected error occurred: SMS EXTENSION service invocation failed.

**User response:**

Try later. If the error repeats, contact IBM Customer Support. Provide the text of this message, along with the preceding or following messages.

---

**ARYS904W**      **Cannot obtain Storage group for qualifier WRKHLQ.**

**Explanation:**

Storage group associated with qualifier WRKHLQ cannot be obtained.

**User response:**

Make sure that WRKHLQ is associated with any storage group.

---

**ARYS905I**      **Storage group WRKSTGR obtained for qualifier WRKHLQ.**

**Explanation:**

Storage group WRKSTGR associated with qualifier WRKHLQ will be used as a source of Work Volumes.

**User response:**

None required.

---

**ARYS906W**      **Skipping invalid or not online work volume WRKVOL.**

**Explanation:**

WRKVOL volume is invalid or offline. It will not be included into the list of Work Volumes.

**User response:**

WRKVOL volume is invalid or offline. It will not be included into the list of Work Volumes.

---

**ARYS907I**      **The final list of work volumes:**

**Explanation:**

The final list of work volumes. Messages ARYS907I and ARYS908I are used only together in debug mode. ARYS907I is a header for resulted Work Volumes list.

Every occurrence of ARYS908I message corresponds to one Work Volume with volser WRKVOL in the final list of work volumes. The list is sorted by FREETRACS in descending order.

**User response:**

None required.

---

**ARYS908I            Volume WRKVOL, free tracks  
FREETRACS**

**Explanation:**

Messages ARYS907I and ARYS908I are used only together in debug mode. ARYS907I is a header for resulted Work Volumes list. Every occurrence of ARYS908I message corresponds to one Work Volume with volser WRKVOL in the final list of work volumes. The list is sorted by FREETRACS in descending order.

**User response:**

None required.

---

**ARYS909E            No suitable Work Volumes found.**

**Explanation:**

All the Work Volumes collected from all specified sources appear to be invalid or offline.

**User response:**

Look for ARYS906W messages in the job log. Check the volumes.

---

**ARYS910E            The ZPARM member could not be  
read.**

**Explanation**

One of the following situations has occurred:

- Error reading from control file
- Invalid control file content
- An internal error

**User response**

Make sure all data sharing members are defined in "Setup" section. See joblog output for additional messages (ARYS020I). Fix the problem described in the message. Contact IBM Software Support.

**Note:** This message may have one of the following text strings, instead of the text given above, depending on the cause of the error:

- Combined with a return code from the @ACCESS macro error
- ZPARM member was not found in the specified DB2 loadlibs
- The first DB2 loadlib in the subsystem concatenation in blank
- One of the DB2 loadlibs in the subsystem concatenation could not be allocated

- The DB2 loadlibs in the subsystem concatenation list could not be concatenated
- The DB2 loadlib concatenation could not be opened
- The FIND function could not find the ZPARM member name in the DB2 loadlib concatenation
- The Db2 loadlib in the concatenation list is not APF-authorized
- At least one of the token names was not found in the token list inside FEC\$ACES
- The control file could not be opened
- Catalog Search Interface has returned no entries
- Catalog Search Interface has returned an entry with error
- Unknown error ZPARSM RC=0000000XX

---

**ARYS911E            The same dump class *DUMP\_CLASS*  
is specified for *COPY\_TYPE\_1* and  
*COPY\_TYPE\_2* backup copy types  
where *COPY\_TYPE\_1* is LP/LB/RP,  
*COPY\_TYPE\_2* is LB/RP/RB**

**Explanation:**

The same Dump class *DUMP\_CLASS* is specified for *COPY\_TYPE\_1* and *COPY\_TYPE\_2* backup copy types. With HSM offload only one tape copy can be created for each DFSMSHsm dump class.

**User response:**

To process offload for different backup copy types, specify a unique dump class for each copy.

---

**ARYS913I            SSID <ssid> Invoking Backup  
System utility**

**Explanation:**

This message is displayed when the system backup is started.

**User response:**

None.

---

**ARYS914I            SSID <ssid> Backup System  
complete: <backup token>**

**Explanation:**

This message is displayed when the system backup is successfully completed.

**User response:**

None.

---

**ARYS915I            MAX-TASKS will be forcibly set to  
1 due to restoring from the same  
tape is not allowed.**

**Explanation:**

If you have recovered the files from the same tape, the number of concurrently running restore tasks is reduced to 1.

**User response:**

No action is required.

---

**ARYS916W**      **PRESMIR(PREF) - deprecated in z/OS 2.4+**

**Explanation:**

FCTOPPRCP is set to P in ARY#PARM. The version of z/OS is 2.4 or higher and does not support the PRESMIR(PREF) keyword.

**User response:**

Change the FCTOPPRCP setting value.

---

**ARYS917E**      **Port1 and Port2 have different values. Value value1 is not equal to value value2.**

**Explanation:**

The value of the *Port1* and *Port2* must be same.

**User response:**

Update the values.

---

**ARYS918E**      **First/Second port of ssl secured(ssl secured port value)is not valid. Possible value is web port(web port value)or server agent port(server agent port value)**

**Explanation:**

Ssl secured can contain up to two values. The supported values are either the web port or the server's agent port.

**User response:**

Update the values.

---

**ARYS920E**      **Port1 can not be equal to Port2.**

**Explanation:**

The specified ports should not have the same values.

**User response:**

Update the values.

---

**ARYS923I**      **The number of tracks that will be copied in this backup: number\_of\_tracks.**

**Explanation:**

This message shows the total number of tracks that will be copied inside an array from the source volume to the target volume. This message is displayed before copying all the backups except BCV.

**User response:**

None.

---

**ARYS9920E**      **Device nnnn (volser) is inaccessible.**

**Explanation:**

An internal error occurred. The device listed in the message is not accessible.

**User response:**

Contact IBM Customer Support.

---

**ARYS9918E**      **At least one USERCAT statement is REQUIRED.**

**Explanation:**

An internal error occurred. At least one USERCAT statement is required.

**User response:**

Contact IBM Customer Support.

---

**ARYS9920E**      **Device nnnn (volser) is inaccessible.**

**Explanation:**

An internal error occurred. The device listed in the message is not accessible.

**User response:**

Contact IBM Customer Support.

---

**ARYS9926E**      **USERCAT BCS Component contains Structural Errors.**

**Explanation:**

An internal error occurred. The user catalog BCS component contains structural errors.

**User response:**

Contact IBM Customer Support.

---

**ARYS9934E**      **Volume Metadata Errors on VOL(volser) UNIT(ucb).**

**Explanation:**

An internal error occurred. The volume and unit listed in the message encountered errors.

**User response:**

Contact IBM Customer Support.

---

**ARYT001E**      **The specified user ID userid is not defined or does not have an OMVS segment defined.**

**Explanation:**

You specified a user ID that is not defined or does not have an OMVS segment defined.

**User response:**

Db2 Recovery Expert was unable to authenticate the specified user. Either specify a valid user ID, or if the user ID is valid, see your security administrator to have an OMVS segment defined for the user ID.

---

**ARYT002I**      **Cancelled request with ID id and type type.**

**Explanation**

Db2 Recovery Expert

cancelled the request identified in the message.

**User response:**

No action is required.

---

**ARYT003E**      **Unable to cancel request with ID *id* and type *type*.****Explanation:**

Db2 Recovery Expert was unable to cancel the request identified in the message.

**User response**

If you are trying to cancel a request that submitted an MVS job, the job name or ID was not known, and the job could not be cancelled. Review the message log to determine the name and ID of the job that was submitted, and use native JES facilities to review the job's status and cancel it.

If you are trying to cancel a different type of request, contact IBM Software Support.

---

**ARYT004E**      **A cancel request was received for a non-existent request (ID *id*).****Explanation:**

You attempted to cancel a non-existent request.

**User response:**

Contact IBM Software Support.

---

**ARYT005I**      **Cancelling request with ID *id* and type *type*.****Explanation:**

Db2 Recovery Expert is cancelling the request identified in the message.

**User response:**

No action is required.

---

**ARYT006S**      **The product is not properly configured to authenticate users.****Explanation:**

Db2 Recovery Expert is not properly configured to authenticate users.

**User response:**

An error occurred while authenticating a remote user request. The error code indicates that the installation configuration required to allow this authentication has not been completed. For more information about how to complete the required configuration, see "Maintaining the Db2 Recovery Expert agent" on page 175.

---

**ARYT007I**      **Completed processing request with ID *id* and type *type*.****Explanation:**

Db2 Recovery Expert completed processing the request identified in the message.

**User response:**

No action is required.

---

**ARYT008E**      **The configuration file *filename* is invalid; the root element *element* is not *<agent-config>*.****Explanation:**

The configuration file identified in the message is invalid.

**User response:**

The contents of the specified configuration file are invalid. Correct the file contents to specify *<agent-config>* as the root XML element.

---

**ARYT009I**      **No server address was configured; listening for server advertisements.****Explanation:**

No specific server address was configured, so the Db2 Recovery Expert client is listening for server advertisements.

**User response:**

No action is required.

---

**ARYT010E**      **An error occurred while opening the configuration file *filename* *message text*.****Explanation:**

An error occurred while opening the configuration file identified in the message. Additional error information is also contained within the message.

**User response:**

Use the specified message text to diagnose the error that occurred. Specify a valid configuration file which is not in use by any other process.

---

**ARYT011E**      **The maximum number of connection attempts has been reached.****Explanation:**

Db2 Recovery Expert has repeatedly attempted to connect to the server and the maximum number of connection attempts has been reached.

**User response:**

The agent is not able to connect to the server specified in the configuration file. Review the configuration file to ensure that the correct server host name (or IP address) is specified by the *<server-address>* configuration parameter. Ensure that the server has been started and is properly running. Ensure that the *<server-port>* value in the agent configuration file matches the *<agent-listener-port>* value in the server configuration file.

---

**ARYT012I**      **Performing discovery of available locations.****Explanation:**

The Db2 Recovery Expert agent is looking for available locations.

**User response:**  
No action is required.

---

**ARYT013I**      **Db2 Recovery Expert agent is terminating.**

**Explanation:**  
The Db2 Recovery Expert agent is terminating.

**User response:**  
No action is required.

---

**ARYT014I**      **Connected to server *hostname* on port *port number*.**

**Explanation:**  
The Db2 Recovery Expert agent has connected to the identified server and port number.

**User response:**  
No action is required.

---

**ARYT015I**      **Attempting connection to server *hostname* on port *port number*.**

**Explanation:**  
The Db2 Recovery Expert agent is attempting to connect to the identified server and port number.

**User response:**  
No action is required.

---

**ARYT016I**      **Discovered data sharing group *group name*.**

**Explanation:**  
The Db2 Recovery Expert agent has discovered the identified data sharing group.

**User response:**  
No action is required.

---

**ARYT017I**      **Discovered subsystem *subsystem-id*.**

**Explanation:**  
The Db2 Recovery Expert agent has discovered the identified subsystem.

**User response:**  
No action is required.

---

**ARYT018I**      **The agent is ready to process requests.**

**Explanation:**  
The agent is ready to process requests.

**User response:**  
No action is required.

---

**ARYT019I**      **Db2 Recovery Expert agent started.**

**Explanation:**

Db2 Recovery Expert agent started.

**User response:**  
No action is required.

---

**ARYT020I**      **Starting the socket selector thread (*thread thread id*)**

**Explanation:**  
The Db2 Recovery Expert agent is starting the identified socket selector thread.

**User response:**  
No action is required.

---

**ARYT021I**      **Processing request with ID *id* and type *type*.**

**Explanation:**  
The Db2 Recovery Expert agent is processing a request with the identified ID and type.

**User response:**  
No action is required.

---

**ARYT022I**      **Reading request with ID *id* and type *type*.**

**Explanation:**  
The Db2 Recovery Expert agent is reading a request with the identified ID and type.

**User response:**  
No action is required.

---

**ARYT023I**      **Received shutdown request.**

**Explanation:**  
The Db2 Recovery Expert agent has received a shutdown request.

**User response:**  
No action is required.

---

**ARYT024I**      **Request thread timed out waiting for work.**

**Explanation:**  
The Db2 Recovery Expert agent request thread has timed out waiting for work.

**User response:**  
No action is required.

---

**ARYT025I**      **The socket selector thread is terminating.**

**Explanation:**  
The Db2 Recovery Expert agent socket selector thread is terminating.

**User response:**  
No action is required.

---

**ARYT026E**      **Location *location name* is not known to the agent.**

**Explanation:**

The location name specified on a received request does not match any Db2 subsystem ID or data sharing group attachment name known to the agent.

**User response:**

Ensure that a valid location is specified in the client. If a valid location is specified, ensure that the Db2 subsystem is operational.

---

**ARYT027S**      **An invalid request type \"request-id\" was received.**

**Explanation:**

The Db2 Recovery Expert agent received an invalid request type.

**User response:**

Contact IBM Software Support.

---

**ARYT028E**      **An error occurred while authenticating user *user-id*.**

**Explanation:**

An unexpected return code was returned by the pthread\_security\_np() callable service.

**User response:**

Ensure that the configuration required to use this service has been completed. See Db2 Recovery Expert User Guide for more information on the required agent configuration. Check the agent job log for additional messages which may be generated.

---

**ARYT029I**      **Location *SSID* has not been configured for use with Db2 Recovery Expert.**

**Explanation:**

The Db2 control file for Db2 subsystem *SSID* is not configured properly; specifically, the product plans are not set.

**User response**

Update the plans with one of the following procedures. In Recovery Expert ISPF:

1. Select **0 - Administration**
2. Select **2 - Register Db2 Subsystems**
3. Select **Specify Db2 Subsystem ID**
4. Select **2 - Db2 Plans**
5. Change the selected plan, then press **ENTER**. An ARYR706I message should appear, indicating that the control file record for the subsystem has been updated.
6. Restart the agent with the updated configuration.

In Tools Customizer (TCz):

1. Verify the plans on the associated Db2 entry.
2. Run the ARYCF1UP template in TCz to update the control file.

3. Restart the agent with the updated configuration.

---

**ARYT031I**      **Starting the command listener thread (thread *thread-id*).**

**Explanation:**

The Db2 Recovery Expert agent is starting the command listener thread.

**User response:**

No action is required.

---

**ARYT032I**      **Received \"stop\" command: *command-text*.**

**Explanation:**

The Db2 Recovery Expert agent received a STOP command.

**User response:**

No action is required.

---

**ARYT033I**      **Received \"modify\" command: *command-text*.**

**Explanation:**

The Db2 Recovery Expert agent received a MODIFY command.

**User response:**

No action is required.

---

**ARYT034S**      **Db2 Recovery Expert agent is terminating due to hard stop request.**

**Explanation:**

Db2 Recovery Expert agent is terminating due to a user /MODIFY FORCE command.

**User response:**

No action is required.

---

**ARYT035E**      **An error occurred while opening *file-name: message-text***

**Explanation:**

An error occurred while opening the specified file and there is also error information in the message.

**User response:**

Use the specified message text to diagnose why the specified file could not be opened.

---

**ARYT036E**      **An error occurred while writing *file-name: message-text***

**Explanation:**

An error occurred while writing to the specified file and there is also error information in the message.

**User response:**

Use the specified message text to diagnose why the specified file could not be written.

---

**ARYT037I**      **Associating with advertised server *server name* (description \ "*description* \")**

**Explanation:**

Db2 Recovery Expert is associating with the identified server.

