

IBM Security Verify Governance

*CA ACF2 for z/OS Adapter Installation
and Configuration Guide*



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Chapter 1. Overview

An adapter is an interface between a managed resource and the Identity server.

Adapters can be installed on the managed resource. The Identity server manages access to the resource by using the security system. Adapters function as trusted virtual administrators on the target operating system. The adapter creates, suspends, restores user accounts, and other functions that administrators run manually. The adapter runs as a service, independently of whether you are logged on to the Identity server.

IBM Security Verify Governance works with the ACF2 Security in an MVS™ environment. The adapter:

- Receives provisioning requests from IBM Security Verify Governance.
- Processes the requests to add, modify, suspend, restore, delete, and reconcile user information from the adapter security database.
- Converts the Directory Access Markup Language (DAML) requests that are received from IBM Security Verify Governance to the corresponding adapter Security for z/OS® commands. The Enrole Resource Management API (ERMA) libraries are used for the conversion.
- Issues the commands to the ACF2 command executor and receives the results.
- Returns the results of the command and includes the success or failure message of a request to IBM Security Verify Governance.

The following figure describes the various components of the adapter.

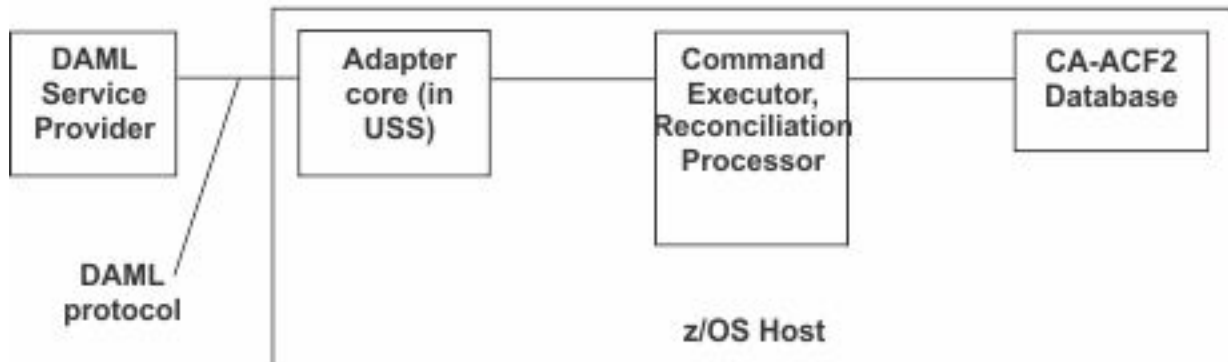


Figure 1. The ACF2 Adapter components

Adapter

Receives and processes requests from IBM Security Verify Governance. The adapter can handle multiple requests simultaneously. The binary files of the adapter and related external files reside in the Unix System Services environment of z/OS (OS/390®).

Command Executor

The ACF2 command executor interfaces with ACF2. It issues the R_Admin (IRRSEQ00) callable service to issue ACF2 commands. It processes the commands and returns relevant messages.

The REXX command executor interfaces with the ISIMEXIT REXX script. It uses IKJTSOEV to enable issuing TSO/E commands in the ISIMEXIT. To allocate and execute the ISIMEXIT REXX script it uses IRXLOAD with IRXEXEC or t socmd depending on the chosen configuration.

Reconciliation Processor

The Reconciliation Processor is a series of programs in the C programming language. By default, the Reconciliation Processor runs two programs to obtain data from the ACF2 database. The data is sorted and merged before it is sent back to the adapter.

Adapter interactions with the server

The ACF2 Adapter uses IBM Security Verify Governance to perform user tasks on the ACF2 Adapter Security for z/OS.

The adapter can add, modify, suspend, restore, reconcile, or delete users from IBM Security Verify Governance. The adapter uses the TCP/IP protocol to communicate with IBM Security Verify Governance.

The ACF2 Adapter does not use Secure Socket Layer (SSL) by default to communicate with IBM Security Verify Governance. You have to configure it.

SSL requires digital certificates and private keys to establish communication between the endpoints. Regarding SSL, the ACF2 Adapter is considered a *server*. When the adapter uses the SSL protocol, the server endpoint must contain a digital certificate and a private key. The *client* endpoint (IBM Security Verify Governance) must contain the Certificate Authority or CA certificate.

To enable SSL communication by default, install a digital certificate and a private key on the adapter and install the CA certificate on IBM Security Verify Governance.

The default TCP/IP port on the z/OS host for the adapter and server communication is 45580. You can change this port to a different port. You can specify the port number on the adapter service form on IBM Security Verify Governance. Ensure that it references the same port number that is configured for the adapter on the z/OS host.

Use the **agentCfig** utility to configure the adapter. The utility communicates with the adapter through TCP/IP. The TCP/IP port number that is used is dynamically assigned and is in the range 44970 - 44994. The port number and the range of port numbers cannot be configured.

You can restrict the use of these ports to the ACF2 Adapter. To protect these ports with the ACF2 protection, define the profiles in the ACF2 Adapter SERVAUTH resource class. Take note that applications run from the z/OS shell have a job name that is the started task name plus a one-character suffix. For example, when you are restricting port access with the PORT statement in the TCP/IP profile the job name has to be <jobname>* 01 <jobname>? to account for the suffix. For more information, see the z/OS Communications Server, IP Configuration Guide or <https://www.ibm.com/support/pages/node/78095>.

Chapter 2. Planning

Installing and configuring the adapter involves several steps that you must complete in a specific sequence. Follow the roadmap for the main tasks.

Roadmap for Adapter Development Kit based adapters, using ISPF

Follow this section when using the guide to install, configure, troubleshoot, or uninstall the adapter.

Pre-installation

Complete these tasks.

1. Verify that your environment meets the software and hardware requirements for the adapter. See *Prerequisites*.
2. Obtain the installation software. See *Software downloads*.
3. Obtain the necessary information for the installation and configuration. See *Installation worksheet*.

Installation

Complete these tasks.

1. Install the ISPF dialog.
2. Run the ISPF dialog.
3. Restart the adapter service.
4. Import the adapter profile.
5. Create an adapter service/target.
6. Install the adapter language package.
7. Verify that the adapter is working correctly.

Upgrade

To upgrade the adapter, do a complete re-installation of the adapter. Follow the *Installation roadmap*.

Configuration

Complete these tasks.

1. Configure secure communication between the Identity server and the adapter.
 - a. Configure 1-way authentication.
 - b. Configure 2-way authentication.
2. Configure secure communication between the adapter and the managed target.
 - a. Configure 1-way authentication.
 - b. Configure 2-way authentication.
3. Configure the adapter.
4. Modify the adapter profiles.
5. Customize the adapter.

Troubleshooting

See the following topics.

- Techniques for troubleshooting problems
- Configure debugging
- Logs
- Error messages and problem solving

Uninstallation

Complete these tasks.

1. Stop the adapter service.
2. Remove the adapter binaries or connector.
3. Remove 3rd party client libraries.
4. Delete the adapter service/target.
5. Delete the adapter profile.

Reference

See the following topics.

- Adapter attributes and object classes
- Adapter attributes by operations
- Special attributes

Related concepts

Prerequisites

Verify that your environment meets the software and hardware requirements for the adapter.

Software downloads

Download the software through your account at the IBM Passport Advantage website.

Prerequisites

Verify that your environment meets the software and hardware requirements for the adapter.

<i>Table 1. Prerequisites to install the adapter</i>	
Operating System	See the Release Notes [®] for the supported software versions.
Managed Resource	See the Release Notes for the supported software versions.
Network Connectivity	Internet Protocol network
Server Communication	Communication must be tested with a low-level communications ping from the Identity server to the z/OS Server. When you do so, it is easier to troubleshoot possible installation problems.
Identity server	The supported products and releases can be found in the Release Notes, which is included in the adapter installation package.
Required authority	You must have system administrator authority to complete the installation procedure.

Organizations with multiple ACF2 databases must have the adapter installed on a z/OS host that manages the database. You can manage a single ACF2 database with a single instance of the ACF2 Adapter.

Note: Support for Sysplex failover is not implemented. When the participating image of the Sysplex running the adapter becomes inoperative:

1. Restart the failed z/OS image.
2. Restart the adapter.

You can also pre-configure another instance of the adapter for use on another image. You must already have this type of environment setup and the necessary resources available. The related service instance on the Identity server might require updates if the alternate image is known through a different IP address.

Related concepts

[Roadmap for Adapter Development Kit based adapters, using ISPF](#)

Follow this section when using the guide to install, configure, troubleshoot, or uninstall the adapter.

[Software downloads](#)

Download the software through your account at the IBM Passport Advantage website.

Software downloads

Download the software through your account at the IBM Passport Advantage website.