**User response:**

No action is required.

---

**ARYT038W**      **An XML error occurred while parsing a server advertisement.**

**Explanation:**

An XML error occurred while parsing a server advertisement.

**User response:**

Contact IBM Software Support.

---

**ARYT039W**      **The request was cancelled.**

**Explanation:**

The request was cancelled due to a user or administrator request.

**User response:**

No action is required.

---

**ARYT040E**      **An I/O abend *Sabend-code-reason-code* occurred on *filename*.**

**Explanation:**

An abend occurred while trying to write to the identified file.

**User response:**

Review the abend and reason codes to determine the error that occurred while writing the file.

---

**ARYT041I**      **Authenticating user *user-id*.**

**Explanation:**

Db2 Recovery Expert is authenticating the identified user.

**User response:**

No action is required.

---

**ARYT042E**      **The specified job has invalid job cards.**

**Explanation:**

The specified job has invalid job cards.

**User response:**

Specify valid job cards in the job. The job cards must not exceed 72 characters in length, and must include a job name on the JOB statement.

---

**ARYT043E**      **The specified SYSOUT data set (*job / step / proc-step / dd*) was not found.**

**Explanation:**

The specified SYSOUT data set was not found. Only output data sets with a "held" output class can be accessed by the agent.

**User response:**

Use native JES facilities to determine whether or not the specified data set is available, and its status. Check the agent job log and the system log for additional messages which may have been generated.

---

**ARYT044E**      **The connection to the server has been lost.**

**Explanation:**

The agent has detected that the network connection to the server has been terminated. This could be due to shutdown of the server by the administrator, a problem in the server, or a network problem. All work that the agent was performing at the time of the lost connection was cancelled.

**User response:**

If the server shutdown was unexpected, see the server job output to diagnose why the job ended. The agent will attempt to reconnect to the server, up to the limit specified by the <server connect retry max> configuration parameter.

---

**ARYT045I**      **Location *SSID* has not been configured properly for use with IBM DB2 Recovery Expert.**

**Explanation:**

*SSID* is found in the control file but it is not configured correctly.

**User response:**

Specify values for all the required fields in Tools Customizer for the current *SSID*, and generate job to update the control file (ARYCF1UP template) and then run it.

---

**ARYT046E**      **Cannot overwrite data set *dataset-name* because of mismatched data set organization.**

**Explanation:**

Cannot overwrite the data set *dataset-name* because of a mismatched data set organization.

**User response**

There are several ways to address this error message:

- Overwrite the data set using the same organization as an existing data set.
- Use a different name for the data set that has not been used previously.
- Delete the existing mismatched data set through the ISPF interface and then use that name with any organization you want.

---

**ARYT047E**      **The name of data set is not valid:  
*dataset-name***

**Explanation:**

Provided *dataset-name* has incorrect format.

**User response:**

Check input for compliance with the z/OS data set naming convention.

---

**ARYT048E**      **The name of the member is not  
valid: *membername***

**Explanation:**

Unable to write to the specified member because the name of the member is not valid.

**User response:**

Specify a valid member name and retry.

---

**ARYT049E**      **This product is not properly  
configured to authenticate using  
passtickets.**

**Explanation:**

User interface is attempting to use passticket strategy for authentication but the product was not configured properly.

**User response:**

Contact your product administrator.

---

**ARYT050E**      **A MVS internal error or  
environmental occurred while  
attempting to access resource  
*resourcenamerc/rsn*.**

**Explanation:**

Specified error occurs while attempting to use passticket strategy for authentication. Additional diagnostic information is provided by the *rc/rsn* code explanation.

**User response:**

Contact your product administrator.

---

**ARYT051E**      **Unexpected error occurred in  
the security product while  
attempting to access resource  
*resourcenamerc/rsn*.**

**Explanation:**

The specified error occurs while attempting to use passticket strategy for authentication. Additional diagnostic information is provided by the *rc/rsn* code explanation.

**User response:**

Contact your product administrator.

---

**ARYT052E**      **System is unable to verify access  
to the resource *resourcenamerc/  
rsn*.**

**Explanation:**

The specified error occurs while attempting to use passticket strategy for authentication. Additional diagnostic information is provided by the *rc/rsn* code explanation.

**User response:**

Contact your product administrator.

---

**ARYT053E**      **This product is not configured  
properly to access the resource  
*PTKTDATA.passticket-app-id*.**

**Explanation:**

The Db2 Recovery Expert agent issued this message because it is unable to access the named resource. The resource name *passticket-app-id* is controlled by *passticket-app-id* in the agent configuration file.

**User response:**

Verify that you have set up passticket verification correctly. For more information on setting up passtickets see the section *Authenticating the current ISPF user* in the *Db2 Recovery Expert for z/OS User Guide*.

---

**ARYT054E**      **No interfaces are enabled for  
multicasting.**

**Explanation:**

Agent was not able to join any multicast group in order to listen for server announcements.

**User response:**

Check if multicast configuration was set up properly. If you did not edit the configuration file, contact your product administrator.

---

**ARYT055E**      **No interfaces are enabled for  
multicasting.**

**Explanation:**

Agent was not able to join any multicast group in order to listen for server announcements.

**User response:**

Check if multicast configuration was set up properly. If you did not edit the configuration file, contact your product administrator.

---

**ARYT055I**      **Attempting to enumerate network  
interfaces.**

**Explanation:**

Agent is attempting to enumerate network interfaces to listen for server announcements.

**User response:**

No action is required.

---

**ARYT056I**      **Discovered interface  
<*stack:name*> with IP address  
*ipaddressindex*.**

**Explanation:**



Agent discovered specified network interface which will be used to listen for server announcements.

**User response:**

No action is required.

---

**ARYT057I**      **Multicast group *multicastaddress* was joined successfully.**

**Explanation:**

Agent joined successfully to the specified multicast group to listen for server announcements.

**User response:**

No action is required.

---

**ARYT058I**      **Attempting to join multicast group *multicast-address* at default interface.**

**Explanation:**

Agent is attempting to join the multicast group at the default network interface since enumerating network interfaces is disabled.

**User response:**

No action is required.

---

**ARYT059I**      **Attempting to join multicast group *multicast-address* at default interface.**

**Explanation:**

Agent is attempting to join the multicast group at the default network interface since enumerating network interfaces is disabled.

**User response:**

No action is required.

---

**ARYT060I**      **No access for 'db2-loadlib-data-set' loadlibs.**

**Explanation:**

The user ID under which the agent is run does not have authority to the specified loadlib.

**User response:**

Give the user ID read access to the loadlib, or run under another user ID with access.

---

**ARYT061E**      **User *USERID* has no access to *SSID* subsystem.**

**Explanation:**

This message accompanies the **ICH408I** and **IEC150I 913-38** messages that were displayed for RACF-protected data sets to which *USERID* doesn't have access. Data sets are required to access the specified *SSID*. Use the **ICH408I** and **IEC150I** messages to determine the failed data set name. For more information, see *z/OS Security Server RACF Messages and Codes SA23-2291-xx* and *z/OS MVS System Messages, Vol 7 (IEB-IEE) SA38-0674-xx* manuals.

**User response:**

Follow the security procedures for your installation. If no such procedures are established, report the complete text of these messages to the RACF security administrator. If there are no **ICH408I** and **IEC150I** messages, contact IBM Software Support.

---

**ARYT062E**      **LRSN delta couldn't be fetched for location *SSID*.**

**Explanation:**

Db2 control file for Db2 subsystem *SSID* is not configured properly; specifically, the bootstrap data set is not set.

**User response**

Update the BSDS with one of the following procedures. In Recovery Expert ISPF:

1. Select **0 - Administration**
2. Select **2 - Register Db2 Subsystems**
3. Select **Specify Db2 Subsystem ID**
4. Select **1 - ZPARM, BSDS, and Load Library information**
5. Change the Db2 Bootstrap DSN and press **ENTER**. An **ARYR706I** message should appear, indicating that the control file record for the subsystem has been updated.
6. Restart the agent with the updated configuration.

In Tools Customizer (TCz):

1. Verify the plans on the associated Db2 entry.
2. Run the **ARYCF1UP** template in TCz to update the control file.
3. Restart the agent with the updated configuration.

---

**ARYT1029E**      **An error occurred while exporting the *JCL*.**

**Explanation:**

An error occurred while exporting the *JCL*. Db2 Recovery Expert cannot overwrite the data set [*data set name*] because of a mismatched data set organization.

**User response**

There are several ways to address this error message:

- Overwrite the data set using the same organization as an existing data set.
- Use a different name for the data set that has not been used previously.
- Delete the existing mismatched data set through the ISPF interface and then use that name with any organization you want.

---

**ARYU001E**      **The specification context references an unrecognized request type type.**

**Explanation:**  
The specification context references an unrecognized request type that is identified in the message.

**User response:**  
Contact IBM Software Support.

---

**ARYU002EE**      **An error occurred while accessing the saved user preferences.**

**Explanation:**  
An error occurred while accessing the saved user preferences.

**User response:**  
This message provides context for an error reported by a subsequent message.

---

**ARYU003II**      **Received multicast**

**Explanation:**  
Received multicast.

**User response:**  
No action is required.

---

**ARYU004E**      **An I/O error occurred while receiving a server multicast message.**

**Explanation:**  
An I/O error occurred while receiving a server multicast message.

**User response:**  
This message provides context for an error reported by a subsequent message.

---

**ARYU005E**      **An error occurred while listening for server multicast messages.**

**Explanation:**  
In order for agents and clients to discover this server, they must be configured with the same multicast-address value.

**User response:**  
Check the multicast-address value and make sure that it is configured properly. Valid values are IP addresses in dotted-decimal notation, in the range from 224.0.1.0 to 238.255.255.255, inclusive.

---

**ARYU006E**      **A malformed server multicast message was received.**

**Explanation:**  
An incorrect server multicast message was received.

**User response:**  
Contact IBM Software Support.

---

**ARYU007I**      **Read network data**

**Explanation:**  
Read network data.

**User response:**  
No action is required.

---

**ARYU008E**      **An I/O error occurred while processing data received from the server.**

**Explanation:**  
An I/O error occurred while processing data received from the server.

**User response:**  
This message provides context for an error reported by a subsequent message.

---

**ARYU009E**      **An unexpected network read error occurred; the connection is in an unrecognized state.**

**Explanation:**  
An unexpected network read error occurred; the connection is in an unrecognized state.

**User response:**  
Contact IBM Software Support.

---

**ARYU010I**      **Disconnecting from the server.**

**Explanation:**  
The Db2 Recovery Expert agent is disconnecting from the server.

**User response:**  
No action is required.

---

**ARYU011W**      **Disconnecting from the server due to an unexpected error.**

**Explanation:**  
The connection to the server has been lost.

**User response:**  
Check the server and the client network connections.

---

**ARYU012E**      **An I/O error occurred while disconnecting from the server.**

**Explanation:**  
An I/O error occurred while disconnecting from the server.

**User response:**  
This message provides context for an error reported by a subsequent message.

---

**ARYU013E**      **An I/O error occurred while reading data from the server.**

**Explanation:**  
An I/O error occurred while reading data from the server.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU014I**      **Writing network data**

**Explanation:**

Writing network data.

**User response:**

No action is required.

---

**ARYU015E**      **An I/O error occurred while writing data to the server.**

**Explanation:**

An I/O error occurred while writing data to the server.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU016I**      **Sending a request with tag <tag>, sequence *sequence*, and type *type*.**

**Explanation:**

Db2 Recovery Expert is sending a request with the identified tag, sequence, and type.

**User response:**

No action is required.

---

**ARYU017I**      **Received a report with tag *tag* and type *type*.**

**Explanation:**

Db2 Recovery Expert received a report with the identified tag and type.

**User response:**

No action is required.

---

**ARYU018I**      **Received an acknowledgment with sequence *sequence* and ID *id*.**

**Explanation:**

Db2 Recovery Expert received an acknowledgment with the identified sequence and ID.

**User response:**

No action is required.

---

**ARYU019E**      **Received an unexpected acknowledgment with sequence *sequence* and ID *id*.**

**Explanation:**

Db2 Recovery Expert received an unexpected acknowledgment with the identified sequence and ID.

**User response:**

Contact IBM Software Support.

---

**ARYU020E**      **Received a negative acknowledgment with sequence *sequence*.**

**Explanation:**

A request to the server failed.

**User response:**

Check the server logs for more details.

---

**ARYU021I**      **Received an unexpected negative acknowledgment with sequence *sequence*.**

**Explanation:**

Db2 Recovery Expert received an unexpected negative acknowledgment with the identified sequence.

**User response:**

Contact IBM Software Support.

---

**ARYU022I**      **Received a response with tag <tag>, type *type*, and ID *id*.**

**Explanation:**

Db2 Recovery Expert received a response with the identified tag, type, and ID.

**User response:**

No action is required.

---

**ARYU023E**      **Received an unexpected response with tag <tag>, type *type*, and ID *id*.**

**Explanation:**

Db2 Recovery Expert received an unexpected response with the identified tag, type, and ID.

**User response:**

Contact IBM Software Support.

---

**ARYU024E**      **The client has lost its connection with the server.**

**Explanation:**

The client has lost its connection with the server.

**User response:**

Check the network connection of the client and the server.

---

**ARYU025E**      **An unexpected error occurred: unknown report ticket type *type*.**

**Explanation:**

An unexpected error has occurred with the identified ticket type.

**User response:**

Contact IBM Software Support.

---

**ARYU026E**      **An unexpected error occurred: duplicate registration for XML tag <tag> (*class1* and *class2*).**

**Explanation:**

An unexpected error occurred with a duplicate registration for the identified XML tag.

**User response:**

Contact IBM Software Support.

---

**ARYU027E**      **An unexpected window initialization error occurred.**

**Explanation:**

An unexpected window initialization error occurred.

**User response:**

Contact IBM Software Support.

---

**ARYU028E**      **An error occurred while creating a hex formatter.**

**Explanation:**

An error occurred while creating a hex formatter.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU029E**      **An error occurred while parsing a formatted value.**

**Explanation:**

An error occurred while parsing a formatted value.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU030E**      **An error occurred initializing the application look-and-feel.**

**Explanation:**

An error occurred initializing the application look-and-feel.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU031E**      **An error occurred while initializing the help system.**

**Explanation:**

An error occurred while initializing the help system.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU032E**      **An error occurred while shutting down the help system.**

**Explanation:**

An error occurred while shutting down the help system.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU033E**      **You must enter the host name or IP address of the Db2 Recovery Expert server.**

**Explanation:**

You did not enter the host name or IP address of the Db2 Recovery Expert server.

**User response:**

Enter a valid host name or IP address and port number of an online Db2 Recovery Expert server into the login field.

---

**ARYU034E**      **The specified port number is invalid.**

**Explanation:**

You entered an invalid port number.

**User response:**

Enter a valid host name or IP address and port number of an online Db2 Recovery Expert server into the login field.

---

**ARYU035I**      **Connecting to server *hostname* on port *portnumber*.**

**Explanation:**

Db2 Recovery Expert *client* is connecting to the identified server and port.

**User response:**

Wait until the client finishes the connection process or click **Exit** to terminate the connection request.

---

**ARYU036I**      **Connected to server *hostname* on port *portnumber*.**

**Explanation:**

Db2 Recovery Expert client has connected to the identified server and port.

**User response:**

No action is required.

---

**ARYU037E**      **The specification context contains no valid request IDs.**

**Explanation:**

The specification context contains no valid request IDs.

**User response:**

Contact IBM Software Support.

---

**ARYU038E**      **The internal state of the specification is invalid ("*token*").**

**Explanation:**

The specification contains invalid data.

**User response:**

If the specification was exported, ensure that the specification was not changed.

---

**ARYU039E**      **An error occurred while cancelling the request.**

**Explanation:**

An error occurred while cancelling the request.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU040E**      **An error occurred while deleting the message.**

**Explanation:**

An error occurred while deleting the message.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU041W**      **Pattern help topic not found for object node type "type".**

**Explanation:**

Pattern help topic not found for object node type.

**User response:**

Contact IBM Software Support.

---

**ARYU042E**      **An error occurred while retrieving the recovery history events.**

**Explanation:**

An error occurred while retrieving the recovery history events.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU043E**      **An error occurred while retrieving the quiet times.**

**Explanation:**

An error occurred while retrieving the quiet times.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU044E**      **An error occurred while retrieving the object definition levels.**

**Explanation:**

An error occurred while retrieving the object definition levels.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU045E**      **The date value *date* is invalid.**

**Explanation:**

You entered a date value that is not in the proper format.

**User response:**

Ensure that the date value is properly formatted. Check the online help for the valid format.

---

**ARYU046E**      **An error occurred while connecting to the server.**

**Explanation:**

An error occurred while connecting to the server.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU047W**      **No database locations are known to the Db2 Recovery Expert server.**

**Explanation:**

The server has no locations.

**User response:**

Check to see if any agents are connected.

---

**ARYU048E**      **The format of the log RBA is invalid.**

**Explanation:**

You entered the log RBA in an invalid format.

**User response:**

Ensure that the entered RBA value is properly formatted.

---

**ARYU049E**      **The format of the LRSN is invalid.**

**Explanation:**

You entered the LRSN in an invalid format.

**User response:**

Ensure that the entered RBA value is properly formatted.

---

**ARYU050E**      **The "to" date/time must be later than the "from" date/time.**

**Explanation:**

You entered a "to" date/time that is earlier than the "from" date/time.

**User response:**

Ensure that the "from" date/time value is less than the "to" date/time value.

---

**ARYU051E**      **The "to" RBA must be greater than the "from" RBA.**

**Explanation:**

You entered a "to" RBA that is less than the "from" RBA.

**User response:**

Ensure that the "from" RBA value is less than the "to" RBA value.

---

**ARYU052E**      **The "to" LRSN must be greater than the "from" LRSN.**

**Explanation:**

You entered a "to" LRSN that is less than the "from" LRSN.

**User response:**

Ensure that the "from" LRSN value is less than the "to" LRSN value.

---

**ARYU053E**      **An unrecognized time range type value *time-range-type* was encountered.**

**Explanation:**

An unrecognized time range type value was encountered.

**User response:**

Contact IBM Software Support.

---

**ARYU054I**      **Validation was successful for plan *plan-name*. Note that this is not a guarantee of successful execution.**

**Explanation:**

Db2 Recovery Expert successfully validated the identified recovery plan.

**User response:**

No action is required.

---

**ARYU055E**      **Validation was unsuccessful for recovery plan "*plan-name*".\n\n**

**Explanation:**

Db2 Recovery Expert did not successfully validate the identified recovery plan.

**User response:**

Check the server logs for more information.

---

**ARYU055W**      **Validation warnings for recovery plan *plan-name*.**

**Explanation:**

Db2 Recovery Expert successfully validated the identified recovery plan with warnings.

**User response:**

Review the message text for more information about the warning(s).

---

**ARYU056E**      **The tri-state value *value* is invalid.**

**Explanation:**

The tri-state value identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU057E**      **The recovery site value *recovery-site* is invalid.**

**Explanation:**

The recovery site identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU058E**      **The rebuild scope value *rebuild-scope* is invalid.**

**Explanation:**

The rebuild scope value identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU059E**      **The copy scope value *copy-scope* is invalid.**

**Explanation:**

The copy scope value identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU060E**      **The in-stream data set delimiter value *delimiter* is invalid. It must be exactly two non-blank characters.**

**Explanation:**

The in-stream data set delimiter value that you specified is invalid. It must be exactly two non-blank characters.

**User response:**

Contact IBM Software Support.

---

**ARYU061E**      **The specified JCL is invalid. At least one line exceeds 72 characters.**

**Explanation:**

The specified JCL is invalid. At least one line exceeds 72 characters.

**User response:**

Ensure that all the lines in the JCL are 72 characters or less.

---

**ARYU062E**      **The job status value *status* is invalid.**

**Explanation:**

The job status value identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU063E**      **The job cards must be no more than 4 lines long.**

**Explanation:**

You specified job cards that have more than 4 lines.

**User response:**

Ensure that the job card is no longer than 4 lines.

---

**ARYU064E**      **The specified job cards are invalid. At least one line exceeds 72 characters.**

**Explanation:**

You specified job cards that have at least one line that exceeds 72 characters.

**User response:**

Ensure that all the lines in the job card are 72 characters or less.

---

**ARYU065E**      **The specified job cards are invalid. The job name exceeds 8 characters.**

**Explanation:**

You specified job cards that are invalid because the job name exceeds 8 characters.

**User response:**

Ensure that the job name is 8 characters or less.

---

**ARYU066E**      **The specified job cards are invalid. The job name could not be determined.**

**Explanation:**

You specified job cards that are invalid because the job name could not be determined.

**User response:**

The job card is improperly formatted. Ensure that the job name is in the correct location.

---

**ARYU067E**      **The job group type value *type* is invalid.**

**Explanation:**

The job group type value that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU068E**      **The location type value *type* is invalid.**

**Explanation:**

The location type value that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU069E**      **The message status value *status* is invalid.**

**Explanation:**

The message status value that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU070E**      **The message type value *type* is invalid.**

**Explanation:**

The message type value that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU071E**      **The timestamp value *timestamp* is invalid.**

**Explanation:**

The timestamp value that is identified in the message is invalid.

**User response:**

Ensure that the entered timestamp is properly formatted.

---

**ARYU072E**      **The log point value *log-point* is invalid.**

**Explanation:**

The log point value that is identified in the message is invalid.

**User response:**

Ensure that the entered logpoint is properly formatted.

---

**ARYU073E**      **The LRSN value *lrsn* is invalid.**

**Explanation:**

The LRSN value that is identified in the message is invalid.

**User response:**

Ensure that the entered LRSN value is properly formatted.

---

**ARYU074E**      **The log RBA value *log-rba* is invalid.**

**Explanation:**

The log RBA value that is identified in the message is invalid.

**User response:**

Ensure that the entered RBA value is properly formatted.

---

**ARYU075E**      **The point-in-time type value *type* is invalid.**

**Explanation:**

The point-in-time type value that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU076E**      **The point-in-time description value is invalid.**

**Explanation:**

The point-in-time description that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU077E**      **The recovery job group type value *type* is invalid.**

**Explanation:**

The recovery job group type that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU078E**      **The recovery plan log processing flag value *flag* is invalid.**

**Explanation:**

The recovery plan log processing flag that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU079E**      **The recovery resource type value *type* is invalid.**

**Explanation:**

The recovery resource type that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU080E**      **The resource severity value *severity* is invalid.**

**Explanation:**

The resource severity that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU081E**      **The specification share option value *share-option* is invalid.**

**Explanation:**

The specification share option that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU082E**      **The specification type value *type* is invalid.**

**Explanation:**

The specification type that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU083E**      **The time range type value *time-range-type* is invalid.**

**Explanation:**

The time range type that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU084E**      **The time range preceding interval type value *interval-type* is invalid.**

**Explanation:**

The time range preceding interval type that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU085E**      **The utility type value *type* is invalid.**

**Explanation:**

The utility type that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU086E**      **The predicate operator value *operator* is invalid.**

**Explanation:**

The predicate operator that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU087E**      **A protocol error occurred: received unexpected element *element*.**

**Explanation:**

A protocol error has occurred. Db2 Recovery Expert received an unexpected element that is identified in the message.

**User response:**

Contact IBM Software Support.

---

**ARYU088E**      **A protocol error occurred: received unrecognized report element *element*.**

**Explanation:**

A protocol error has occurred. Db2 Recovery Expert received an unexpected report element that is identified in the message.

**User response:**

Contact IBM Software Support.

---

**ARYU089E**      **A protocol error occurred: received unrecognized response element *element*.**

**Explanation:**

A protocol error has occurred. Db2 Recovery Expert received an unexpected response element that is identified in the message.

**User response:**

Contact IBM Software Support.

---

**ARYU090S**      **An internal protocol error occurred: invalid state *state*.**

**Explanation:**



An internal protocol error has occurred the invalid state is identified in the message.

**User response:**

Contact IBM Software Support.

---

**ARYU091E**      **The job group type value *type* is invalid.**

**Explanation:**

The job group type that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU092E**      **The recovery plan validation status value *status* is invalid.**

**Explanation:**

The recovery plan validation status that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU093S**      **The specification state is invalid; unrecognized result object class *class* encountered.**

**Explanation:**

The specification state is invalid; an unrecognized result object class that is identified in the message was encountered.

**User response:**

Contact IBM Software Support.

---

**ARYU094S**      **Connection decryption key not initialized.**

**Explanation:**

The connection decryption key was not initialized.

**User response:**

Contact IBM Software Support.

---

**ARYU095S**      **Connection encryption key not initialized.**

**Explanation:**

The connection encryption key was not initialized.

**User response:**

Contact IBM Software Support.

---

**ARYU096E**      **Decryption error. (*message-text*)**

**Explanation:**

There was a decryption error. See the error message text for more information.

**User response:**

Contact IBM Software Support.

---

**ARYU097E**      **Encryption error. (*message-text*)**

**Explanation:**

There was an encryption error. See the error message text for more information.

**User response:**

Contact IBM Software Support.

---

**ARYU098E**      **Failed to create cipher. (*message-text*)**

**Explanation:**

Failed to create cipher. See the error message text for more information.

**User response:**

Contact IBM Software Support.

---

**ARYU099S**      **Settings decryption key not initialized.**

**Explanation:**

The settings decryption key was not initialized.

**User response:**

Contact IBM Software Support.

---

**ARYU100S**      **Settings encryption key not initialized.**

**Explanation:**

The settings encryption key was not initialized.

**User response:**

Contact IBM Software Support.

---

**ARYU101S**      **The UTF-8 encoding is not supported on this platform.**

**Explanation:**

The UTF-8 encoding is not supported on this platform.

**User response:**

Contact IBM Software Support.

---

**ARYU102E**      **The base64 data is invalid.**

**Explanation:**

The base64 data is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU103E**      **XML document creation failed. (*message-text*)**

**Explanation:**

XML document creation failed. See the message text for more information.

**User response:**

Contact IBM Software Support.

---

**ARYU104E**      **XML document parsing failed. (*message-text*)**

**Explanation:**

XML document parsing failed. See the message text for more information.

**User response:**

Contact IBM Software Support.

---

**ARYU105E**      **An XML syntax error was detected; no element was found at the root of the document.**

**Explanation:**

An XML syntax error was detected; no element was found at the root of the document.

**User response:**

Contact IBM Software Support.

---

**ARYU106E**      **An XML schema violation was detected; expected root element *element-expected*, but found *element-found* instead.**

**Explanation:**

An XML schema violation was detected. Db2 Recovery Expert expected the identified root element but found the other identified element instead.

**User response:**

Contact IBM Software Support.

---

**ARYU107E**      **XML document generation failed. (*message-text*)**

**Explanation:**

XML document generation failed. See the message text for more information.

**User response:**

Contact IBM Software Support.

---

**ARYU108S**      **The UTF-8 encoding is not supported on this platform.**

**Explanation:**

The UTF-8 encoding is not supported on this platform.

**User response:**

Contact IBM Software Support.

---

**ARYU109E**      **An XML schema violation was detected; value *value* is not a valid integer value.**

**Explanation:**

An XML schema violation was detected. The identified value is not a valid integer value.

**User response:**

Contact IBM Software Support.

---

**ARYU110E**      **An XML schema violation was detected; value *value* is not a valid boolean value.**

**Explanation:**

An XML schema violation was detected. The identified value is not a valid boolean value.

**User response:**

Contact IBM Software Support.

---

**ARYU111S**      **Object instantiation failure. (*message-text*)**

**Explanation:**

Object instantiation failure. See the message text for more information.

**User response:**

Contact IBM Software Support.

---

**ARYU112E**      **An XML schema violation was detected; element *element child child-number* has the wrong type.**

**Explanation:**

An XML schema violation was detected; the element that is identified in the message has the wrong type.

**User response:**

Contact IBM Software Support.

---

**ARYU113E**      **An XML schema violation was detected; element name *element* is invalid.**

**Explanation:**

An XML schema violation was detected; the element that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU114E**      **An XML schema violation was detected; element *element value value* is invalid.**

**Explanation:**

An XML schema violation was detected; the element that is identified in the message is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYU115E**      **An XML schema violation was detected; required element *element child child-element* is not present.**

**Explanation:**

An XML schema violation was detected; the required element that is identified in the message is not present.

**User response:**

Contact IBM Software Support.

---

**ARYU116E**      **An XML schema violation was detected; required element *element attribute attribute* is not present.**

**Explanation:**

An XML schema violation was detected; a required element that is identified in the message is not present.

**User response:**  
Contact IBM Software Support.

---

**ARYU117S**      **An unexpected error occurred: no message text is available.**

**Explanation:**  
An unexpected error occurred: no message text is available.

**User response:**  
Contact IBM Software Support.

---

**ARYU118I**      **The JCL was exported to *file-name*.**

**Explanation:**  
The JCL was exported to the file that is identified in the message.

**User response:**  
Contact IBM Software Support.

---

**ARYU119I**      **Are you sure that you want to discard the changes that you have made?**

**Explanation:**  
This message ensures that you want to discard the changes that you have made.

**User response:**  
Confirm that you want to discard the changes that you have made or cancel the changes.

---

**ARYU120I**      **The JCL has changed. Do you want to save the changes?**

**Explanation:**  
This message identifies that the JCL has changed and ensures that you want to save the changes.

**User response:**  
Confirm whether you want to save the changes.

---

**ARYU121E**      **You are not authorized to open *specification*. Do you want to make a copy instead?**

**Explanation:**  
You are not allowed to access or edit the specification, but you are allowed to make a copy.

**User response:**  
Make a copy.

---

**ARYU122EI**      **You are not authorized to rename *specification*. Do you want to make a copy instead?**

**Explanation:**  
You are not allowed to access or edit the specification, but are allowed to make a copy.

**User response:**  
Make a copy.

---

**ARYU123E**      **An error occurred while opening *specification*.**

**Explanation:**  
An error occurred while opening the specification that is identified in the message.

**User response:**  
This message provides context for an error reported by a subsequent message.

---

**ARYU124W**      **The size of the result file is *number* bytes. Do you want to view the entire file?**

**Explanation:**  
The size of the file is greater than the file size trigger in the options menu.

**User response:**  
Confirm whether you want to view the entire file.

---

**ARYU125I**      **The job results were exported to *file-name*.**

**Explanation:**  
The job results were exported to the file that is identified in the message.

**User response:**  
No action is required.

---

**ARYU126E**      **An error occurred while exporting the job results.**

**Explanation:**  
An error occurred while exporting the job results.

**User response:**  
This message provides context for an error reported by a subsequent message.

---

**ARYU127E**      **An error occurred while retrieving the job results.**

**Explanation:**  
An error occurred while retrieving the job results.

**User response:**  
This message provides context for an error reported by a subsequent message.

---

**ARYU128E**      **An unexpected error occurred.**

**Explanation:**  
An unexpected error occurred.

**User response:**  
Contact Db2 Recovery Expert

---

**ARYU129I**      **The list of passwords has been reset.**

**Explanation:**  
The list of passwords has been reset.

**User response:**

No action is required.