Go to [IBM Passport Advantage](#).

See the corresponding *Identity server Download Document* for instructions.

Note:

You can also obtain additional adapter information from IBM Support.

Related concepts

[Roadmap for Adapter Development Kit based adapters, using ISPF](#)

Follow this section when using the guide to install, configure, troubleshoot, or uninstall the adapter.

[Prerequisites](#)

Verify that your environment meets the software and hardware requirements for the adapter.

Chapter 3. Installing

Installing the adapter mainly involves importing the adapter profile and creating an adapter service. Depending on the adapter, several other tasks can be involved to completely install it.

Note: The screens displayed in the tasks topics are examples. Information in the actual screens might be different.

Uploading the adapter package

You must upload the adapter package to the operating system.

Obtain the installation software. See [Software downloads](#).

Use the following values for the referred files:

File description	File name
XMI file	VERACF2.UPLOAD.XMI
Partitioned Data Set (PDS) file	<i>userid</i> .VERACF2.UPLOAD

The *userid* is your TSO user ID.

1. Extract the installation package on your local workstation. Ensure that the .XMI file exists. The file is in the z/OS operating system Time Sharing Option (TSO) TRANSMIT/RECEIVE format.
2. Transfer the file.

You can use any method for transferring the file but the resulting file must be in FB 80 format. This example shows how to use FTP to transfer the file from your workstation to MVS.

```
ftp host
user/password
cd HLQ
site recfm=fb lrecl=80 blksize=0 tracks pri=500 sec=100
bin
put VERACF2.UPLOAD.XMI
quit
```

Note: If you cannot specify these characteristics with your method, you must pre-allocate the dataset.

3. Receive the uploaded file with the TSO RECEIVE command:

```
RECEIVE INDA(VERACF2.UPLOAD.XMI)
```

4. Press **Enter** to create a Partitioned Data Set (PDS) file.

Related concepts

Access configuration

Configure how the adapter access information. The installation process configures most of the definitions that are necessary for the adapter to function. For more information, see the job streams that are generated during the installation process.

Communication configuration

To establish communication between the Identity server and the adapter, import the adapter profile and create an adapter service.

Related tasks

[Installing the ISPF dialog](#)

[Install the ISPF dialog](#)

[Running the ISPF dialog](#)

Run the ISPF dialog to customize the adapter for run time execution.

Restarting the adapter service

Various installation and configuration task might require the adapter to be restarted to apply the changes.

Verifying that the adapter is working correctly

After you install and configure the adapter, verify that the installation and configuration are correct.

Installing the ISPF dialog

Install the ISPF dialog

The *userid* is your TSO user ID.

1. Log on to the z/OS operating system that hosts the adapter.
2. Run the following command from the ISPF 6 option

```
EXEC 'userid.VERACF2.UPLOAD(INSTALL1)'
```

3. Specify a high-level qualifier (hlq) for the data sets, which the **INSTALL1** exec creates. When you do not specify a high-level qualifier, the exec uses *userid.VERACF2* as the high-level qualifier. Specify another hlq to use the ISPF dialog in the future.

When you run the exec, the exec creates the listed high-level qualifier data sets.

High-level qualifier	Library
hlq.SAGACENU	CLIST/EXEC library
hlq.SAGAMENU	ISPF message library
hlq.SAGATPENU	ISPF panel library
hlq.SAGATSENU	ISPF skeleton library

Note: The **AGACCFG** exec allocates the libraries.

Related concepts

Access configuration

Configure how the adapter access information. The installation process configures most of the definitions that are necessary for the adapter to function. For more information, see the job streams that are generated during the installation process.

Communication configuration

To establish communication between the Identity server and the adapter, import the adapter profile and create an adapter service.

Related tasks

Uploading the adapter package

You must upload the adapter package to the operating system.

Running the ISPF dialog

Run the ISPF dialog to customize the adapter for run time execution.

Restarting the adapter service

Various installation and configuration task might require the adapter to be restarted to apply the changes.

Verifying that the adapter is working correctly

After you install and configure the adapter, verify that the installation and configuration are correct.

Running the ISPF dialog

Run the ISPF dialog to customize the adapter for run time execution.

Install the ISPF dialog.

The dialog presents the default values for the parameters. However, you can set your own values.

The ISPF dialog creates the Job Control Language (JCL) job streams with the installation parameters that you selected. The JCL job streams are required for adapter installation.

1. Log on to the TSO on the z/OS operating system that hosts the adapter.
2. Run the following command from the ISPF 6 option

```
EXEC 'hlq.SAGACENU(AGACCFG)'
```

When the ISPF dialog starts, the following screen is displayed.

```
----- ISV  ACF2 Adapter Customization -----
Option ==>                                     Location:  1

Security Verify Adapter ACF2

  Initial Customization

    1  Initial Customization
       If this is a new installation, select this option.

    X  Exit
```

Note: As you run the dialog, keep in mind the following considerations:

- You can return to the previous menu at any time by pressing **F3** or **END** on the **Menu** selection screen.
- If you press **F3** on a data entry screen, the values that you entered are not saved.
- When you fill the data entry screen and if it is validated without errors, the software returns to the previous screen.

3. Type 1 to select **Initial Customization**

The **Initial Customization** page lists the high-level tasks that you must perform.

```
----- ISV  ACF2 Adapter Adapter Customization -----
Option ==>                                     Location:  1-> 1

  Initial Installation

    1  Load Default or Saved Variables.
       You must load either the default variables, or your previously
       saved variables prior to defining or altering.

    2  Display / Define / Alter Variables.
       Select or change specifications for this server or node.

    3  Generate Job Streams.
       You must have performed choices 1 and 2 before performing
       this choice.

    4  Save All Variables.
       Save variable changes to an MVS data set.

    5  View instructions for job execution and further tailoring.
       This displays customized instructions, based on your inputs.
```

4. Select **Load Default or Saved Variables**

```

----- ISV  ACF2 Adapter Adapter Customization -----
Option ==>                                     Location:  1->1-> 1

Load Variables

The IBM supplied defaults are in IBMUSER.VERACF2.SAGACENU(AGACDFLT)
If you remove the name specified below, the defaults will be loaded.

To load previously saved variables, specify the fully qualified
data set name without quotes.

==>  IBMUSER.VERACF2.CONFIG

```

5. Take one of the following actions:

- Specify the fully qualified name of the data set that includes previously saved variables
- If none exists, leave the fields blank to load the default variables.

6. Press **PF3** (Cancel) or **Enter** after final input (Accept) to return to the **Initial Installation** panel.

7. Select **Display / Define / Alter Variables**.

```

----- ISV  ACF2 Adapter AdapterCustomization -----
Option ==>                                     Location:  1->1-> 2

Specify or Alter variables for this configuration.

1   Disk location paramaters.
    Define / alter data set and Unix System Services locations.

2   Adapter communication paramters.
    Define / alter Verify to adapter communication parameters.

3   ACF2 site specific parameters.
    Define / alter site specific ACF2 parameters.

4   Reconciliation specific storage allocation parameters.
    Define / alter reconciliation related storage parameters

5   Adapter specific parameters.
    Define / alter ISIM server to adapter runtime parameters.

** Indicates option has been visited during this session.

Select an option, or press F3 to return to main menu selection.

```

8. Select **Disk location parameters**.

- a) The **Disk location parameters** page defines or alters data set and UNIX System Services (USS) locations.

```

----- ISV  ACF2 Adapter Adapter Customization -----
Option ==>

Input Data Sets

Fully qualified data set name of the UPLOAD data set.
====> IBMUSER.VERACF2.UPLOAD

Enter data sets names, volume ID, Storage Class and z/OS Unix directories.

USS Adapter read-only home
====> /usr/lpp/veracf2

USS Adapter read/write home
====> /var/ibm/veracf2

Storage Class ==> STORCLAS
and/or
Disk Volume ID ==> DSKVOL

Fully qualified data set name of Adapter Load Library
====> IBMUSER.VERACF2.LOAD

Fully qualified data set name of Adapter EXEC Library
====> IBMUSER.VERACF2.EXEC

High-level qualifier for reconciliation data sets (optional)
====> ACF2AGNT

Keep temporary reconciliation data sets
====> TRUE

```

b) Supply the following information

Fully qualified data set name of the UPLOAD data set

Specifies the name of the data set that you received earlier. For example, IBMUSER.ISIMACF2.UPLOAD.XMI.

Unix System Services (USS) Adapter read-only home

Specifies the location where the adapter USS binary files are stored. The adapter installer creates the directories and the subordinate directories later.

USS Adapter read/write home

Specifies the location where the adapter registry file, certificates, and log files are written. The adapter installer creates the directories and the subordinate directories later.

Note: The read-only home and the read/write home must be in different locations. If they are the same location, the installation might fail.

Storage class

Specifies the storage class for the Load and EXEC libraries.

DASD (Disk) volume ID

Specifies the Disk ID for the Load and EXEC libraries.

Fully qualified data set name of Adapter Load Library and Fully qualified data set name of Adapter EXEC Library

Specify the fully qualified data set name for the Load and EXEC libraries.

High-level qualifier for reconciliation data sets

Specifies a high-level qualifier for the data sets that are allocated during reconciliation. If a value is not specified, the agentID is set as high-level qualifier. If the agentID cannot be determined, the default value ACF2AGNT is set as a high-level qualifier.

Keep temporary reconciliation data sets

Specify TRUE to keep temporary reconciliation data sets.

Specify FALSE to automatically delete temporary reconciliation data sets as soon as the reconciliation has completed.

c) Press PF3 (Cancel) or Enter after final input (Accept) to return to the Specify or Alter variables for this configuration panel.

9. Select Adapter communication parameters to define or alter the Identity server to adapter communication settings.

```
----- ISV  ACF2 Adapter AdapterCustomization -----
Option ==>

Adapter communication parameters

IP Communications Port Number          ==> 45580
Note: The adapter will always require access to ports 44970 through 44994.
     These ports are implicitly reserved.

Adapter authentication ID (internal)   ==> agent
Adapter authentication password (internal) ==> agent

Enable SSL                             ==> TRUE (TRUE,FALSE)
Note: You must install a certificate when SSL is enabled. Review the documentation for more
information.

Disable TLS1.0                         ==> TRUE
Disable TLS1.1                         ==> TRUE
```

IP Communications Port Number

Specifies the default IP Communications Port Number, which is 45580. When more than one adapter is active in the same LPAR, use a different port number for each adapter instance.

Adapter authentication ID and Adapter authentication password

Specifies the adapter authentication ID and password that are stored in the adapter registry. The ID and password are used to authenticate the Identity server to the ACF2 Adapter. These two parameters must also be specified on the adapter service form that is created on IBM Security Verify Governance.

Enable SSL

Controls the USE_SSL registry setting. Its default value is TRUE. You must install a certificate when SSL is enabled. For more information, see [“Configuring SSL authentication” on page 51](#).

Disable TLS1.0

Disables or enables TLS1.0 support. The default value is TRUE, which disables TLS1.0.

Disable TLS1.1

Disables or enables TLS1.1 support. The default value is TRUE, which disables TLS1.1.

10. Select ACF2 site specific parameters.

```
ISV  ACF2 Adapter Adapter Customization
Option ==>

Site specific ACF2 configuration

@HEADER field as defined in the ACFFDR
==> LID,UID,NAME,PHONE

@UID field as defined in the ACFFDR
==> LID
```

@HEADER

Specify the @HEADER string as specified in the ACFFDR. The fields that are specified in this string are collected during a single account lookup.

@UID

Specify the @UID string as specified in the ACFFDR. The fields that are specified in this string are collected during a single account lookup.

- a) Press PF3 (Cancel) or Enter after final input (Accept) to return to the Specify or Alter variables for this configuration panel.

11. Select Reconciliation specific storage allocation parameters.

```

ISV ACF2 Adapter Adapter
Option ==>

Reconciliation related storage configuration

Storage class (optional)
==> REMOVE

Management class (optional)
==> REMOVE

Data class (optional)
==> REMOVE

Primary quantity (cylinders)
==> 100

Secondary quantity (cylinders)
==> 50

Adapter must perform unload to flat file?
==> TRUE

```

Storage class

Specify the storage class for storing the intermediate reconciliation data sets.

Management class

Specify the management class for storing the intermediate reconciliation data sets.

Data class

Specify the data class for storing the intermediate reconciliation data sets.

Primary quantity

Specify the primary quantity that is required to be able to store the unload of the ACF2 instance that is managed by this adapter instance.

Secondary quantity

Specify the secondary quantity that is required to be able to store the unload of the ACF2 instance that is managed by this adapter instance.

Adapter must perform unload to flat file?

When set to TRUE, the adapter unloads the ACF2 data to a set of temporary data set files during a reconciliation. When set to FALSE, the adapter uses an already existing unload which is created by AGAJ9. You must define a scheduling mechanism for running AGAJ9 or run it manually before starting a reconciliation.

- a) Press PF3 (Cancel) or Enter after final input (Accept) to return to the Specify or Alter variables for this configuration panel.

12. Select **Adapter specific parameters**

The **Adapter specific parameters** define or alter the IBM Security Verify Governance adapter run time parameters.

```

----- ISV  ACF2 Adapter Adapter Customization -----
Option ==>

Adapter specific parameters

  Name of adapter instance           ==> ACF2Agent
  Name of Started Task JCL procedure name ==>
ACF2AGNT
  ACF2 Date Format (MDY, DMY, YMD)    ==> MDY
  PDU backlog limit                  ==> 2000
  Do you want to use tsocmd?          ==> TRUE      (True, False)
  Do you want passwords set as expired? ==> TRUE      (True, False)
  Do you use SYS1.BROADCAST in the environment? ==> TRUE      (True, False)
  ACF2 OMVS Group for the ISIM Logon ID ==> STCUSS
  OMVS UID to be assigned to LID (non-zero) ==> 123456789

```

a) Supply the following information:

Name of adapter instance

Specifies the unique name assigned to the adapter instance. When more than one adapter is active in the same Logical Partition (LPAR), use a different adapter name for each instance.

Name of the Started Task JCL procedure name

Specifies the name of the JCL member that is created. You can use the name of the JCL member as the ACF2 Login ID for the adapter.

ACF2 date format

Specifies the date format that must match with the configured date format in ACF2.

PDU backlog limit

Specifies the number of entries that can be in queue for sending to the Identity server. The higher the number, the greater the throughput on reconciliations. However, this also results in higher storage utilization.

Do you want to use tsocmd?

Specify TRUE to use **tsocmd** to call ISIMEXIT.

Specify FALSE to use **IRXEXEC** to call ISIMEXIT.

The default value is set to TRUE.

Do you want passwords set as expired

Specifies whether the passwords must be set as expired or non-expired. The default value is set to TRUE. You can change it to FALSE if you want all the passwords set as non-expired.

Do you use SYS1.BROADCAST in the environment

Specifies whether your TSO environment uses the SYS1.BROADCAST data set for TSO logon messages and notifications. The default value is TRUE.

ACF2 OMVS Group for the ISIM Logon ID

Specifies a z/OS UNIX GROUP with a GID. A GID is a UNIX Group ID, which is a unique number assigned to a UNIX group name. The adapter operates as a z/OS UNIX process and requires this information.

OMVS UID to be assigned to LID (non-zero)

Specifies a unique UID number for the IBM Security Verify Governance logonid. Ensure that you specify a non-zero number as the UID number.

b) Press FP3 to return to the Installation panel.

13. Select **Generate Job Streams**.

This screen displays the default data set names that are generated to store the job streams and data. You might change the default names on this screen as per requirements of your organization. These data sets are not used at the adapter run time.

```
----- ISV  ACF2 Adapter Adapter Customization -----
Option ==>

Generate the job streams

Specify two fully qualified data set names.  These data sets will be
populated with the job streams and their input data elements.
Specify the data set names, without quotes.  If these data sets do not
exist, they will be created.

Data set name for job streams to be stored.
==> IBMUSER.VERACF2.CNTL

Data set name for data elements required by generated job streams.
==> IBMUSER.VERACF2.DATA

Enter your installation job statement parameters here:

=> //JOBNAME  JOB (ACCTNO,ROOM), '&SYSUID', CLASS=A,MSGCLASS=X,
=> // NOTIFY=&SYSUID
=> /**
```

Specify valid parameters for installation JCL JOB statement and press Enter to create job streams (members) and data members. Control returns to the **Initial Installation** panel.

- 14. Select **Save All Variables** to save all the changes that you made to the data set.

You can use the same data set when you select **Load Default or Saved Variables**. Specify a data set name to save all your settings for the adapter configuration as described in this screen.

```
----- ISV  ACF2 Adapter Adapter Customization -----
Option ==>

Save variables to a data set.

Specify the data set where the variables specified in this session are
to be saved.  Specify a fully qualified data set name, without quotes.
If the data set does not exist, a sequential data set will be created.

==> IBMUSER.VERACF2.CONFIG
```

- 15. Select **View instructions for job execution and further tailoring**.

To view the adapter settings and instructions to run the generated job streams, see the *hlq.VERACF2.CNTL (INSTRUCT)* data set. Follow the instructions specified in the *hlq.VERACF2.CNTL (INSTRUCT)* data set to complete the configuration.

The adapter is configured to use SSL.

To complete the SSL configuration, see [“Configuring SSL authentication” on page 51](#).