---

**ARYU130W**      **Help is not available for the current filter type.**

**Explanation:**

Help is not available for the current filter type.

**User response:**

Contact IBM Software Support.

---

**ARYU131W**      **You cannot close until the specification has been completely saved.**

**Explanation:**

You must finish saving before closing the window.

**User response:**

An advisor window cannot be closed while a save is occurring. Cancel the save or wait for the save to complete before attempting to close the window.

---

**ARYU132I**      ***specification was saved.***

**Explanation:**

The specification that is identified in the message was saved.

**User response:**

No action is required.

---

**ARYU133W**      **Changes made to the specification during this session may be lost.**

**Explanation:**

Changes that you made to the specification during this session may be lost.

**User response:**

Contact IBM Software Support.

---

**ARYU134I**      **The specification has changed. Do you want to save the changes?**

**Explanation:**

The specification has changed and you are asked if you want to save the changes.

**User response:**

Confirm whether you want to save the changes.

---

**ARYU135I**      **A task is in progress for this specification. You must either save the specification or cancel the task. Do you want to save the specification?**

**Explanation:**

There is a task in progress for this specification, so you must either save the specification or cancel the task.

**User response:**

Specify whether you want to save the specification.

---

**ARYU136I**      **Are you sure that you want to delete *specification*?**

**Explanation:**

Confirmation message for deleting the specification that is identified in the message.

**User response:**

Specify whether you want to delete the specification.

---

**ARYU137I**      ***From-specification was copied as to-specification.***

**Explanation:**

Confirmation message for copying the specification that is identified in the message.

**User response:**

No action is required.

---

**ARYU138I**      ***From-specification was copied as to-specification.***

**Explanation:**

Confirmation message for copying the specification that is identified in the message.

**User response:**

No action is required.

---

**ARYU139I**      ***specification was exported to file-name.***

**Explanation:**

Confirmation message for exporting the specification that is identified in the message.

**User response:**

No action is required.

---

**ARYU140W**      **The specification refers to an unrecognized location. You must select a different location in order to continue.**

**Explanation:**

The specification being opened uses either a location that is not currently available to the server or that is invalid.

**User response:**

You are prompted to select a valid location.

---

**ARYU141W**      **You must close all open advisor windows before exiting.**

**Explanation:**

All advisor windows should be closed before attempting to exit from Recovery Expert or before disconnecting from the server.

**User response:**

You must close all open advisor windows before exiting.

---

**ARYU142W**      **The list of objects displayed has been truncated due to the filter limit specified.**

**Explanation:**

The number of objects exceeds the filter limit.

**User response:**

Increase the specified filter limit to increase the number of objects returned or edit the filter in an effort to reduce the number of objects returned.

---

**ARYU143E**      **An error occurred while exporting the JCL.**

**Explanation:**

An error occurred while exporting the JCL.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU144E**      **An error occurred while opening specification.**

**Explanation:**

An error occurred while opening the specification that is identified in the message.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU145E**      **An error occurred while determining the task start time.**

**Explanation:**

An error occurred while determining the task start time.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU146E**      **An error occurred while cancelling a request.**

**Explanation:**

An error occurred while cancelling a request.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU147E**      **An error occurred while opening a new log analysis advisor.**

**Explanation:**

An error occurred while opening a new Log Analysis Advisor.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU148S**      **An unexpected internal error occurred.**

**Explanation:**

An unexpected internal error occurred.

**User response:**

Contact Db2 Recovery Expert.

---

**ARYU149E**      **An error occurred while copying the specification.**

**Explanation:**

An error occurred while copying the specification.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU150E**      **An error occurred while deleting the specification.**

**Explanation:**

An error occurred while deleting the specification.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU151E**      **An error occurred while exporting the specification.**

**Explanation:**

An error occurred while exporting the specification.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU152E**      **An error occurred while importing the specification.**

**Explanation:**

An error occurred while importing the specification.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU153E**      **An error occurred while renaming the specification.**

**Explanation:**

An error occurred while renaming the specification.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU154E**      **An error occurred while closing the specification.**

**Explanation:**

An error occurred while closing the specification.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU155E**      **An error occurred while saving the specification.**

**Explanation:**

An error occurred while saving the specification.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU156E**      **An error occurred while listing the specifications.**

**Explanation:**

An error occurred while listing the specifications.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU157E**      **An error occurred while listing the available database locations.**

**Explanation:**

An error occurred while listing the available database locations.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU158E**      **An error occurred while retrieving the status of the location.**

**Explanation:**

An error occurred while retrieving the status of the location.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU159E**      **An error occurred while listing the objects.**

**Explanation:**

An error occurred while listing the objects.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU160E**      **An error occurred while retrieving the properties of the object.**

**Explanation:**

An error occurred while retrieving the properties of the object.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU161E**      **An error occurred while resuming the state of the specification.**

**Explanation:**

An error occurred while resuming the state of the specification.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU162E**      **An error occurred while validating the selected point in time.**

**Explanation:**

An error occurred while validating the selected point in time.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU163E**      **An error occurred while generating recovery plans.**

**Explanation:**

An error occurred while generating recovery plans.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU164E**      **An error occurred while running the recovery plan.**

**Explanation:**

An error occurred while running the recovery plan.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU165E**      **An error occurred while validating the recovery plan.**

**Explanation:**

An error occurred while validating the recovery plan.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU166E**      **An error occurred while generating JCL for the recovery plan.**

**Explanation:**

An error occurred while generating JCL for the recovery plan.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU167E**      **An error occurred while generating JCL for the quiet time analysis.**

**Explanation:**

An error occurred while generating JCL for the quiet time analysis.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU168E**      **An error occurred while performing the quiet time analysis.**

**Explanation:**

An error occurred while performing the quiet time analysis.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU169E**      **An unexpected error occurred while making a copy of a specification.**

**Explanation:**

An unexpected error occurred while making a copy of a specification.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU170E**      **Caused by: *message-text (class-name)***

**Explanation:**

This message gives more details about a preceding message.

**User response:**

See the message text for more information.

---

**ARYU171E**      **Caused by: *(class-name)***

**Explanation:**

This message gives more details about a preceding message.

**User response:**

See the message text for more information.

---

**ARYU172I**      ***file-name* already exists. Do you want to replace it?**

**Explanation:**

This message identifies that the file already exists and ensures that you want to replace it.

**User response:**

No action is required.

---

**ARYU173I**      **XML: S->C: *xml-trace***

**Explanation:**

XML trace message.

**User response:**

No action is required.

---

**ARYU174I**      **XML: C->S: *xml-trace***

**Explanation:**

XML trace message.

**User response:**

No action is required.

---

**ARYU175E**      **The specified job cards are invalid. The job name is not all uppercase characters.**

**Explanation:**

You have specified a job name that is not in uppercase characters. Job names are required to be in uppercase characters.

**User response:**

Change your job name to uppercase characters and retry.

---

**ARYU175I**      **Db2 Recovery Expert client started.**

**Explanation:**

Db2 Recovery Expert client started.

**User response:**

No action is required.

---

**ARYU176I**      **Build date client *date*.**

**Explanation:**

The build date of the client.

**User response:**

No action is required.

---

**ARYU177I**      **Db2 Recovery Expert client terminating.**

**Explanation:**

Db2 Recovery Expert client terminating.

**User response:**

No action is required.

---

**ARYU178W**      **You cannot close until the specification has finished opening.**

**Explanation:**

An advisor window cannot be closed while a specification is being opened. Cancel the opening or wait for the opening to complete before attempting to close the window.

**User response:**

No action is required.

---

**ARYU179E**      **An error occurred while issuing the command.**

**Explanation:**

This message provides context for an error reported by a subsequent message.

**User response:**

No action is required.

---

**ARYU180E**      **Db2 command *command-text* failed with return code = *return-code* and reason code = *reason-code*.**

**Explanation:**

A Db2 error with the specified return and reason codes occurred while issuing the specified command.

**User response:**

See *Db2 Messages and Codes* for more information about the return and reason codes.

---

**ARYU181W      The request was interrupted.**

**Explanation:**

A task that was running was interrupted. This is usually caused by a specification being closed before a task is completed.

**User response:**

No action is required.

---

**ARYU182I      System-level recovery is not performed directly from this user interface. After generating JCL for the recovery plan, additional instructions for completing the recovery will display.**

**Explanation:**

This message indicates that the process for running a system-level recovery is different from other types of recovery. Rather than simply submitting one or more jobs from the Db2 Recovery Expert user interface, system-level recovery requires additional manual steps. After generating JCL, the System Recovery Instructions dialog box displays, describing the required steps.

**User response:**

No action is required.

---

**ARYU183E      The from date/time must be earlier than the current date/time.**

**Explanation:**

This message indicates that you specified an from date and time that is later than the current date and time.

**User response:**

Specify a from date and time that is earlier than the current time and retry.

---

**ARYU184E      No agents online.**

**Explanation:**

The Db2 Recovery Expert server attempted to communicate with an agent, but there are no agents currently running.

**User response:**

Run the agent JCL to start an agent on the LPAR where the Db2 subsystem to which you want to connect resides.

---

**ARYU185E      An error occurred while retrieving the list of backups.**

**Explanation:**

An error occurred while retrieving the list of backups.

**User response:**

No action is required. This message provides context for an error reported by a subsequent message.

---

**ARYU186E      An error occurred while retrieving the properties of the backup.**

**Explanation:**

An error occurred while retrieving the properties of the backup.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU188E      The backup type value is invalid. Valid values are B(cv), S(NAP), F(lash), D(B2), and L (DFSMSdss).**

**Explanation**

The backup type value is invalid. Valid values are:

- Specify F for FlashCopy
- S for SNAP backup
- Enter B for BCV backup
- Enter D for Db2 backup
- Enter L to specify DFSMSdss backup

**User response:**

Enter a valid backup type value.

---

**ARYU189E      An error occurred while generating JCL for the system restore job.**

**Explanation:**

An error occurred while generating JCL for the system restore job

**User response:**

No action is required. This message provides context for an error reported by a subsequent message.

---

**ARYU190E      An error occurred while deleting a backup.**

**Explanation:**

An error occurred while deleting a backup.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU191E      An error occurred while generating offload JCL for the backup.**

**Explanation:**

An error occurred while generating offload JCL for the backup.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU192E      An error occurred while running the offload JCL for the backup.**

**Explanation:**



An error occurred while running the offload JCL for the backup.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU193E**      **An error occurred while running the system restore job.**

**Explanation:**

An error occurred while running the system restore job.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU194E**      **An error occurred while retrieving data from the RBA Capture Utility.**

**Explanation:**

An error occurred while retrieving data from the RBA Capture Utility.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU195E**      **An error occurred while running the RBA timestamp to LRSN conversion utility.**

**Explanation:**

An error occurred while running the RBA timestamp to LRSN conversion utility.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU196E**      **An error occurred while generating object restore DDL.**

**Explanation:**

An error occurred while generating object restore DDL.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU197E**      **An error occurred while running the object restore DDL.**

**Explanation:**

An error occurred while running the object restore DDL.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU198E**      **An error occurred while running the object restore recovery JCL.**

**Explanation:**

An error occurred while running the object restore recovery JCL.

**User response:**

This message provides context for an error reported by a subsequent message.

---

**ARYU199E**      **An XML schema violation was detected; value *date* is not a valid date value.**

**Explanation:**

An XML schema violation was detected. The identified value is not a valid date value.

**User response:**

Contact IBM Software Support customer support.

---

**ARYU200I**      **Are you sure that you want to delete the selected backup?**

**Explanation:**

You must confirm that you want to delete the selected object in order to delete it.

**User response:**

Click **OK** to delete the selected object or **Cancel** to cancel the deletion and return to the previous window.

---

**ARYU200E**      **Protocol verification has failed. The server reported a version of *server-version* and the client expected *server-version* or higher.**

**Explanation:**

A protocol error occurred; the server version of Db2 Recovery Expert is not compatible with the client version being run.

**User response:**

Upgrade the Db2 Recovery Expert server to match the version specified in the error message.

---

**ARYU202E**      **The specification has an unknown type.**

**Explanation:**

A specification was read but the program could not decipher its type.

**User response:**

Contact IBM Software Support customer support.

---

**ARYU203E**      **The recover to RBA/LRSN must be greater than RBA/LRSN of the selected backup.**

**Explanation:**

The Recover To RBA/LRSN specified is at a point prior to the RBA/LRSN of the selected backup. This is not allowed.

**User response:**

Specify a recovery point RBA/LRSN equal to or greater than the listed RBA/LRSN, or choose an earlier backup.

---

**ARYU204I**      **Are you sure that you want to delete the selected job?**

**Explanation:**

You must confirm that you want to delete the selected job in order to delete it.

**User response:**

Click **OK** to delete the selected job or **Cancel** to cancel the deletion and return to the previous window.

---

**ARYU205I**      **A specification must be saved at an active location, you must select a different location in order to continue.**

**Explanation:**

The location that you selected to save the specification is inactive.

**User response:**

Choose an active location to save the specification.

---

**ARYU206I**      **Db2 subsystem *subsystem id* has been restarted and has issued the following WTOR: {1} CONDITIONAL RESTART RECORD INDICATES TRUNCATION AT RBA {2}. REPLY Y OR N. Do you wish to reply Yes to this request?**

**Explanation:**

Before the final job of a system restore runs, a message informs you that the Db2 subsystem restarted and issued the following WTOR.

**User response:**

Reply to the WTOR. To complete the final job, you must reply Y.

---

**ARYU240W**      **The Include RI related objects option is switched off. If you do not include referential integrity related objects in generated recovery plans the restore may fail.**

**Explanation:**

From either the ISPF interface or the web browser interface, you have set the referential integrity recovery option to N.

**User response:**

If you do not want to include the objects related by referential integrity then you do not need to do anything. This is a warning message and processing will continue. If you want to include the related objects you must set the recovery option back to Y using either the ISPF or web browser interface. Using the ISPF interface, set the recovery option **Include RI related objects** to **Y** to include the related objects or **R** to include the relations but not the objects themselves. Using the web browser interface select the **Include**

**additional objects that are related to the selected one(s) via referential integrity: Yes** radio button to include the additional objects in the recovery or the **Relations only** radio button to include the relations but not the actual objects.

---

**ARYU241W**      **The Allow LOAD from full IC for recreated tables option is set to Y. This type of plan, when used for recreated tables, may fail in some cases.**

**Explanation:**

This is an informational message. It is informing you that the **Allow LOAD from full IC for recreated tables** option has been checked and the **LOAD from full IC** recovery plan has been selected to recover recreated tables. In some cases, using this plan may fail.

**User response:**

None is required if you want to go forward with using the **LOAD from full IC** recovery plan to recover recreated tables. Otherwise select another recovery plan.

---

**ARYV013I**      **Listening on port *port-number*.**

**Explanation**

Identifies the port number that the server is listening to.

**User response**

None required.

---

**ARYV014I**      **The network connection has been disconnected.**

**Explanation**

The network connection has been disconnected.

**User response**

None required.

---

**ARYV015I**      **Session *session-id* ended normally.**

**Explanation**

The session that is identified in the message ended normally.

**User response**

None required.

---

**ARYV016I**      **Session *session-id* established.**

## Explanation

The session that is identified in the message has been established.

## User response

None required.

---

**ARYV017E**      **The maximum number of listen attempts has been reached.**

## Explanation

The server cannot open the client or agent port in order to listen for incoming requests.

## User response

Ensure that the desired ports are specified in the server configuration file. Ensure that the specified ports are not in use by any other application.

---

**ARYV018E**      **Session *session-id* has ended abnormally.**

## Explanation

The session that is identified in the message has ended abnormally.

## User response

Contact IBM Customer Support.

---

**ARYV019E**      **Invalid data received from client.**

### Explanation:

This error can occur if an incorrect port has been specified in the agent/server configuration or a client is attempting to connect at an incorrect port.

### User response:

Check the port configuration in all the configuration files and verify that the client is connecting at either the client-listener-port and/or the HTTP port (depending on the type of client being used).

---

**ARYW003E**      **Active module not found.**

### Explanation:

The active module was not found.

### User response:

No action is required. Preceding and/or following messages provide more information about the abend that occurred.

---

**ARYW007E**      **Callable service invocation failed with return code = *return-code* and reason code = *reason-code*.**

### Explanation:

Unexpected error occurred: A callable service invocation failed with a return code and reason code that are identified in the message.

### User response:

Contact IBM Software Support and provide the XML trace and CSI trace from the agent (if the failed operation was performed online) or failed job (if the operation was performed in batch).

---

**ARYW008E**      **ARYCSI SQL code = *sql-code*, reason code = *reason-code*.**

### Explanation:

An SQL error has occurred.

### User response:

See "Db2 Messages and Codes" for more information about the specified SQL code and SQL state values. Ensure that the product packages have been bound at the connected location.

---

**ARYW009E**      **The data set *data-set-name* does not exist on volume *volume*.**

### Explanation:

The specified image copy or log data set is recorded as being cataloged on the specified volume, but it does not exist on that volume.

### User response:

Regenerate recovery plans. You may need to take a new image copy with the COPY utility to replace the missing data set.

---

**ARYW010E**      **The data set *data-set-name* is not cataloged.**

### Explanation:

The specified image copy or log data set is recorded as being cataloged, but it is not cataloged.

### User response:

Regenerate recovery plans. You may need to take a new image copy with the COPY utility to replace the missing data set.

---

**ARYW011E**      **The image copy data set *data-set-name* does not exist on volume *volume*.**

### Explanation:

The specified image copy data set is recorded as being cataloged on the specified volume, but it does not exist on that volume.

### User response:

Regenerate recovery plans. You may need to take a new image copy with the COPY utility to replace the missing data set.

---

**ARYW012E**      **The image copy data set *data-set-name* is not cataloged.**

### Explanation:

The specified image copy data set is recorded as being cataloged, but it is not cataloged.

**User response:**

Regenerate recovery plans. You may need to take a new image copy with the COPY utility to replace the missing data set.

---

**ARYW015E**      **The log data set *data-set-name* does not exist on volume *volume*.**

**Explanation:**

The specified Db2 log data set is recorded as being cataloged on the specified volume, but it does not exist on that volume.

**User response:**

Regenerate recovery plans.

---

**ARYW016E**      **The log data set *data-set-name* is not cataloged.**

**Explanation:**

The specified log data set is recorded as being cataloged, but it is not cataloged.

**User response:**

Regenerate recovery plans.

---

**ARYW030I**      **Invoking callable service *service-name*.**

**Explanation:**

Invoking a callable service that is identified in the message.

**User response:**

No action is required.

---

**ARYW031I**      **Returned from callable service *service-name*.**

**Explanation:**

Returned from a callable service that is identified in the message.

**User response:**

No action is required.

---

**ARYW034E**      **The job *job-name / job-id* was abandoned.**

**Explanation:**

The specified job did not end in a timely fashion after it was cancelled.

**User response:**

Use native JES facilities to check the status of the job, and take further actions if necessary.

---

**ARYW035E**      **The job *job-name / job-id* abended *abend-code*.**

**Explanation:**

The job that is identified in the message abended.

**User response:**

Use native JES facilities to check the status and review the output of the job to diagnose the error.

---

**ARYW036E**      **The job *job-name / job-id* was cancelled.**

**Explanation:**

The job was cancelled due to a user request.

**User response:**

No action is required.

---

**ARYW037E**      **The job *job-name / job-id* did not run.**

**Explanation:**

The job that is identified in the message did not run.

**User response:**

Use native JES facilities to check the status and review the output of the job to diagnose the error. Contact IBM Software Support.

---

**ARYW038E**      **The job *job-name / job-id* ended with a JCL error.**

**Explanation:**

The job that is identified in the message ended with a JCL error.

**User response:**

Use native JES facilities to check the status and review the output of the job to diagnose the error. Contact IBM Software Support.

---

**ARYW039E**      **The job *job-name / job-id* ended with MAXCC = *max-cc*.**

**Explanation:**

The job that is identified in the message ended with an error.

**User response:**

Use native JES facilities to check the status and review the output of the job to diagnose the error. Contact IBM Software Support.

---

**ARYW040W**      **The job *job-name / job-id* ended with MAXCC = *max-cc*.**

**Explanation:**

The job that is identified in the message ended with a warning.

**User response:**

Use native JES facilities to check the status and review the output of the job to diagnose the warning. Contact IBM Software Support.

---

**ARYW041I**      **The job *job-name / job-id* ended with MAXCC = *max-cc*.**

**Explanation:**

The job that is identified in the message ended successfully.

**User response:**

No action is required.

---

**ARYW042E**      **The job *job-name* / *job-id* is running.**

**Explanation:**

The job that is identified in the message should have ended, but is still running.

**User response:**

Contact IBM Software Support.

---

**ARYW043E**      **A severe error occurred while running job *job-name* / *job-id*.**

**Explanation:**

A severe error occurred while running job that is identified in the message.

**User response:**

Contact IBM Software Support.

---

**ARYW046E**      **The specified timestamp is not within the scope of the log.**

**Explanation:**

You specified a timestamp that is not found within the log, most likely one in the future.

**User response:**

Specify a timestamp prior to the current point in time.

---

**ARYW047E**      **The specified log RBA is not within the scope of the log.**

**Explanation:**

You specified a log RBA that is not within the scope of the log.

**User response:**

Specify a log RBA which is within the scope of the Db2 log.

---

**ARYW048E**      **The specified LRSN is not within the scope of the log.**

**Explanation:**

You specified an LRSN that is not within the scope of the log.

**User response:**

Specify an LRSN that is within the scope of the Db2 log.

---

**ARYW049E**      **ARYCSI SQL code = *sql-code*, reason code = *reason-code*. SQL message text follows: .**

**Explanation:**

An SQL error occurred.

**User response:**

See "Db2 Messages and Codes" for more information about the specified SQL code and SQL state values. Ensure that the product packages have been bound at the connected location.

---

**ARYW050E**      **The job *job-name* / *job-id* was deleted by JES or cancelled by the operator before execution.**

**Explanation:**

The job *job-name* / *job-id* was deleted by JES or cancelled by the operator before execution.

**User response:**

No action is required.

---

**ARYW082E**      **The log point *<hex-value>* has unknown type.**

**Explanation:**

Cannot determine the log point type because the log point value specified has the wrong format.

**User response:**

Check the input. If you have not edited any field, contact IBM Software Support.

---

**ARYX014E**      **An XML schema violation was detected; value *"value"* is not a valid boolean value.**

**Explanation:**

An XML schema violation was detected and the value that is identified in the message is not a valid boolean value.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support .

---

**ARYX015E**      **An XML schema violation was detected; value *"value"* is not a valid double value.**

**Explanation:**

An XML schema violation was detected and the value that is identified in the message is not a valid double value.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support.

---

**ARYX016E**      **An XML schema violation was detected; value *"value"* is not a valid integer value.**

**Explanation:**

An XML schema violation was detected and the value that is identified in the message is not a valid integer value.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support.

---

**ARYX017E**      **An XML syntax error was detected at offset *offset*; expected `\\"expected-value\"`, found `\\"found-value\"`.**

**Explanation:**

An XML syntax error was detected at the offset that is identified in the message. The expected value and found value are also identified in the message.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support.

---

**ARYX018E**      **An XML schema violation was detected; required element `\\"element\"` attribute `\\"attribute\"` is not present.**

**Explanation:**

An XML schema violation was detected. The required element that is identified in the message is not present.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support

---

**ARYX019E**      **An XML schema violation was detected; required element `\\"element\"` child `\\"child-element\"` is not present.**

**Explanation:**

An XML schema violation was detected. The required element that is identified in the message is not present.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support.

---

**ARYX020E**      **Memory allocation failed (*number* bytes).**

**Explanation:**

A memory allocation has failed.

**User response:**

Contact IBM Software Support.

---

**ARYX021E**      **An XML schema violation was detected; element `\\"element\"` child `\\"child-number\"` has wrong type.**

**Explanation:**

An XML schema violation was detected. The element that is identified in the message has the wrong type.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support.

---

**ARYX022E**      **An XML syntax error was detected; character reference `\\"character-reference\"` is invalid.**

**Explanation:**

An XML syntax error was detected. The character reference that is identified in the message is invalid.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support.

---

**ARYX023E**      **An XML syntax error was detected; entity reference `\\"entity-reference\"` is invalid.**

**Explanation:**

An XML syntax error was detected. The entity reference that is identified in the message is invalid.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support.

---

**ARYX024E**      **An XML syntax error was detected; more than one element was found at the root of the document.**

**Explanation:**

An XML syntax error was detected; more than one element was found at the root of the document.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support.

---

**ARYX025E**      **An XML syntax error was detected; no element was found at the root of the document.**

**Explanation:**

An XML syntax error was detected; no element was found at the root of the document.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support.

---

**ARYX026E**      **An XML syntax error was detected; text was found at the root of the document.**

**Explanation:**

An XML syntax error was detected; text was found at the root of the document.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support.

---

**ARYX027E**      **A severe error occurred during XML parsing; an unknown exception occurred.**

**Explanation:**

A severe error occurred during XML parsing; an unknown exception occurred.

**User response:**

Contact IBM Software Support.

---

**ARYX028E**      **The command line option \"option\" is invalid.**

**Explanation:**

The command line option that is identified in the message is invalid.

**User response:**

Correct the command line option and retry the operation. See the Db2 Recovery Expert client/server environment information in the *Db2 Recovery Expert User Guide* for valid options.

---

**ARYX029E**      **The command line option \"option\" value \"value\" is invalid.**

**Explanation:**

The command line option that is identified in the message is invalid.

**User response:**

Correct the command line option and retry the operation. See the Db2 Recovery Expert client/server environment information in the *Db2 Recovery Expert User Guide* for valid options.

---

**ARYX030E**      **The required command line option \"option\" was not specified.**

**Explanation:**

The required command line option that is identified in the message was not specified.

**User response:**

Correct the command line option and retry the operation. See the Db2 Recovery Expert client/server environment information in the *Db2 Recovery Expert User Guide* for valid options.

---

**ARYX031E**      **A value is required for the command line option \"option\".**

**Explanation:**

You did not enter a value for the command line option that is identified in the message.

**User response:**

Specify a value for the command line option and retry the operation. See the Db2 Recovery Expert client/

server environment information in the *Db2 Recovery Expert User Guide* for valid options.

---

**ARYX032E**      **Too many values were specified for the command line option \"option\".**

**Explanation:**

You entered too many values for the command line option that is identified in the message.

**User response:**

Specify only one value for the command line option and retry the operation. See the Db2 Recovery Expert client/server environment information in the *Db2 Recovery Expert User Guide* for valid options.

---

**ARYX033E**      **The command line option \"option\" does not accept any values.**

**Explanation:**

You entered a value for the command line option that is identified in the message.

**User response:**

Correct the command line option and retry the operation. See the Db2 Recovery Expert client/server environment information in the *Db2 Recovery Expert User Guide* for valid options.

---

**ARYX034S**      **A severe error occurred during command line processing; an unknown exception occurred.**

**Explanation:**

A severe error occurred during command line processing; an unknown exception occurred.

**User response:**

Contact IBM Software Support.

---

**ARYX035E**      **The operation completed successfully.**

**Explanation:**

The operation completed successfully.

**User response:**

No action is required.

---

**ARYX036E**      **The address family is not supported by the protocol family (socket-return-code).**

**Explanation:**

The address family is not supported by the protocol family.

**User response:**

Contact IBM Software Support.

---

**ARYX037E**      **The operation is still in progress (socket-return-code).**

**Explanation:**

The operation that is identified in the message is still in progress.

**User response:**

Contact IBM Software Support.

---

**ARYX038E**      **Permission is denied (*socket-return-code*).**

**Explanation:**

Permission is denied.

**User response:**

Contact IBM Software Support.

---

**ARYX039E**      **The network is down (*socket-return-code*).**

**Explanation:**

The network is down.

**User response:**

Contact IBM Software Support.

---

**ARYX040E**      **No buffer space is available (*socket-return-code*).**

**Explanation**

No buffer space is available.

**User response:**

Contact IBM Software Support.

---

**ARYX041E**      **Too many sockets have been opened (*socket-return-code*).**

**Explanation:**

Too many sockets have been opened.

**User response:**

Contact IBM Software Support.

---

**ARYX042E**      **The protocol is not supported (*socket-return-code*).**

**Explanation:**

The protocol is not supported.

**User response:**

Contact IBM Software Support.

---

**ARYX043E**      **The WSStartup routine was not called (*socket-return-code*).**

**Explanation:**

The WSStartup routine was not called.

**User response:**

Contact IBM Software Support.

---

**ARYX044E**      **The protocol is the wrong type for the socket (*socket-return-code*).**

**Explanation:**

The protocol is the wrong type for the socket.

**User response:**

Contact IBM Software Support.

---

**ARYX045E**      **The socket type is not supported (*socket-return-code*).**

**Explanation:**

The socket type is not supported.

**User response:**

Contact IBM Software Support.

---

**ARYX046E**      **The destination network is unreachable (*socket-return-code*).**

**Explanation:**

The destination network is unreachable.

**User response:**

Ensure that the correct host name or IP address was specified.

---

**ARYX047E**      **The socket handle is invalid (*socket-return-code*).**

**Explanation:**

The socket handle is invalid.

**User response:**

Contact IBM Software Support.

---

**ARYX048E**      **The address is already in use (*socket-return-code*).**

**Explanation:**

The address is already in use.

**User response:**

Contact IBM Software Support.

---

**ARYX049E**      **The function call was interrupted (*socket-return-code*).**

**Explanation:**

The function call was interrupted.

**User response:**

Contact IBM Software Support.

---

**ARYX050E**      **The requested address is not available (*socket-return-code*).**

**Explanation:**

The requested address is not available.

**User response:**

Contact IBM Software Support.

---

**ARYX051E**      **The connection was aborted (*socket-return-code*).**

**Explanation:**

The connection was aborted.

**User response:**

Contact IBM Software Support.

---

**ARYX052E**      **The connection was refused by the partner (*socket-return-code*).**



**Explanation:**

The connection was refused by the partner.

**User response:**

Ensure that the correct port number was specified, and that the partner application has been started and is available.