Related concepts

Access configuration

Configure how the adapter access information. The installation process configures most of the definitions that are necessary for the adapter to function. For more information, see the job streams that are generated during the installation process.

Communication configuration

To establish communication between the Identity server and the adapter, import the adapter profile and create an adapter service.

Related tasks

Uploading the adapter package

You must upload the adapter package to the operating system.

Installing the ISPF dialog

Install the ISPF dialog

[Restarting the adapter service](#)

Various installation and configuration task might require the adapter to be restarted to apply the changes.

[Verifying that the adapter is working correctly](#)

After you install and configure the adapter, verify that the installation and configuration are correct.

Restarting the adapter service

Various installation and configuration task might require the adapter to be restarted to apply the changes.

Start the adapter as a started task, where the started task JCL is customized and installed in a system procedure library.

ISIAGNT is the name of the JCL procedure that represents the adapter.

The ISIAGNT task listens on two IP ports. These two ports are used for:

- Communication between the Identity server and the adapter
- **agentCfg** utility

Note: You can define `_BPX_SHAREAS=YES` in the `/etc/profile`. This setting enables the adapter to run in a single address space, instead of multiple address spaces. Newer releases of z/OS create two address spaces with this environment variable set. For more information, see [“z/OS UNIX System Services considerations”](#) on page 66.

1. To start the adapter, run the MVS console start command:

```
START ISIAGNT
```

2. To stop the adapter, perform one of the following steps:

- If the UNIX System Services environment is running with `_BPX_SHAREAS=YES`, then run one of the following stop commands:

```
STOP ISIAGNT
```

or

```
P ISIAGNT
```

- If the UNIX System Services environment is running with the `_BPX_SHAREAS=YES` setting in a newer release of z/OS, run the following command:

```
P ISIAGNT1
```

- If an **MVS STOP** command does not stop the adapter, run the following command:

```
CANCEL ISIAGNT
```

Related concepts

[Access configuration](#)

Configure how the adapter access information. The installation process configures most of the definitions that are necessary for the adapter to function. For more information, see the job streams that are generated during the installation process.

[Communication configuration](#)

To establish communication between the Identity server and the adapter, import the adapter profile and create an adapter service.

Related tasks

[Uploading the adapter package](#)

You must upload the adapter package to the operating system.

[Installing the ISPF dialog](#)

Install the ISPF dialog

[Running the ISPF dialog](#)

Run the ISPF dialog to customize the adapter for run time execution.

[Verifying that the adapter is working correctly](#)

After you install and configure the adapter, verify that the installation and configuration are correct.

Access configuration

Configure how the adapter access information. The installation process configures most of the definitions that are necessary for the adapter to function. For more information, see the job streams that are generated during the installation process.

Related concepts

[Communication configuration](#)

To establish communication between the Identity server and the adapter, import the adapter profile and create an adapter service.

Related tasks

[Uploading the adapter package](#)

You must upload the adapter package to the operating system.

[Installing the ISPF dialog](#)

Install the ISPF dialog

[Running the ISPF dialog](#)

Run the ISPF dialog to customize the adapter for run time execution.

[Restarting the adapter service](#)

Various installation and configuration task might require the adapter to be restarted to apply the changes.

[Verifying that the adapter is working correctly](#)

After you install and configure the adapter, verify that the installation and configuration are correct.

ACF2 logonid

The adapter must run under a valid ACF2 loginid, with access to z/OS UNIX System Services, a valid UID, and a valid TSO account.

The name of the adapter instance must match the name of the started task user.

If you are using shared OMVS userIDs you must make sure that the output for the following command is never empty if the adapter is running: `ps -ef | grep -i <ADAPTERID> | grep -v grep`

The R_admin callable service requires **READ** permission to be defined for the ADAPTER user and/or **SURROGATE** user on the following resources:

Table 4.

CLASS	RESOURCE
FACILITY	IRR.RADMIN.ADDUSER
FACILITY	IRR.RADMIN.ALTUSER
FACILITY	IRR.RADMIN.CONNECT
FACILITY	IRR.RADMIN.DELUSER
FACILITY	IRR.RADMIN.PASSWORD
FACILITY	IRR.RADMIN.REMOVE

Related concepts

[Surrogate user loginids](#)

For the adapter to perform requests on behalf of another user, you must define one or more **SURROGATE** class rules.

Surrogate user loginids

For the adapter to perform requests on behalf of another user, you must define one or more **SURROGATE** class rules.

The CA ACF2 adapter logonid must have **UPDATE** permission on the BPX.SERVER resource in the FACILITY class.

Related concepts

ACF2 logonid

The adapter must run under a valid ACF2 logonid, with access to z/OS UNIX System Services, a valid UID, and a valid TSO account.

Communication configuration

To establish communication between the Identity server and the adapter, import the adapter profile and create an adapter service.

Related concepts

Access configuration

Configure how the adapter access information. The installation process configures most of the definitions that are necessary for the adapter to function. For more information, see the job streams that are generated during the installation process.

Related tasks

Uploading the adapter package

You must upload the adapter package to the operating system.

Installing the ISPF dialog

Install the ISPF dialog

Running the ISPF dialog

Run the ISPF dialog to customize the adapter for run time execution.

Restarting the adapter service

Various installation and configuration task might require the adapter to be restarted to apply the changes.

Verifying that the adapter is working correctly

After you install and configure the adapter, verify that the installation and configuration are correct.

Building the adapter profile

To use the target database with IBM Security Verify Governance, you must create an adapter profile.

The adapter installation generates a schema file. This schema file must be merged into the distributed profile, CAACF2Profile.jar file.

1. Copy the CAACF2Profile.jar file that is packaged with the adapter to a temporary directory.
2. Run the following command from the command prompt to create the subdirectory, CAACF2Profile, in the temporary directory.:

```
jar xvf CAACF2Profile.jar
```

3. Change the directory to the CAACF2Profile subdirectory.

For example:

```
cd CAACF2Profile
```

4. From the z/OS operating system, download the member *userid.VERACF2.DATA(ISIMSCHM)* to the CAACF2Profile subdirectory.
5. Rename the ISIMSCHM file to schema.dsm1.

Note: The CAACF2Profile subdirectory already contains the following files:

- resource.def
 - eracf2Account.xml
 - eracf2Service.xml
 - Customlabels.properties
 - targetProfile.json
6. Add attributes that are defined in the schema.dsm1 file as account class attributes to the targetProfile.json UserExtension schema if required.
 7. Change the directory to the parent directory.
 8. Run the following command from the command prompt to create the CAACF2Profile.jar file:

```
jar cvf CAACF2Profile.jar CAACF2Profile
```

The CAACF2Profile.jar file includes all the files that are required to define the adapter schema, account form, service form, and profile properties.

You can extract the files from the JAR file to modify the necessary files and then repackage the JAR file with the updated files. You can add site-defined fields to the account form.

Importing the adapter profile

You can import a profile definition file, which creates a profile in Identity server. Use this option for importing adapter profiles.

- The Identity server is installed and running.
- You have administrator authority on the Identity server.
- The file to be imported must be a Java™ archive (JAR) file. The <Adapter>Profile.jar file includes all the files that are required to define the adapter schema, account form, service/target form, and profile properties. If necessary, you can extract the files from the JAR file, modify the files, and repackage the JAR file with the updated files.

Target definition files are also called adapter profile files. The profile definition files are provided with the various IBM Security Verify Adapter. The adapter profile must be imported because it defines the types of resources that the Verify Governance server can manage.

The adapter profile definition file is used to create a target profile on the Verify Governance server and to establish communication with the adapter. If the adapter profile is not imported, you cannot create a connector for that adapter type.

An upload error might occur when no file is selected, or when the file is empty, or due to any upload operation error, such as a timeout or connection error. If the adapter profile is not installed correctly, the adapter cannot function correctly. You cannot create a connector with the adapter profile or open and account on the service. You must import the adapter profile again.

This task can be completed from the Enterprise Connectors module in the Administration Console. To import an adapter target profile, complete these steps:

1. Log in to the Verify Governance Administration Console.
2. From the Administration Console, select **Enterprise Connectors**.
3. Select **Manage > Profiles**.
4. Optional: Click **Filter** to toggle the filter on to refine your search results, or click **Hide Filter** to toggle the filter off. When the filter is visible, you can specify search criteria for your requests, and then click **Search**.
5. Click **Actions > Import**.
6. On the **Import** page, complete these steps:
 - a) Select **Profile**.

b) Click **Browse** to locate the JAR file that you want to import.

c) Click **Upload file**.

A message indicates that you successfully imported a profile.

7. Click **Close**.

The new profile is displayed in the list of profiles.