---

**ARYX053E**      **The connection was reset by the partner (socket-return-code).**

**Explanation:**

The partner application terminated the network connection.

**User response:**

If this is unexpected, diagnose the other application's failure. Otherwise, no action is required.

---

**ARYX054E**      **The network message is too long (socket-return-code).**

**Explanation:**

The network message is too long.

**User response:**

Contact IBM Software Support.

---

**ARYX055E**      **The network dropped the connection when reset (socket-return-code).**

**Explanation:**

The network dropped the connection when reset.

**User response:**

Contact IBM Software Support.

---

**ARYX056E**      **An invalid parameter was specified (socket-return-code).**

**Explanation:**

An invalid parameter was specified.

**User response:**

Contact IBM Software Support.

---

**ARYX057E**      **The socket is not connected (socket-return-code).**

**Explanation:**

The socket is not connected.

**User response:**

Contact IBM Software Support.

---

**ARYX058E**      **The operation is not supported (socket-return-code).**

**Explanation:**

The operation is not supported.

**User response:**

Contact IBM Software Support.

---

**ARYX059E**      **The socket has been closed (socket-return-code).**

**Explanation:**

The socket has been closed.

**User response:**

Contact IBM Software Support.

---

**ARYX060E**      **The socket is already connected (socket-return-code).**

**Explanation:**

The socket is already connected.

**User response:**

Contact IBM Software Support.

---

**ARYX061S**      **An unknown error occurred (socket-return-code).**

**Explanation:**

An unknown error occurred.

**User response:**

Contact IBM Software Support.

---

**ARYX062E**      **A socket error occurred on "*socket-operation*": *message-text***

**Explanation:**

A socket error occurred on the operation that is identified in the message.

**User response:**

Use the specified message text to diagnose the error.

---

**ARYX063E**      **A socket select error occurred: *message-text***

**Explanation:**

A socket select error occurred. Additional message text is also displayed.

**User response:**

Use the specified message text to diagnose the error.

---

**ARYX064E**      **An XML schema violation was detected; expected root element "*element-expected*", but found "*element-found*" instead.**

**Explanation:**

An XML schema violation was detected.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support.

---

**ARYX066E**      **An XML schema violation was detected; element "*element*" value "*value*" is invalid.**

**Explanation:**

An XML schema violation was detected. The element that is identified in the message is invalid.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support.

---

**ARYX067E**      **An XML schema violation was detected; element name \"*element*\" is invalid.**

**Explanation:**

An XML schema violation was detected. The element name that is identified in the message is invalid.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support.

---

**ARYX068E**      **An XML schema violation was detected; element name \"*element-found*\" is invalid (expected \"*element-expected*\").**

**Explanation:**

An XML schema violation was detected. The element name that is identified in the message is invalid.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support.

---

**ARYX071E**      **An error occurred while invoking the subsystem interface (RC =*return-code*).**

**Explanation:**

The specified return code was returned by the MVS subsystem interface when trying to query job status or results.

**User response:**

See *MVS Using the Subsystem Interface* for more information about the return code.

---

**ARYX072E**      **An error occurred while invoking the SYSOUT API (SSOBRETN = *return-code*, SSS2REAS = *reason-code*).**

**Explanation:**

The specified return code was returned by the MVS subsystem interface when trying to query job status or results.

**User response:**

See *MVS Using the Subsystem Interface* for more information about the return code.

---

**ARYX074E**      **An abend occurred: *abendcode***

**Explanation:**

This message indicates that a system and/or a user abend has occurred. Additional diagnostic information may be present in the message when applicable.

**User response:**

Contact IBM Software Support.

---

**ARYX075E**      **An abend occurred: *system-code/ user-code***

**Explanation:**

This message indicates that a system and/or a user abend has occurred. Additional diagnostic information may be present in the message when applicable.

**User response:**

Contact IBM Software Support.

---

**ARYX076E**      **An XML schema violation was detected; element \"*element*\" attribute \"*attribute*\" value \"*value*\" is invalid.**

**Explanation:**

An XML schema violation was detected. The element that is identified in the message is invalid.

**User response:**

If the error occurred while reading the agent or server configuration file, correct the file contents. Otherwise, contact IBM Software Support.

---

**ARYX077E**      **A Db2 attachment facility error occurred: function = *function-code*, RC = *return-code*, reason = *reason-code*.**

**Explanation:**

A Db2 attachment facility error occurred.

**User response:**

An error occurred while performing a Db2 attachment function. See *Db2 Messages and Codes* for more information about the return and reason codes.

---

**ARYX078E**      **An error occurred while opening the Db2 load libraries: RC = *return-code*.**

**Explanation:**

An error occurred while opening the Db2 load libraries.

**User response:**

Ensure that the correct list of load libraries for the Db2 subsystem is configured in the product control file, using sample job ARYSJ001. See *DFSMS Macro Instructions For Data Sets* for more information about the return code.

---

**ARYX079E**      **An error occurred while attaching the Db2 attachment facility subtask: RC = *return-code*.**

**Explanation:**

An error occurred while attaching the Db2 attachment facility subtask.

**User response:**

Contact IBM Software Support.

---

**ARYX080S**      **The Db2 attachment facility subtask ended unexpectedly: RC = return-code.**

**Explanation:**

The Db2 attachment facility subtask ended unexpectedly.

**User response:**

Contact IBM Software Support.

---

**ARYX081E**      **An SQL error occurred: SQL code = sql-code, SQL state = sql-state**

**Explanation:**

An SQL error occurred.

**User response:**

See *Db2 Messages and Codes* for more information about the SQL code and SQL state values.

---

**ARYX082E**      **The input Db2 command is too long.**

**Explanation:**

The input Db2 command is too long.

**User response:**

Contact IBM Software Support.

---

**ARYX083E**      **An error occurred while making an IFI function-code call: IFARC1 = return-code, IFARC2 = reason-code.**

**Explanation:**

An error occurred while making an IFI call.

**User response:**

See *Db2 Messages and Codes* for more information about the SQL code and SQL state values.

---

**ARYX084E**      **Insufficient data was returned from an IFI call.**

**Explanation:**

Insufficient data was returned from an IFI call.

**User response:**

Contact IBM Software Support.

---

**ARYX085E**      **A dynamic allocation error occurred: info code = info-code, error code = error-code.**

**Explanation:**

A dynamic allocation error occurred.

**User response:**

See *MVS Programming: Authorized Assembler Services Guide* for more information about the specified info and error codes.

---

**ARYX086E**      **A dynamic concatenation error occurred: info code = info-code, error code = error-code.**

**Explanation:**

A dynamic concatenation error occurred.

**User response:**

See *MVS Programming: Authorized Assembler Services Guide* for more information about the specified info and error codes.

---

**ARYX087E**      **A dynamic free error occurred: info code = info-code, error code = error-code.**

**Explanation:**

A dynamic free error occurred.

**User response:**

See *MVS Programming: Authorized Assembler Services Guide* for more information about the specified info and error codes.

---

**ARYX088E**      **An invalid dynamic allocation parameter was specified: code = parm-code.**

**Explanation:**

An invalid dynamic allocation parameter was specified.

**User response:**

Contact IBM Software Support.

---

**ARYX089E**      **The specified user ID user-id and password are invalid.**

**Explanation:**

You entered a user ID and password that are invalid.

**User response:**

Correct the user ID and password and retry the operation.

---

**ARYX090E**      **The specified password for user ID user-id has expired.**

**Explanation:**

The specified password for the user ID that is identified in the message has expired.

**User response:**

Use native facilities to change your password, then retry the operation.

---

**ARYX091E**      **Access for the specified user ID user-id has been revoked.**

**Explanation:**

Access for the specified user ID that is identified in the message has been revoked.

**User response:**

See your security administrator to get your user ID reinstated.

---

**ARYX092E**      **An error occurred while performing authentication: SAF RC = saf-return-code, RC = return-code, RSN = reason-code.**

**Explanation:**

An error occurred while performing authentication.

**User response:**

Contact IBM Software Support.

---

**ARYX093S**      **An unexpected error occurred  
(file-name, line-number).**

**Explanation:**

An unexpected error occurred.

**User response:**

Contact IBM Software Support.

---

**ARYX094S**      **An unexpected error occurred with  
token \"token, \" (file-name, ).**

**Explanation:**

An unexpected error occurred.

**User response:**

Contact IBM Software Support.

---

**ARYX095S**      **An unexpected error occurred with  
tokens \"token\" and \"token\"  
(file-name, line-number).**

**Explanation:**

An unexpected error occurred.

**User response:**

Contact IBM Software Support.

---

**ARYX096S**      **An unexpected error occurred  
with tokens \"token, token \" and  
\"token\" (file-name, line-number).**

**Explanation:**

An unexpected error occurred.

**User response:**

Contact IBM Software Support.

---

**ARYX097S**      **An unexpected error occurred  
with tokens \"token, token, token,  
\" and \"token\" (file-name, line-  
number.**

**Explanation:**

An unexpected error occurred.

**User response:**

Contact IBM Software Support.

---

**ARYX098E**      **A thread error occurred  
on \"thread-operation\": message-  
text**

**Explanation:**

A thread error occurred.

**User response:**

Contact IBM Software Support.

---

**ARYX101E**      **An event error occurred on  
\"event-operation\": message-text**

**Explanation:**

An event error occurred.

**User response:**

Use the specified message text to diagnose the error.

---

**ARYX104E**      **A mutex error occurred on  
\"mutex-operation\": message-text**

**Explanation:**

A mutex error occurred.

**User response:**

Use the specified message text to diagnose the error.

---

**ARYX109E**      **A semaphore error occurred  
on \"semaphore-operation\":  
message-text**

**Explanation:**

A semaphore error occurred.

**User response:**

Use the specified message text to diagnose the error.

---

**ARYX110I**      **The network connection has been  
disconnected.**

**Explanation:**

The network connection has been disconnected.

**User response:**

No action is required.

---

**ARYX111E**      **An SQL error occurred with SQL  
code = sql-code and SQL state  
= sql-state. SQL message text  
follows: message-text**

**Explanation:**

An SQL error occurred and SQL message text is displayed.

**User response:**

See *Db2 Messages and Codes* for more information about the SQL code and SQL state values.

---

**ARYX112E**      **An SQL error occurred with SQL  
code = sql-code and SQL state =  
sql-state.**

**Explanation:**

An SQL error occurred.

**User response:**

See *Db2 Messages and Codes* for more information about the SQL code and SQL state values.

---

**ARYX113E**      **An SQL error occurred with SQL  
code = sql-code and SQL state =  
sql-state.**

**Explanation:**

An SQL error occurred.

**User response:**

See *Db2 Messages and Codes* for more information about the SQL code and SQL state values.

---

**ARYX114E**      **A dynamic allocation query error occurred: info code = *info-code*, error code = *error-code*.**

**Explanation:**

A dynamic allocation query error occurred.

**User response:**

See *MVS Programming: Authorized Assembler Services Guide* for more information about the specified info and error codes.

---

**ARYX115E**      **An input command error occurred on *"command-operation"*: *message-text***

**Explanation:**

An input command error occurred.

**User response:**

Contact IBM Software Support.

---

**ARYX116I**      **Received input command: *command*.**

**Explanation:**

Received input command.

**User response:**

No action is required.

---

**ARYX117E**      **Excessive data was encountered in the ASN.1 data stream.**

**Explanation:**

Excessive data was encountered in the ASN.1 data stream.

**User response:**

Contact IBM Software Support.

---

**ARYX118E**      **Insufficient data was encountered in the ASN.1 data stream.**

**Explanation:**

Insufficient data was encountered in the ASN.1 data stream.

**User response:**

Contact IBM Software Support.

---

**ARYX119E**      **An unsupported ASN.1 feature was encountered.**

**Explanation:**

An unsupported ASN.1 feature was encountered.

**User response:**

Contact IBM Software Support.

---

**ARYX120E**      **Invalid DES-encrypted data was encountered.**

**Explanation:**

Invalid DES-encrypted data was encountered.

**User response:**

Contact IBM Software Support.

---

**ARYX121E**      **Invalid DES-encrypted data was encountered (pad = *pad-value*).**

**Explanation:**

Invalid DES-encrypted data was encountered.

**User response:**

Contact IBM Software Support.

---

**ARYX122I**      **Build date *component* = *date*.**

**Explanation:**

Identifies the build date of the component that is identified in the message.

**User response:**

No action is required.

---

**ARYX123W**      **The action was cancelled.**

**Explanation:**

The operation was cancelled due to user or administrator request.

**User response:**

No action is required.

---

**ARYX124E**      **The task is not running APF-authorized.**

**Explanation:**

The task is not running APF-authorized. The Db2 Recovery Expert load library, and the load libraries for all of the Db2 subsystems accessed, must be APF-authorized.

**User response:**

See *Db2 Recovery Expert User Guide* for more information about the agent and the required configuration steps.

---

**ARYX125E**      **An error occurred while retrieving product configuration data: RC = *return-code*.**

**Explanation:**

An error occurred while retrieving product configuration data.

**User response:**

Ensure that a product control file has been created and loaded using sample jobs ARYSJ000 and ARYSJ001, and that it is allocated to the Db2PARMS DD.

---

**ARYX126E**      **A DLL error occurred on *"dll-operation"*: *message-text***

**Explanation:**

A DLL error occurred on the operation that is identified in the message.

**User response:**

Contact IBM Software Support.

---

**ARYX127S**      **An error occurred while opening log file `"file-name"`.**

**Explanation:**

An error occurred while opening the log file that is identified in the message.

**User response:**

Contact IBM Software Support.

---

**ARYX128E**      **An error occurred while submitting the job: RC = *return-code*.**

**Explanation:**

An error occurred while submitting the job.

**User response:**

Contact IBM Software Support.

---

**ARYX129I**      **Job *job-id* was submitted.**

**Explanation:**

The job that is identified in the message was submitted.

**User response:**

No action is required.

---

**ARYX130E**      **An ICSF cryptographic error occurred: API = *apiname*, RC = *returncode*, REASON = *reason*.**

**Explanation:**

The Integrated Cryptographic Service Facility fails on *apiname*. For additional diagnostic information see the return code and reason as explained in the message text.

**User response:**

Contact your product administrator.

---

**ARYX133I**      **Location: LINE = *<line number>*, COL = *<column-number>*, system\_id = *<system-id>***

**Explanation:**

This message provides additional information about the XML schema violation. It shows *<line number>*, *<column-number>*, and *<system-id>* where the error has occurred.

**User response:**

Use the specified message text to correct invalid XML if this is available or contact support.

---

**ARYX136W**      **ICSF cryptographic services are not available.**

**Explanation:**

The warning specifies that the Integrated Cryptographic Service Facility is not available.

**User response:**

No action is required since native encryption methods will be used instead of ICSF.

---

---

**ARYX137W**      **The specified resource *resourcename* is not protected by RACF.**

**Explanation:**

The warning specifies the profile *resourcename* that is used for authentication is not protected by RACF.

**User response:**

Contact your product administrator.

---

**ARYX138E**      **The user *userid* is not authorized to access the resource *resourcename*.**

**Explanation:**

An error occurs because the specified user is not authorized to access the resource *resourcename*.

**User response:**

Contact your product administrator.

---

**ARYX139E**      **An error occurred while authorizing user *userid*: SAF RC = *saf-rc*, RC = *returncode*, RSN = *reason*.**

**Explanation:**

An error occurs while authorizing user. For additional diagnostic information see the recode code and reason explanation.