The upload is synchronous but has a timeout. The progress bar on the **Import** page accurately indicates the upload status. However, when a timeout is reached, the following message occurs: "The import is still in progress and will complete shortly. Close this window to proceed." If you see that message, allow a few minutes for the upload to complete and for the profile to be available.

After the target profile is imported successfully, complete these tasks.

- Import the attribute mapping file. See [“Importing attribute mapping file”](#) on page 20.
- Create a connector that uses the target profile. See [“Adding a connector”](#) on page 20.

Importing attribute mapping file

After importing the adapter profile, you must import an attribute map from a profile mapping definition file.

This task involves importing an account attribute mapping definition file, which is included in the adapter package. The imported file must be a DEF file.

1. Log in to the Verify Governance Administration Console.
2. From the Administration Console, select **Enterprise Connectors**.
3. Select **Manage > Profiles**.
4. Optional: Click **Filter** to toggle the filter on to refine your search results, or click **Hide Filter** to toggle the filter off. When the filter is visible, you can specify search criteria for your requests, and then click **Search**.
5. Click **Actions > Import**.
6. On the **Import** page, complete these steps:
 - a) Select **Attribute Mapping**.
 - b) Click **Browse** to locate the attribute mapping file that you want to import.
 - c) Click **Upload file**.

A message indicates that you successfully imported the file.

7. Click **Close**.

Adding a connector

After you import the adapter profile on the Verify Governance server, add a connector so that Verify Governance server can communicate with the managed resource.

Complete [Importing the adapter profile](#).

Note: If you migrated from Verify Governance V5.2.2 or V5.2.2.1 and want to add or configure a connector, see *Adding and configuring a connector for each target* in the IBM Security Verify Governance product documentation.

The connectors consolidate, extract, and reconcile user identities, organization units, permissions, and user entitlements with the most common enterprise applications. Configure a connector to keep the Access Governance Core repository synchronized with the target system.

This task can be completed from the Enterprise Connectors module in the Administration Console.

To add a connector, complete these steps.

1. Log in to the Verify Governance Administration Console.
2. From the Administration Console, select **Enterprise Connectors**.

3. Select **Manage > Connectors**.

A list of connectors is displayed on the **Connectors** tab.

4. Click **Filter** to toggle the filter on to refine your search results, or click **Hide Filter** to toggle the filter off. When the filter is visible, you can specify search criteria for your requests, and then click **Search**.

5. To view all of the columns in the list of connectors, expand the **Connectors** pane.

6. Click **Actions > Add**.

The **Connector Details** pane is enabled for your input.

7. On the **Connector Details** tab, complete these steps:

a) Assign a name and description for the connector.

b) Select the target profile type as **Identity Brokerage** and its corresponding target profile.

c) Select the entity, such as **Account** or **User**.

Depending on the connector type, this field might be preselected.

d) Optional: Select **Trace ON** and the corresponding **Trace Level** to enable trace logs.

The available trace levels are DEBUG, INFO, and ERROR.

e) Optional: Select **History ON** to save and track the connector usage.

f) Click **Save**.

The fields for enabling the channels for sending and receiving data are now visible.

g) Select and set the connector properties in the **Global Config** accordion pane.

For information about the global configuration properties, see [Global Config accordion pane](#).

h) Click **Save**. The fields for enabling the channels for sending and receiving data are now visible.

The connector is saved and added to the list of connectors in the **Connectors** pane.

If you cannot create a connector with the target profile or open an account on an existing connector, the target profile was not installed correctly during the import. You must import the target profile again.

Enable the channel modes to synchronize the data between the target systems and Verify Governance.

For more information, see [“Enabling connectors” on page 21](#).

Enabling connectors

After you create a connector, by default it is in a disabled state. You must enable a connector to use it.

Prerequisite	Find more information
A connector must exist in Verify Governance.	“Adding a connector” on page 20 .
Ensure that you enabled the appropriate channel modes for the connector.	“Reviewing and setting channel modes for each new connector” on page 22 .

To enable a connector, complete these steps:

1. Log in to the Verify Governance Administration Console.

2. From the Administration Console, select **Enterprise Connectors**.

3. Select **Manage > Connectors**.

A list of connectors is displayed on the **Connectors** tab.

4. Optional: Click **Filter** to toggle the filter on to refine your search results, or click **Hide Filter** to toggle the filter off. When the filter is visible, you can specify search criteria for your requests, and then click **Search**.

5. Optional: To view all of the columns in the list of connectors, expand the **Connectors** pane.

6. Select the connector that you want to enable.

7. On the **Connector Details** tab, complete these steps:

- a) Select the channel modes that you want to enable, and then click **Save**. Depending on the channels that you enable, the corresponding **Channel** tabs are displayed.

Enable write-to channel

Propagates every change in the Access Governance Core repository into the target system.

For connectors that are not HR feed, the check boxes for enabling the read-from channel and the write-to channel are available.

Enable read-from channel

Reads the INPUT EVENTS and USER DATA from the target system. Imports data from the target system to the Access Governance Core repository.

For HR feed connectors, only the check box for enabling the read-from channel is available.

Enable reconciliation

Synchronizes the modified data between the Access Governance Core repository and the target system.

The connector is enabled

Enable the channel modes to synchronize the data between the target systems and Verify Governance.

Reviewing and setting channel modes for each new connector

Use this procedure to set up the read-from and write-to channels and to set the synchronization schedule for each new connector.

Note: Legacy Verify Governance Enterprise connectors use Reconciliation channel, whereas Identity Brokerage Enterprise connectors use Read From Channel and Change Log Sync.

For more information about any of tasks in the following steps, see the IBM® Security Identity Governance and Intelligence product documentation.

To enable the read-from and write-to channels, and to set the change log synchronization schedule for each new connector, complete these steps in Verify Governance V5.2.3:

1. Log in to the Verify Governance Administration Console.
2. From the Administration Console, select **Enterprise Connectors**.
3. Select **Manage > Connectors**.

A list of connectors is displayed on the **Connectors** tab.

4. Optional: Click **Filter** to toggle the filter on to refine your search results, or click **Hide Filter** to toggle the filter off. When the filter is visible, you can specify search criteria for your requests, and then click **Search**.
5. Optional: To view all of the columns in the list of connectors, expand the **Connectors** pane.
6. Select the connector that you want to enable.
7. On the **Connector Details** tab, complete these steps:

- a) Select the channel modes that you want to enable, and then click **Save**. Depending on the channels that you enable, the corresponding **Channel** tabs are displayed, in which you can do more configuration, such as mapping attributes and setting up rules.

Enable write-to channel

Propagates every change in the Access Governance Core repository into the target system.

Enable read-from channel

Reads the INPUT EVENTS and USER DATA from the target system. Imports data from the target system to the Access Governance Core repository.

Enable reconciliation

Synchronizes the modified data between the Access Governance Core repository and the target system.

8. Select **Monitor > Change Log Sync Status**.

A list of connectors is displayed.

9. On the **Change Log Sync Status** tab, complete these steps:
 - a) Optional: Click **Filter** to toggle the filter on to refine your search results, or click **Hide Filter** to toggle the filter off. When the filter is visible, you can specify search criteria for your requests, and then click **Search**.
 - b) Select a connector, and click **Actions > Sync Now**.
The synchronization process begins.
 - c) Optional: To view the status of the synchronization request, select **Sync History** in the right pane.
Information about the synchronization is displayed in the **Sync History** tab.
10. Set the change log synchronization schedule for each new connector that you migrated.
11. When the connector configuration is complete, enable the connector by completing these steps:
 - a) Select **Manage > Connectors**.
 - b) Select the connector that you want to enable, and then select the **Enable** check box in the **Connector Details** tab.
 - c) Click **Save**.
For more information, see [“Enabling connectors” on page 21](#).

For Identity Brokerage connectors that are not HR feed, the check boxes for enabling the read-from channel and the write-to channel are available.

For Identity Brokerage HR feed connectors, only the check box for enabling the read-from channel is available.
12. Start the connector by selecting **Monitor > Connector Status**. Select the connector that you want to start, and then select **Actions > Start**.

Attribute Mapping

Attribute mapping is required to define which target attributes correspond to the Verify Governance account attributes.

This task involves an account attribute mapping definition file, which is included in the adapter package.

The file consists of Verify Governance account attributes and their equivalent attributes in the managed target. The file is structured as `<IGI_attribute> = <target_attribute>`.

The `<IGI_attribute>` is fixed and must not be modified. Edit only the `<target_attribute>`. Some `<IGI_attribute>` already has a fixed equivalent `<target_attribute>` of `eraccount`.

Some `<IGI_attribute>` do not have a defined `<target_attribute>` and you can assign the mapping. For example:

```
USER_TYPE=USER_TYPE
ATTR1=ATTR1
```

Note:

- The default mapping is already included out-of-the box. If there are no changes to the attribute mapping, there is no need to import the attribute mapping files.
 - It might take up to 10 minutes for the attribute mapping changes to take effect once the file is imported.
1. Open the mapping definition file by using any text editor.
 2. Edit the mapping.
 3. If the target attribute has a list of predefined values, use the following syntax to convert its values to the corresponding Verify Governance attribute values.

```
[conversion].<target_attribute>.<IGI_attribute> =
[<target_attribute_value1>=<IGI_attribute_value1>;...;
<target_attribute_valuen>=<IGI_attribute_valuen>]
```

4. For attributes that contains date and time, use the following syntax to convert its values.

For example:

```
[conversion.date].erbirthdate.BIRTHDAY=[yyyyMMdd=dd/MM/yyyy HH:mm:ss]  
[conversion.date].ACCOUNT_EXPIRY_DATE.ACCOUNT_EXPIRY_DATE=  
[dd/MM/yyyy HH:mm:ss=dd/MM/yyyy HH:mm:ss]
```

5. Import the updated mapping definition file through the Enterprise Connectors module. For more information, see *Attribute-to-permission mapping service* in the IBM Security Verify Governance product documentation.
6. Map the following attributes for **Chanel-Write To** and **Chanel-Read From**

Attribute	Mapped Attribute
eruid	CODE
erpassword	PASSWORD

For more information, see *Mapping attributes for a connector* in the IBM Security Verify Governance product documentation.

Service/Target form details

Complete the service/target form fields.

On the General Information tab:

Service Name

Specify a name that identifies the ACF2 Adapter service on the Identity server.

Service Description

Optional: Specify a description that identifies the service for your environment. You can specify additional information about the service instance.

URL

Specify the location and port number of the adapter. The port number is defined during installation, and can be viewed and modified in the protocol configuration by using the **agentCfg** utility. For more information about protocol configuration settings, see [“Changing protocol configuration settings”](#) on page 32.

Note: Configure the adapter for SSL authentication only if **https** is part of the URL. For more information, see [“Configuring SSL authentication”](#) on page 51.

User ID

Specify the name that you defined at installation as the Adapter authentication ID. This name is in the registry. The default value is agent.

Password

Specify the password that you defined at installation for the Adapter authentication ID. The default value is agent.

ACF2 ID under which requests will be processed

Optional: Specify a SURROGATE ID. This loginid might have administrative authority over a subset of logonids within the ACF2 database.

Owner

Optional: Specify the service owner, if any

Service Prerequisite

Optional: Specify an existing service.

On the Status and information tab

This page contains read only information about the adapter and managed resource. These fields are examples. The actual fields vary depending on the type of adapter and how the service form is configured. The adapter must be running to obtain the information. Click **Test Connection** to populate the fields.

Last status update: Date

Specifies the most recent date when the **Status and information** tab was updated.

Last status update: Time

Specifies the most recent time of the date when the **Status and information** tab was updated.

Managed resource status

Specifies the status of the managed resource that the adapter is connected to.

Adapter version

Specifies the version of the adapter that the service uses to provision request to the managed resource.

Profile version

Specifies the version of the profile that is installed in the Identity server.

ADK version

Specifies the version of the ADK that the adapter uses.

Installation platform

Specifies summary information about the operating system where the adapter is installed.

Adapter account

Specifies the account that running the adapter binary file.

Adapter up time: Date

Specifies the date when the adapter started.

Adapter up time: Time

Specifies the time of the date when the adapter started.

Adapter memory usage

Specifies the memory usage for running the adapter.

If the connection fails, follow the instructions in the error message and do the following verifications:

- Verify the adapter log to ensure that the test request is successfully sent to the adapter.
- Verify the adapter configuration information.
- Verify service parameters for the adapter profile. For example, verify the workstation name or the IP address of the managed resource and the port.

Verifying that the adapter is working correctly

After you install and configure the adapter, verify that the installation and configuration are correct.

1. Test the connection for the service that you created on the Identity server.
2. Run a full reconciliation from the Identity server.
3. Run all supported operations such as add, modify, and delete on one user account.
4. Verify the `caacf2agent.log` file after each operation to ensure that no errors are reported.
5. Verify the `trace.log` file to ensure that no errors are reported when you run an adapter operation.

Related conceptsAccess configuration

Configure how the adapter access information. The installation process configures most of the definitions that are necessary for the adapter to function. For more information, see the job streams that are generated during the installation process.

Communication configuration

To establish communication between the Identity server and the adapter, import the adapter profile and create an adapter service.

Related tasksUploading the adapter package

You must upload the adapter package to the operating system.

Installing the ISPF dialog

Install the ISPF dialog

Running the ISPF dialog

Run the ISPF dialog to customize the adapter for run time execution.

Restarting the adapter service

Various installation and configuration task might require the adapter to be restarted to apply the changes.

Chapter 4. Upgrading

Upgrading the adapter requires a full installation. See the Release Notes for the supported software versions or for specific instructions.

Chapter 5. Configuring

After you install the adapter, configure it to function correctly. Configuration is based on your requirements or preference.

You can use the adapter configuration tool, **agentCfg**, to view or modify the adapter parameters. You can use the Regis tool to view or modify the adapter parameters when it is offline. For more information on the Regis tool, see [“Using the Regis Tool”](#) on page 64.

Configuring the adapter parameters

You can use the adapter configuration tool, **agentCfg**, to view or modify the adapter parameters.

All the changes that you make to the parameters, by using the **agentCfg**, take effect immediately. The adapter configuration tool can only be used to configure the adapter while it is active. To modify configuration settings while the adapter is not active, use the Regis tool. For more information on the Regis tool, see [“Using the Regis Tool”](#) on page 64.

Related concepts

[Configuring SSL authentication](#)

To establish a secure connection between the adapter and the Identity server, configure SSL authentication for connections that originate from the Identity server or from the adapter.

[Customizing the adapter](#)

You can do specific functions according to your requirements by using the REXX execs that are provided with the adapter installation.

[z/OS UNIX System Services considerations](#)

UNIX System Service creates a task for each child process. If you define `_BPX_SHAREAS=YES` in the `/etc/profile`, the adapter runs in a single address space, instead of multiple address spaces.

[Configuration notes](#)

The ACF2 adapter can handle multiple requests simultaneously. Learn how the adapter processes specific attributes and requests and how it interacts with z/OS during the processing of some of the requests.

Related tasks

[Using the Regis Tool](#)

Start the Regis tool to modify the different adapter parameters.

Starting the adapter configuration tool

Start the **agentCfg** tool to access the configuration menu, where you can modify the different adapter parameters.

1. Browse to the Windows Command Prompt.
2. Log on to the TSO on the z/OS operating system that hosts the adapter.
3. Run the following command. Press **Enter** to enter the UNIX System Services environment.

```
omvs
```

Note: You can also use a telnet session to enter the UNIX System Services environment.

4. In the command prompt, change to the read/write /bin subdirectory of the adapter. If the adapter is installed in the default location for the read/write directory, run the following command.
5. Run the following command

```
agentCfg -agent adapter_home
```

The adapter name is specified when you install the adapter. You can find the names of the active adapters by running the **agentCfg** utility as:

```
agentCfg -list
```

- At **Enter configuration key for Agent 'adapterAGNT'**, type the configuration key for the adapter.

The default configuration key is agent.

Note: To prevent unauthorized access to the configuration of the adapter, you must modify the configuration key after the adapter installation completes..

The **Agent Main Configuration Menu** is displayed.

```
Agent Main Configuration Menu
-----
A. Configuration Settings.
B. Protocol Configuration.
C. Event Notification.
D. Change Configuration Key.
E. Activity Logging.
F. Registry Settings.
G. Advanced Settings.
H. Statistics.
I. Codepage Support.

X. Done

Select menu option:
```

The following table lists the different options available in the **Agent Main Configuration Menu**.

<i>Table 6. Options for the main configuration menu</i>	
Option	Configuration task
A	Viewing configuration settings
B	Changing protocol configuration settings
C	Configuring event notification
D	Changing the configuration key
E	Changing activity logging settings
F	Changing registry settings
G	Changing advanced settings
H	Viewing statistics
I	Changing code page settings

Related tasks

[Viewing configuration settings](#)

Use the **Configuration Settings** option to display the adapter information such as its version, ADK version, and adapter log file name.

[Changing protocol configuration settings](#)

The adapter uses the DAML protocol to communicate with the Identity server. By default, when the adapter is installed, the DAML protocol is configured for a non-secure environment. Use the **Protocol Configuration** option to configure the protocol properties for the adapter.

[Changing the configuration key](#)

Use the **Change Configuration Key** option to set the configuration key. The configuration key is used as a password to access the configuration tool for the adapter.