**User response:**

Contact your product administrator.

---

**ARYX140E**      **An error occurred while opening the configuration file *filename message-text*.**

**Explanation:**

An error occurred while opening the configuration file identified in the message. Additional error information is also contained within the message.

**User response:**

Use the specified message text to diagnose the error that occurred. Specify a valid configuration file that is not in use by any other process.

---

**ARYX141E**      **A SSL error occurred on socket-operation: *message-text*.**

**Explanation:**

A SSL socket error occurred on the operation that is identified in the message.

**User response:**

Use the specified message text to diagnose the error that occurred.

---

**ARYX157E**      **Catalog Search Interface: error RC = *return-code*, RSN = *reason-code***

**Explanation:**

The call to the Catalog Search Interface has ended with an error.

**User response:**

Use the specified *return-code* and *reason-code* to diagnose the error using the *Catalog Search Interface User's Guide*.

---

**ARYX158E**      **Catalog Search Interface: Invalid mask = *mask***

**Explanation:**

An invalid filter key was provided to the Catalog Search Interface. This may indicate an invalid data set name in the catalog that is being searched.

**User response:**

Fix filter key and try again.

---

**ARYX159E**      **Unable to load *module*.**

**Explanation:**

Indicates that the Catalog Search Interface program cannot load the specified module *module*.

**User response:**

Check that the program is installed properly.

---

**ARYX160E**      **A dynamic allocation query error occurred: info code = *info-code*, error code = *error-code*, DD name = *dd-name*.**

**Explanation:**

A dynamic allocation query error occurred with the specified information code, error code, and DD name.

**User response:**

See the *MVS Programming: Authorized Assembler Services Guide* for more information about the specified information and error codes.

---

**ARYX161I**      **SSL connection closed (RC = *return-code*): *message-text***

**Explanation:**

Indicates that the SSL connection has been closed.

**User response:**

No action is required. Use the specified message text to diagnose the reason.

---

**ARYX162W**      **[SSL] *key-database-directory* can be read by any user in the same group as the owner.**

**Explanation:**

This message warns that the key database directory can be read by any user in the same group as the owner.

**User response:**

No action is required. You can change directory permissions to be more secure if it is necessary.

---

**ARYX163W**      **[SSL] *key-database-directory* can be read by any user.**

**Explanation:**

This message warns that the key database directory can be read by anyone.

**User response:**

No action is required. You can change directory permissions to be more secure if it is necessary.

---

**ARYX164W**      **[SSL] *key-database-directory* can be modified by any user in the same group as the owner.**

**Explanation:**

This message warns that the key database directory can be modified by any user in the same group as the owner.

**User response:**

No action is required. You can change directory permissions to be more secure if it is necessary.

---

**ARYX165W**      **[SSL] *key-database-directory* can be modified by any user.**

**Explanation:**

This message warns that the key database directory can be modified by any user.

**User response:**

No action is required. Change directory permissions to be more secure if it is necessary.

---

**ARYX166W**      **[SSL] *key-database-directory* is not owned by *user-name*.**

**Explanation:**

This message warns that the key database directory is not owned by the current user.

**User response:**

No action is required. Change directory permissions to be more secure if it is necessary.

---

**ARYX168I**      **ICSF cryptographic services are available.**

**Explanation:**

Indicates that ICSF (cryptographic services) are available.

**User response:**

No action is required.

---

**ARYX183E**      **The number of file descriptors (sockets) has exceeded maximum = *number***

**Explanation:**

The active program holds too many file or socket descriptors and exceeded system maximum *number*.

**User response:**

Contact your system administrator or IBM Software Support.

---

**ARYX184E** [SSL] User *user-name* does not have the necessary permissions to read the key database *database-name*.

**Explanation:**

User *user-name* does not have the necessary permissions to read the specified key database *database-name*.

**User response:**

Check the necessary permissions for the key database file. The file must be readable by the user or group that is attempting to access it.

---

**ARYX195E** An invalid padding byte was encountered in the encrypted data.

**Explanation:**

Web UI uses deprecated encryption to communicate with a server task.

**User response:**

Perform HOLD ACTION for PTF UI81362.

---

**ARYY001S** The agent at *host-address* has unexpectedly disconnected.

**Explanation:**

The agent at the *host-address* that is identified in the message has unexpectedly disconnected.

**User response:**

Check the agent's log for any errors and contact IBM Software Support if needed.

---

**ARYY002I** Received command acknowledgment.

**Explanation:**

Received command acknowledgment.

**User response:**

No action is required.

---

**ARYY003I** Received command response.

**Explanation:**

Received command response.

**User response:**

No action is required.

---

**ARYY005E** Location *location-name* does not exist on *machine-name*.

**Explanation:**

The location that is identified in the message does not exist.

**User response:**

Verify that the identified subsystem or data sharing group exists on the identified machine.

---

**ARYY008E** The configuration file *file-name* is invalid; the root element *element* is not *<server-config>*.

**Explanation:**

The contents of the specified configuration file are invalid.

**User response:**

Correct the file contents to specify *<server-config>* as the root XML element.

---

**ARYY009E** An error occurred while opening the configuration file *file-name*. *message-text*

**Explanation:**

An error occurred while opening the configuration file that is identified in the message.

**User response:**

Review the message text for more information about the error that occurred. Specify a valid configuration file which is not in use by any other process.

---

**ARYY009E** Message with ID = *id* does not exist.

**Explanation:**

The message with the ID that is identified in the message does not exist.

**User response:**

Contact IBM Software Support.

---

**ARYY011E** A task is in progress for .

**Explanation:**

The specification could not be deleted or renamed because it has an active related job to be viewed by the user.

**User response:**

Either wait for the job to end, or open the specification and cancel the job before deleting the specification.

---

**ARYY012E** Received an acknowledgment with sequence = *sequence-id* and ID = *request-id* from an agent session with ID = *session-id*.

**Explanation:**

Received an acknowledgment that is identified in the message from an agent session.

**User response:**

No action is required.

---

**ARYY013E** Received a data message from an agent session with ID = *session-id*.

**Explanation:**

Received a data message from an agent session with the ID that is identified in the message.

**User response:**



No action is required.

---

**ARYY014E**      **Received a negative acknowledgment with sequence = from an agent session with ID = session-id.**

**Explanation:**

Db2 Recovery Expert received a negative acknowledgment from an agent session that is identified in the message.

**User response:**

No action is required.

---

**ARYY015E**      **Received a report with type = type from an agent session with ID = session-id.**

**Explanation:**

Db2 Recovery Expert received a report from an agent that is identified in the message.

**User response:**

No action is required.

---

**ARYY016I**      **Received request with sequence = sequence-id and type = type from client session session-id.**

**Explanation:**

Recovery Expert received a request from the client session that is identified in the message.

**User response:**

No action is required.

---

**ARYY017I**      **Received a response with ID = id, type = type, and final indicator = indicator from an agent session with ID = session-id.**

**Explanation:**

Db2 Recovery Expert received a response from an agent session that is identified in the message.

**User response:**

No action is required.

---

**ARYY019E**      **specification is already open.**

**Explanation:**

The specification that is identified in the message is already open.

**User response:**

Switch to the specification's active window rather than trying to open the specification a second time.

---

**ARYY020E**      **specification is in use by user-id at host-address.**

**Explanation:**

The specification is in use by a user that is identified in the message.

**User response:**

Contact the specified user to coordinate use of the specification, or use a different specification.

---

**ARYY021E**      **specification is not open.**

**Explanation:**

The specification that is identified in the message is not open.

**User response:**

Contact IBM Software Support.

---

**ARYY022I**      **Db2 Recovery Expert server started.**

**Explanation:**

Db2 Recovery Expert server started.

**User response:**

No action is required.

---

**ARYY023I**      **(CT request-id) Task started.**

**Explanation:**

Task started.

**User response:**

No action is required.

---

**ARYY024E**      **(CT request-id) Error: message-text**

**Explanation:**

Message text identifies the error and the request ID.

**User response:**

Use the specified message text to diagnose the error.

---

**ARYY025I**      **(CT request-id) Task ended.**

**Explanation:**

Task ended.

**User response:**

No action is required.

---

**ARYY026I**      **(CT request-id) Started processing request with sequence = sequence-id and type = type.**

**Explanation:**

Db2 Recovery Expert started processing the request that is identified in the message.

**User response:**

No action is required.

---

**ARYY027I**      **(CT request-id) Completed processing request with sequence = sequence-id and type = type.**

**Explanation:**

Db2 Recovery Expert completed processing the request that is identified in the message.

**User response:**

No action is required.

---

**ARYY028E**      **(CT request-id) Task does not exist.**

**Explanation:**  
Task does not exist.

**User response:**  
IBM Software Support.

---

**ARYY029I**      **Db2 Recovery Expert server is terminating normally.**

**Explanation:**  
Db2 Recovery Expert server is terminating normally.

**User response:**  
No action is required.

---

**ARYY030E**      **Db2 Recovery Expert server is terminating due to prior errors.**

**Explanation:**  
Db2 Recovery Expert server is terminating due to prior errors.

**User response:**  
See preceding messages to determine why the server is terminating.

---

**ARYY031E**      **An invalid request type \"request-id\" was received.**

**Explanation:**  
An invalid request type that is identified in the message was received.

**User response:**  
Contact IBM Software Support.

---

**ARYY032E**      **Invalid data was received from an agent: data.**

**Explanation:**  
Invalid data that is identified in the message was received from an agent.

**User response:**  
Contact IBM Software Support.

---

**ARYY033I**      **Db2 Recovery Expert is terminating. Please end your session.**

**Explanation:**  
Db2 Recovery Expert is terminating.

**User response:**  
End your session.

---

**ARYY034E**      **An invalid report type \"report-id\" was received.**

**Explanation:**  
An invalid report type that is identified in the message was received.

**User response:**  
Contact IBM Software Support.

---

**ARYY035I**      **(AT request-id) Task started.**

**Explanation:**  
Task started.

**User response:**  
No action is required.

---

**ARYY036I**      **(AT request-id) Error: message-text.**

**Explanation:**  
Message text identifies the error and the request ID.

**User response:**  
Use the specified message text to diagnose the error.

---

**ARYY037I**      **(AT request-id) Task ended.**

**Explanation:**  
Task ended.

**User response:**  
No action is required.

---

**ARYY038I**      **(AT request-id) Sent request. agent-info {id=agent-id}; request-info {type=request-type,sequence=sequence-id}**

**Explanation:**  
Request sent.

**User response:**  
No action is required.

---

**ARYY039I**      **(AT request-id) Received ack. agent-info {id=agent-id}; nack-info {sequence=sequence-id, id=request-id}**

**Explanation:**  
Acknowledgment received.

**User response:**  
No action is required.

---

**ARYY040I**      **(AT request-id) Received ack. agent-info {id=agent-id}; ack-info {sequence=sequence-id}**

**Explanation:**  
Negative acknowledgment received.

**User response:**  
No action is required.

---

**ARYY041I**      **(AT request-id) Received response. agent-info {id=agent-id}; response-info {id=request-id, final =indicator}**

**Explanation:**  
Response received.

**User response:**  
No action is required.

---

**ARYY042I** (AT *request-id*) Agent disconnected unexpectedly. agent-info {id=*agent-id*}

**Explanation:**  
Agent disconnected unexpectedly.

**User response:**  
Review the agent job output to determine why it disconnected unexpectedly.

---

**ARYY043I** Task was cancelled.

**Explanation:**  
Task was cancelled.

**User response:**  
No action is required.

---

**ARYY044S** The agent for location *location-name* has unexpectedly disconnected.

**Explanation:**  
The agent for the location that is identified in the message has unexpectedly disconnected.

**User response:**  
Review the agent job output to determine why it disconnected unexpectedly.

---

**ARYY045E** Specification already exists.

**Explanation:**  
The specification already exists.

**User response:**  
Specify a different specification owner or name.

---

**ARYY046E** The length of the "*parameter*" configuration parameter exceeds *number*.

**Explanation:**  
The length of the configuration parameter that is identified in the message exceeds the maximum allowable length.

**User response:**  
Specify a value for the configuration parameter which does not exceed the maximum allowable length.

---

**ARYY047E** Specification authorization error.

**Explanation:**  
Specification authorization error.

**User response:**  
Specify a different specification owner, or contact the owner of the specification in order to complete the task.

---

**ARYY048I** (ACP) Received *command* command.

**Explanation:**

Db2 Recovery Expert received the command that is identified in the message.

**User response:**  
No action is required.

---

**ARYY049I** (ACP) *command* -- Begin output.

**Explanation:**  
This is the beginning of the output from the command that is identified in the message.

**User response:**  
No action is required.

---

**ARYY050I** (ACP) *command* -- End output.

**Explanation:**  
This is the end of the output from the command that is identified in the message.

**User response:**  
No action is required.

---

**ARYY051E** (ACP) *command* not recognized.

**Explanation:**  
The command that is identified in the message is not recognized.

**User response:**  
Specify a command that is supported by the server. See *The Db2 Recovery Expert client/server environment* in the *Db2 Recovery Expert User Guide* for supported administrative commands.

---

**ARYY052E** (ACP) *command* -- Unique specification ID not specified.

**Explanation**

The command is not properly formatted.

**User response**

See "The Db2 Recovery Expert for z/OS client/server environment" for supported administrative commands.

---

**ARYY053E** (ACP) *command* -- Session ID required.

**Explanation:**  
The command is not properly formatted.

**User response:**  
See *The Db2 Recovery Expert client/server environment* in the *Db2 Recovery Expert User Guide* for supported administrative commands.

---

**ARYY054I** The administrator has requested that this session be ended. Please end your session.

**Explanation:**  
The administrator has requested that this session be ended.

**User response:**  
End your session.

---

**ARYY055I**      **Sending report with type = *type* to client with session id = *session-id*.**

**Explanation:**  
Db2 Recovery Expert is sending the report that is identified in the message.

**User response:**  
No action is required.

---

**ARYY056E**      **Protocol verification has failed. The client reported a version of *version-number* and the server expected *version-number* or higher.**

**Explanation:**  
This error occurs if there is a mismatch between the client version and the server version and the mismatch would cause unpredictable results.

**User response:**  
Please verify that the version of the server and the client is the same.

---

**ARYY057E**      **Specified interface *stack-name* (IP address *ipaddress*, index *index* can not be configured for multicasting.**

**Explanation:**  
Attempt to configure specified network interface for multicasting fails.

**User response:**  
Contact your product administrator.

---

**ARYY058I**      **No interfaces are available for multicasting.**

**Explanation:**  
There are no network interfaces in the system available for multicasting.

**User response:**  
Contact your product administrator.

---

**ARYY059I**      **Attempting to configure multicasting at interface *ip-stack-name@interface-name* (IP address *IP address*, index *index*. Multicasting group address *multicast-address*.**

**Explanation:**  
Server is attempting to configure specified network interface to send announcements for multicast group *multicast-address*.

**User response:**  
No action is required.

---

**ARYY060I**      **Attempt to configure multicasting at default interface. Multicasting group address *multicast-address*.**

**Explanation:**  
Server is attempting to configure default network interface to send announcements for multicast group *multicast-address*.