[Changing activity logging settings](#)

Use the **Activity Logging** option to enable or disable log files that monitor various system activities.

Modifying registry settings

Use the **Registry Settings** option to access the various types of registry settings that you can modify based on your requirements.

Modifying non-encrypted registry settings

Use the **Modify Non-encrypted registry settings** option to modify the registry settings that do not use encryption.

Changing advanced settings

Use the **Advanced Settings** option to change the adapter thread count settings for the different types of requests.

Viewing statistics

Use the **Statistics** option to view the event log of the adapter.

Changing code page settings

Use the **Codepage Support** option to view the list of codes that the adapter supports.

Accessing help and additional options

Access the **agentCfig** help menu to view the list of available arguments that you can use.

Viewing configuration settings

Use the **Configuration Settings** option to display the adapter information such as its version, ADK version, and adapter log file name.

1. Access the **Agent Main Configuration Menu**.

For more information, see [“Starting the adapter configuration tool” on page 29](#).

2. At the **Main menu** prompt, type A to display the configuration settings for the adapter.

```
Configuration Settings
-----
Name           : adapterAGNT
Version        : 6.0
ADK Version    : 6.0
ERM Version    : 6.0
Adapter Events : FALSE
License       : NONE
Asynchronous ADD Requests : FALSE (Max.Threads:3)
Asynchronous MOD Requests : FALSE (Max.Threads:3)
Asynchronous DEL Requests : FALSE (Max.Threads:3)
Asynchronous SEA Requests : FALSE (Max.Threads:3)
Available Protocols       : DAML
Configured Protocols     : DAML
Logging Enabled          : TRUE
Logging Directory       : /var/ibm/adapter_readwritedir/log
Log File Name           : adapter_name.log
Max. log files          : 3
Max.log file size (Mbytes) : 1
Debug Logging Enabled   : TRUE
Detail Logging Enabled  : FALSE
Thread Logging Enabled  : FALSE
```

Related tasks

Starting the adapter configuration tool

Start the **agentCfig** tool to access the configuration menu, where you can modify the different adapter parameters.

Changing protocol configuration settings

The adapter uses the DAML protocol to communicate with the Identity server. By default, when the adapter is installed, the DAML protocol is configured for a non-secure environment. Use the **Protocol Configuration** option to configure the protocol properties for the adapter.

Changing the configuration key

Use the **Change Configuration Key** option to set the configuration key. The configuration key is used as a password to access the configuration tool for the adapter.

Changing activity logging settings

Use the **Activity Logging** option to enable or disable log files that monitor various system activities.

Modifying registry settings

Use the **Registry Settings** option to access the various types of registry settings that you can modify based on your requirements.

Modifying non-encrypted registry settings

Use the **Modify Non-encrypted registry settings** option to modify the registry settings that do not use encryption.

Changing advanced settings

Use the **Advanced Settings** option to change the adapter thread count settings for the different types of requests.

Viewing statistics

Use the **Statistics** option to view the event log of the adapter.

Changing code page settings

Use the **Codepage Support** option to view the list of codes that the adapter supports.

Accessing help and additional options

Access the **agentCfg** help menu to view the list of available arguments that you can use.

Changing protocol configuration settings

The adapter uses the DAML protocol to communicate with the Identity server. By default, when the adapter is installed, the DAML protocol is configured for a non-secure environment. Use the **Protocol Configuration** option to configure the protocol properties for the adapter.

The DAML protocol is the only supported protocol that you can use. Do not add or remove a protocol.

1. Access the **Agent Main Configuration Menu**.

For more information, see [“Starting the adapter configuration tool” on page 29](#).

2. At the **Main menu** prompt, type B. The DAML protocol is configured and available by default for the adapter.

```
Agent Protocol Configuration Menu
-----
Available Protocols: DAML
Configured Protocols: DAML
A. Add Protocol.
B. Remove Protocol.
C. Configure Protocol.

X. Done

Select menu option
```

3. At the **Agent Protocol Configuration Menu**, type C to display the **Configure Protocol Menu**.

```
Configure Protocol Menu
-----
A. DAML
X. Done
Select menu option
```

4. Type A to display the **Protocol Properties Menu** for the configured protocol with protocol properties. The following screen is an example of the DAML protocol properties.

DAML Protocol Properties

```

-----
A. USERNAME          ***** ;Authorized user name.
B. PASSWORD          ***** ;Authorized user password.
C. MAX_CONNECTIONS  100      ;Max Connections.
D. PORTNUMBER        45580    ;Protocol Server port number.
E. USE_SSL           FALSE    ;Use SSL secure connection.
F. SRV_NODENAME      9.38.215.20 ;Event Notif. Server name.
G. SRV_PORTNUMBER    9443     ;Event Notif. Server port number.
H. HOSTADDR          ANY;Listen on address (or "ANY")
I. VALIDATE_CLIENT_CE FALSE ;Require client certificate.
J. REQUIRE_CERT_REG  FALSE    ;Require registered certificate.
K. READ_TIMEOUT      0 ;Socket read timeout (seconds)
L. DISABLE_TLS10     TRUE ;Disable TLS 1.0 and earlier
M. DISABLE_TLS11     TRUE ;Disable TLS 1.1
N. DISABLE_TLS12     TRUE ;Disable TLS 1.2

```

X. Done

Select menu option:

5. Change the protocol value:

- a) Type the letter of the menu option for the protocol property to configure. The table below describes each property.
- b) Change the property value and press **Enter** to display the **Protocol Properties Menu** with the new value.

If you do not want to change the value, press **Enter**.

<i>Table 7. Options for the DAML protocol menu</i>	
Option	Configuration task
A	<p>Displays the following prompt:</p> <pre>Modify Property 'USERNAME':</pre> <p>Type a user ID, for example, admin.</p> <p>The Identity server uses this value to connect to the adapter.</p>
B	<p>Displays the following prompt</p> <pre>Modify Property 'PASSWORD':</pre> <p>Type a password, for example, admin.</p> <p>The Identity server uses this value to connect to the adapter.</p>
C	<p>Displays the following prompt:</p> <pre>Modify Property 'MAX_CONNECTIONS':</pre> <p>Enter the maximum number of concurrent open connections that the adapter supports.</p> <p>The default value is 100.</p> <p>Note: This setting is sufficient and does not require adjustment.</p>
D	<p>Displays the following prompt:</p> <pre>Modify Property 'PORTNUMBER':</pre> <p>Type a different port number.</p> <p>The Identity server uses the port number to connect to the adapter. The default port number is 45580.</p>

Table 7. Options for the DAML protocol menu (continued)	
Option	Configuration task
E	<p>Displays the following prompt:</p> <pre>Modify Property 'USE_SSL' :</pre> <p>Type TRUE to use a secure SSL connection to connect the adapter. When you set this option, you must install a certificate. For more information, see “Installing the certificate” on page 59.</p> <p>Type FALSE to not use a secure SSL connection. The default value is TRUE.</p>
F	<p>Displays the following prompt:</p> <pre>Modify Property 'SRV_NODENAME' :</pre> <p>Type a server name or an IP address of the workstation where you installed the Identity server.</p> <p>This value is the DNS name or the IP address of the Identity server that is used for event notification and asynchronous request processing.</p> <p>Note: If your operating system supports Internet Protocol version 6 (IPv6) connections, you can specify an IPv6 server.</p>
G	<p>Displays the following prompt:</p> <pre>Modify Property 'SRV_PORTNUMBER' :</pre> <p>Type a different port number to access the Identity server.</p> <p>The adapter uses this port number to connect to the Identity server. The default port number is 9443.</p>
H	<p>The HOSTADDR option is useful when the system, where the adapter is running, has more than one network adapter. You can select which IP address to which the adapter must listen. The default value is ANY.</p>
I	<p>Displays the following prompt:</p> <pre>Modify Property 'VALIDATE_CLIENT_CE' :</pre> <p>Type TRUE for the Identity server to send a certificate when it communicates with the adapter. When you set this option, you must configure options D through I.</p> <p>Type FALSE for the Identity server can communicate with the adapter without a certificate.</p> <p>Note:</p> <ul style="list-style-type: none"> • The property name is VALIDATE_CLIENT_CERT. It is truncated by the agentCfg to fit in the screen. • You must use certTool to install the appropriate CA certificates and optionally register the Identity server certificate.