**User response:**  
No action is required.

---

**ARYY061I**      **Multicasting has been configured successfully.**

**Explanation:**  
Indicates that multicasting has been configured successfully.

**User response:**  
No action is required.

---

**ARYY062I**      **Attempting to send multicast packet.**

**Explanation:**  
Server is attempting to send multicast announcement.

**User response:**  
No action is required.

---

**ARYY063I**      **Multicast packet sent successfully.**

**Explanation:**  
Server multicast announcements sent successfully.

**User response:**  
No action is required.

---

**ARYY064I**      **Attempting to enumerate network interfaces.**

**Explanation:**  
Server is attempting to enumerate network interfaces to send multicast announcements.

**User response:**  
No action is required.

---

**ARYY065I**      **Discovered *number* interfaces.**

**Explanation:**  
Server discovered a number of network interfaces represented by *number* which can be used to send server announcements.

**User response:**  
No action is required.

---

**ARYY066I**      **(AT *agent-task-id*) Received raw packet. agent-info {id=*agent-id*}**

**Explanation:**  
Specifies that the server has received a raw packet from the agent.

**User response:**

No action is required.

---

**ARYZ001E**      **A callable services abend *abend-code* has occurred.**

**Explanation:**

A callable services abend has occurred.

**User response:**

Contact IBM Software Support.

---

**ARYZ002E**      **GPRS *register-register: value value value value* .**

**Explanation:**

An abend has occurred.

**User response:**

No action is required. Preceding and/or following messages provide more information about the abend that occurred.

---

**ARYZ004E**      **Active module = *module-name*,  
load point = *address*, offset =  
*offset*.**

**Explanation:**

An abend has occurred.

**User response:**

No action is required. Preceding and/or following messages provide more information about the abend that occurred.

---

**ARYZ005E**      **PSW = *psw-contents*.**

**Explanation:**

An abend has occurred.

**User response:**

No action is required. Preceding and/or following messages provide more information about the abend that occurred.

---

**ARYZ007E**      **Callable service invocation failed  
with return code = *return-code* and  
reason code = *reason-code*.**

**Explanation:**

A callable service invocation failed with a return code and reason code that are identified in the message.

**User response:**

Contact IBM Software Support

---

**ARYZ013E**      **None of the image copies are  
enabled.**

**Explanation:**

Image copy options node does not specify a valid image copy. At least one of the image copy traditional types must be specified.

**User response:**

Contact IBM Software Support.

---

**ARYZ014E**      **Image copy type *<type-string>*  
already specified.**

**Explanation:**

Duplicated image copy of specified type found..

**User response:**

Pass data without duplicated image copies.

---

**ARYZ016E**      **No included objects were passed.**

**Explanation:**

At least one object or wildcard of type "include" should be specified in profile/specification.

**User response:**

Regenerate profile/specification and add required object or wildcard.

---

**ARYZ017E**      **No objects to recover were found.**

**Explanation:**

There are no recovery plans available for the selected objects.

**User response:**

Attempt to resolve this issue using the information available in the documentation under "No recovery plans generated". If unable to do so, contact IBM Software Support .

---

**ARYZ019E**      ***objectname* doesn't exist.**

**Explanation:**

The object was not found in Db2 and may have been either typed incorrectly or dropped from Db2.

**User response:**

Verify the correctness of the object name and its existence in the specified Db2 subsystem.

---

**ARYZ021E**      ***Specification* already exists.**

**Explanation:**

The specification that is identified in the message already exists.

**User response:**

Specify a different specification owner or name.

---

**ARYZ022E**      ***Specification* does not exist.**

**Explanation:**

The specification that is identified in the message does not exist.

**User response:**

Specify the owner and name of a specification that does exist.

---

**ARYZ023E**      **You are not authorized to delete  
*specification*.**

**Explanation:**

You are not authorized to delete the specification that is identified in the message.

**User response:**

See the owner of the specification to delete the specification.

---

**ARYZ024E**      **You are not authorized to open specification.**

**Explanation:**

You are not authorized to open the specification that is identified in the message.

**User response:**

See the owner of the specification to receive permission to open and use it.

---

**ARYZ025E**      **You are not authorized to save specification.**

**Explanation:**

You are not authorized to save the specification that is identified in the message.

**User response:**

Specify a different owner when saving the specification.

---

**ARYZ027E**      **Job job-number (beginning with \"jcl-text ...\") has invalid job cards.**

**Explanation:**

The job that is identified in the message has invalid job cards.

**User response:**

Specify valid job cards in the job. The job cards must not exceed 72 characters in length, and must include a job name on the JOB statement.

---

**ARYZ032E**      **You are not authorized to rename specification.**

**Explanation:**

You are not authorized to rename the specification that is identified in the message.

**User response:**

Contact the owner to rename the specification.

---

**ARYZ033E**      **A file read error occurred on file-name: message-text.**

**Explanation:**

A file read error has occurred on the file that is identified in the message.

**User response:**

Use the specified message text to diagnose why the specified file could not be read.

---

**ARYZ044E**      **A file open error occurred on file-name: message-text.**

**Explanation:**

A file open error occurred on the file that is identified in the message.

**User response:**

Use the specified message text to diagnose why the specified file could not be opened.

---

**ARYZ045E**      **The subsystem cannot be recovered because no system backups exist prior to the selected point in time.**

**Explanation:**

The subsystem cannot be recovered because no system backups exist prior to the selected point in time.

**User response:**

Use the BACKUP SYSTEM utility to take a subsystem-level backup of the Db2 subsystem.

---

**ARYZ051W**      **Use of a SHRLEVEL CHANGE copy during recovery could result in SQL errors or duplicate rows in the table.**

**Explanation:**

A warning is displayed by the product if SHRLEVEL CHANGE copy is used during recovery.

**User response:**

No action is required.

---

**ARYZ052E**      **Objects required for IBM Database Relationship Analyzer support have not been defined properly.**

**Explanation:**

Db2 Recovery Expert views and/or tables required for IBM Database Relationship Analyzer support have not been defined.

**User response:**

Verify that IBM Database Relationship Analyzer is installed and required Db2 Recovery Expert objects are defined using SAMPLIB member ARYDDLG.

---

**ARYZ053E**      **Objects required for IBM Db2 Automation Tool support have not been defined properly.**

**Explanation:**

Db2 Recovery Expert views and/or tables required for IBM Db2 Automation Tool support have not been defined.

**User response:**

Verify IBM Db2 Automation Tool is installed and required Db2 Recovery Expert objects are defined using the Tools Customizer.

---

**ARYZ054I**      **Discovered available backups for subsystem subsystem-id**

**Explanation:**

Discovered available backups for subsystem *subsystem-id*.

**User response:**  
No action is required.

---

**ARYZ055E**      **System Restore and Backup Services is not configured properly.**

**Explanation:**  
This message is always accompanied with another message regarding the specific configuration issue. In most cases, the agent JCL is missing a DD statement required for system restore and backup services.

**User response:**  
Check the agent JCL and add any missing DD statements required for supporting system restore and backup services.

---

**ARYZ056E**      **Scanned log range with IDENT = *id* does not exist.**

**Explanation:**  
The scanned log range was not found in Db2 and may have been either typed incorrectly or dropped from Db2.

**User response:**  
Verify the correctness of the scanned log range *id* and its existence in the specified Db2 subsystem.

---

**ARYZ057E**      ***user-id* is not authorized to delete scanned log range with IDENT = *id*.**

**Explanation:**  
The *user-id* specified in the message text is not authorized to delete the scanned log range that is also identified in the message.

**User response:**  
Choose another authorized user to delete the specified scanned log range.

---

**ARYZ058E**      **The combination of specified objects and patterns did not result in any valid list of objects.**

**Explanation:**  
The list of objects and patterns specified in the include list and the list of objects and patterns specified in the exclude list yield no objects.

**User response:**  
Edit the profile/specification. Add some object entries representing existing or dropped objects and delete any incorrect entries.

---

**ARYZ059E**      **Mask *dsn-maks* could not be resolved to a valid DSN. Encountered invalid character at *offset*.**

**Explanation:**  
An error occurs when resolving the data set name using the *dsn-maks* specified at *offset*.

**User response:**  
Specify a valid DSN mask and retry.

---

**ARYZ060E**      **The following objects are not eligible for quiet time analysis: *object-list***

**Explanation:**  
The objects in the list are not eligible for quiet time analysis.

**User response:**  
Attempt to resolve this issue by generating quiet times for the specified objects. If unable to do so, contact IBM Software Support.

---

**ARYZ061E**      **Too many DBRM libraries have been specified. Maximum is *max-number*.**

**Explanation:**  
The number of bind DBRM libraries that is specified in the user options XML exceeds the maximum value specified in *max-number*.

**User response:**  
Contact IBM Software Support.

---

**ARYZ062E**      **Set of recovery plans not found (SET\_ID = *set-id*).**

**Explanation:**  
The recovery plan set was not found in Db2 and may have been either typed incorrectly or dropped from Db2.

**User response:**  
Verify the correctness of the recovery plan *set-id* and its existence in the specified Db2 subsystem.

---

**ARYZ063E**      **Recovery plan not found (SET\_ID = *set-id*; PLAN\_ID = *plan-id*).**

**Explanation:**  
The recovery plan was not found in Db2 and may have been either typed incorrectly or dropped from Db2.

**User response:**  
Verify the correctness of the recovery plan and its existence in the specified Db2 subsystem.

---

**ARYZ064E**      **The length of the <*string*> parameter exceeds <*number*>.**

**Explanation:**  
The length of the string parameter that is identified in the message exceeds the maximum allowable length.

**User response:**  
Specify a value for the string parameter which does not exceed the maximum allowable length.

---

**ARYZ065E**      **Callable service invocation failed with return code = *rc*.**

**Explanation:**

A callable service invocation failed with a return code that is identified in the message.

**User response:**

Contact IBM Software Support.

---

**ARYZ066E**      **A #CIO error occurred: *message-text*.**

**Explanation:**

An error described in the variable *message-text* occurs while invoking the #CIO service.

**User response:**

Contact IBM Software Support.

---

**ARYZ067E**      **Coordinated profile *<creator>.<name>* does not exist.**

**Explanation:**

The coordinated profile was not found in the catalog and may have been either typed incorrectly or dropped from the catalog.

**User response:**

Verify the correctness of the coordinated profile *<creator>.<name>* and its existence in the specified catalog.

---

**ARYZ068E**      **Saved *number* quiet times for the coordinated profile.**

**Explanation:**

The specified number of quiet times were discovered for the coordinated profile and saved to the coordinated profile catalog.

**User response:**

No action is required.

---

**ARYZ069E**      **No common quiet times were found.**

**Explanation:**

No entries were made in the coordinated profile catalog because no common quiet times were found for coordinated profile.

**User response:**

Attempt to resolve this issue by generating quiet times for objects specified in the coordinated profile. If unable to do so, contact IBM Software Support.

---

**ARYZ070E**      **Required parameter *parameter-name* was not found.**

**Explanation:**

Required input parameter was not found.

**User response:**

Define values for all required input parameters.

---

**ARYZ071I**      **Retrieved *<number>* quiet times for *<profile>*.**

**Explanation:**

The number of quiet times as specified in the variable *<number>* were added to the Quiet Times Report for the profile *<profile>*.

**User response:**

No action is required.

---

**ARYZ072E**      **Parameter *<parameter-name>* has invalid format: *<parameter-value>***

**Explanation:**

The specified input parameter is invalid.

**User response:**

Specify a valid value for *<parameter-name>* and retry.

---

**ARYZ073E**      **Application profile *<owner>.<name>* is not associated with a coordinated profile.**

**Explanation:**

An error occurs while retrieving an application profile that is supposed to be associated with a coordinated profile.

**User response:**

Verify the correctness of the application profile creator and name and its existence in the coordinated profile catalog.

---

**ARYZ074I**      **Coordinated application recovery has been disabled as *<dd-name>* DD is not allocated.**

**Explanation:**

Coordinated application recovery has been disabled because a valid *<dd-name>* statement is not allocated .

**User response:**

No action is required.

---

**ARYZ075E**      ***<owner>.<name>* already exists on *<ssid>*.**

**Explanation:**

The specification already exists in the specified Db2 subsystem.

**User response:**

Specify a unique name for the specification.

---

**ARYZ076E**      **All operations with *<owner>.<name>* are valid only on *<ssid>*.**

**Explanation:**

The specification *<owner>.<name>* can only be used on the specified Db2 subsystem.

**User response:**

Access the specified Db2 subsystem to work with this specification.

---

**ARYZ078E**      **The page number is out of range of the source number.**



**Explanation:**

The number specified for a paging request is out of range.

**User response:**

Contact IBM Software Support.

**ARYZ079I**      **Data set <dataset-name> has been deleted.**

**Explanation:**

Specifies that the <dataset-name> has been deleted.

**User response:**

No action is required.

**ARYZ083E**      **Operation is not permitted: Specification <owner>.<name> is part of application group <parent-owner>.<parent.name>.**

**Explanation:**

A request has been made to include the specified application profile <owner>.<name> in an application group <parent-owner>.<parent.name>. However the application profile is already included in another application group. An application profile can only be a member of a single application group.

**User response:**

Select a different application profile or a different application group.

**ARYZ084E**      **Application group specification <owner>.<name> contains an incorrect reference type.**

**Explanation:**

Application group can contain only specifications that have the same object-collection type.

**User response:**

Exclude named specification from the application group and try again.

**ARYZ085E**      **Application collection specification <owner>.<name> already included in another application-group <parent-owner>.<parent.name>.**

**Explanation:**

Indicates that the selected application collection specification <owner>.<name> is included in another application group <parent-owner>.<parent.name>. An application collection specification can be a part of only one application group.

**User response:**

Exclude named specification from the application group and try again.

**ARYZ086E**      **Application group specification contains duplicate object collections.**

**Explanation:**

The application profiles that are included in the application group contain duplicate objects. The same object has been included for recovery in more than one application profile.

**User response:**

Change the application profiles that you are including in the group or change the objects that are scheduled to be recovered in the application profile.

**ARYZ087E**      **Failed on parsing object card <object-card>.**

**Explanation:**

Parsing of the specified object card failed.

**User response:**

Check your input. If you have not edited any field, contact IBM Customer Support.

**ARYZ089E**      **Only one automatic image copy can be specified.**

**Explanation:**

Automatic image copy has been specified more than one time.

**User response:**

Reduce the number of automatic image copies.

**ARYZ090E**      **An automatic image copy must be of Local Primary type.**

**Explanation:**

You have specified that the automatic image copy be a type other than Local Primary.

**User response:**

Be sure that a VSAM image copy of a type other than Local Primary is not marked as automatic.

**ARYZ091E**      **Number of volumes should be in the range from <min-work-volumes-number> to <max-work-volumes-number>.**

**Explanation:**

Number of work volumes must be in the specified range.

**User response:**

Specify valid value for the number of work volumes.

**ARYZ092E**      **<object-name> cannot be translated using the provided masks.**

**Explanation:**

Error indicates that the specified object cannot be translated using the provided masks.

**User response:**

Specify other masks or exclude the object from input.

---

**ARYZ093E**      **The product configuration does not allow saving a specification at the data sharing member level.**

**Explanation:**

The product has not been configured to allow saving a specification at the data sharing member level.

**User response:**

Use a data sharing group to save the specification.

---

**ARYZ099E**      **Operation is not permitted: Specification <application-profilename> is part**

**of application group <application-groupname>.**

**Explanation:**

A request has been made to include the specified application profile in an application group. However the application profile is already included in another application group. An application profile can only be a member of a single application group.

**User response:**

Select a different application profile or a different application group.

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