Table 7. Options for the DAML protocol menu (continued)	
Option	Configuration task
J	<p>Displays the following prompt:</p> <pre>Modify Property 'REQUIRE_CERT_REG':</pre> <p>This value applies when option I is set to TRUE.</p> <p>Type TRUE to register the adapter with the client certificate from the Identity server before it accepts an SSL connection.</p> <p>Type FALSE to verify the client certificate against the list of CA certificates. The default value is FALSE.</p> <p>For more information about certificates, see “Configuring SSL authentication” on page 51.</p>
K	<p>Displays the following prompt:</p> <pre>Modify Property 'READ_TIMEOUT':</pre> <p>Specify the timeout value in seconds. The default value is 0 which specifies that no read timeout is set.</p> <p>Note: READ_TIMEOUT prevents open threads in the adapter, which might cause "hang" problems. The open threads might be caused by firewall or network connection problems and might be seen as TCP/IP ClosesWait connections that remain on the adapter.</p> <p>Note:</p> <p>If you encounter such problems, set the value of READ_TIMEOUT to a time longer than the Identity server timeout, but less than any firewall timeout. The Identity server timeout is specified by the maximum connection age DAML property.</p> <p>The adapter must be restarted because READ_TIMEOUT is set at adapter initialization.</p>
L	<p>Displays the following prompt:</p> <pre>Modify Property 'DISABLE_TLS10':</pre> <p>Type FALSE to use the TLSv1.0 protocol to connect the adapter.</p> <p>The default value is TRUE.</p>
M	<p>Displays the following prompt:</p> <pre>Modify Property 'DISABLE_TLS11':</pre> <p>Type FALSE to use the TLSv1.1 protocol to connect the adapter.</p> <p>The default value is TRUE.</p>
N	<p>Displays the following prompt:</p> <pre>Modify Property 'DISABLE_TLS12':</pre> <p>Type FALSE to use the TLSv1.2 protocol to connect the adapter.</p> <p>The default value is FALSE.</p>

6. Repeat step 5 to configure the other protocol properties.

7. At the **Protocol Properties Menu**, type X to exit.

Related tasks

Starting the adapter configuration tool

Start the **agentCfg** tool to access the configuration menu, where you can modify the different adapter parameters.

Viewing configuration settings

Use the **Configuration Settings** option to display the adapter information such as its version, ADK version, and adapter log file name.

Changing the configuration key

Use the **Change Configuration Key** option to set the configuration key. The configuration key is used as a password to access the configuration tool for the adapter.

Changing activity logging settings

Use the **Activity Logging** option to enable or disable log files that monitor various system activities.

Modifying registry settings

Use the **Registry Settings** option to access the various types of registry settings that you can modify based on your requirements.

Modifying non-encrypted registry settings

Use the **Modify Non-encrypted registry settings** option to modify the registry settings that do not use encryption.

Changing advanced settings

Use the **Advanced Settings** option to change the adapter thread count settings for the different types of requests.

Viewing statistics

Use the **Statistics** option to view the event log of the adapter.

Changing code page settings

Use the **Codepage Support** option to view the list of codes that the adapter supports.

Accessing help and additional options

Access the **agentCfg** help menu to view the list of available arguments that you can use.

Changing the configuration key

Use the **Change Configuration Key** option to set the configuration key. The configuration key is used as a password to access the configuration tool for the adapter.

1. Access the **Agent Main Configuration Menu**.

For more information, see [“Starting the adapter configuration tool” on page 29](#).

2. At the **Main menu** prompt, typeD.

3. Take one of the following actions:

- Change the value of the configuration key and press **Enter**.

Note: The default configuration key is agent. Ensure that your password is complex.

- Press **Enter** to return to the **Main Configuration Menu** without changing the configuration key.

Related tasks

Starting the adapter configuration tool

Start the **agentCfg** tool to access the configuration menu, where you can modify the different adapter parameters.

Viewing configuration settings

Use the **Configuration Settings** option to display the adapter information such as its version, ADK version, and adapter log file name.

Changing protocol configuration settings

The adapter uses the DAML protocol to communicate with the Identity server. By default, when the adapter is installed, the DAML protocol is configured for a non-secure environment. Use the **Protocol Configuration** option to configure the protocol properties for the adapter.

Changing activity logging settings

Use the **Activity Logging** option to enable or disable log files that monitor various system activities.

Modifying registry settings

Use the **Registry Settings** option to access the various types of registry settings that you can modify based on your requirements.

Modifying non-encrypted registry settings

Use the **Modify Non-encrypted registry settings** option to modify the registry settings that do not use encryption.

Changing advanced settings

Use the **Advanced Settings** option to change the adapter thread count settings for the different types of requests.

Viewing statistics

Use the **Statistics** option to view the event log of the adapter.

Changing code page settings

Use the **Codepage Support** option to view the list of codes that the adapter supports.

Accessing help and additional options

Access the **agentCfg** help menu to view the list of available arguments that you can use.

Changing activity logging settings

Use the **Activity Logging** option to enable or disable log files that monitor various system activities.

When you enable activity logging settings, IBM Security Verify Governance maintains a log file, *adapterAGNT.log*, of all transactions. By default, the log file is in the read/write log directory.

1. Access the **Agent Main Configuration Menu**.
2. At the **Main menu** prompt, type E to display the **Agent Activity Logging Menu**.

The following screen displays the default activity logging settings.

```
Agent Activity Logging Menu
-----
A. Activity Logging (Enabled).
B. Logging Directory (current: /var/ibm/adapter_readwritedir/log).
C. Activity Log File Name (current: adapterAGNT.log).
D. Activity Logging Max. File Size ( 1 mbytes)
E. Activity Logging Max. Files ( 3 )
F. Debug Logging (Enabled).
G. Detail Logging (Disabled).
H. Base Logging (Disabled).
I. Thread Logging (Disabled).
X. Done
Select menu option:
```

3. Type the letter of the preferred menu option

Note: Ensure that Option A is enabled for the values of other options to take effect.

- Press **Enter** to change the value for menu option B, C, D, or E. The other options are changed automatically when you type the corresponding letter of the menu option. [Table 8 on page 38](#) describes each option.
- Press **Enter** to return to the **Agent Activity Logging Menu** without changing the value.

<i>Table 8. Options for the activity logging menu</i>	
Option	Configuration task
A	<p>Set this option to Enabled for the adapter to maintain a dated log file of all transactions.</p> <p>Type A to toggle between the options.</p>
B	<p>Displays the following prompt:</p> <pre>Enter log file directory:</pre> <p>Type a different value for the logging directory, for example, /home/Log. When the logging option is enabled, details about each access request are stored in the logging file that is in this directory.</p>
C	<p>Displays the following prompt:</p> <pre>Enter log file name:</pre> <p>Type a different value for the log file name. When the logging option is enabled, details about each access request are stored in the logging file.</p>
D	<p>Displays the following prompt:</p> <pre>Enter maximum size of log files (mbytes):</pre> <p>Type a new value, for example, 10. The oldest data is archived when the log file reaches the maximum file size. File size is measured in megabytes. It is possible for the activity log file size to exceed the disk capacity.</p>
E	<p>Displays the following prompt:</p> <pre>Enter maximum number of log files to retain:</pre> <p>Type a new value up to 99, for example, 5. The adapter automatically deletes the oldest activity logs beyond the specified limit.</p>
F	<p>If this option is set to enabled, the adapter includes the debug statements in the log file of all transactions.</p> <p>Type F to toggle between the options.</p>
G	<p>If this option is set to enabled, the adapter maintains a detailed log file of all transactions. The detail logging option must be used for diagnostic purposes only. Detailed logging enables more messages from the adapter and might increase the size of the logs.</p> <p>Type G to toggle between the options.</p>
H	<p>If this option is set to enabled, the adapter maintains a log file of all transactions in the Agent Development Kit (ADK) and library files. Base logging substantially increases the size of the logs.</p> <p>Type H to toggle between the options.</p>
I	<p>If this option is enabled, the log file contains thread IDs, in addition to a date and timestamp on each line of the file.</p> <p>Type I to toggle between the options.</p>

Related tasks

Starting the adapter configuration tool

Start the **agentCfg** tool to access the configuration menu, where you can modify the different adapter parameters.

Viewing configuration settings

Use the **Configuration Settings** option to display the adapter information such as its version, ADK version, and adapter log file name.

Changing protocol configuration settings

The adapter uses the DAML protocol to communicate with the Identity server. By default, when the adapter is installed, the DAML protocol is configured for a non-secure environment. Use the **Protocol Configuration** option to configure the protocol properties for the adapter.

Changing the configuration key

Use the **Change Configuration Key** option to set the configuration key. The configuration key is used as a password to access the configuration tool for the adapter.

Modifying registry settings

Use the **Registry Settings** option to access the various types of registry settings that you can modify based on your requirements.

Modifying non-encrypted registry settings

Use the **Modify Non-encrypted registry settings** option to modify the registry settings that do not use encryption.

Changing advanced settings

Use the **Advanced Settings** option to change the adapter thread count settings for the different types of requests.

Viewing statistics

Use the **Statistics** option to view the event log of the adapter.

Changing code page settings

Use the **Codepage Support** option to view the list of codes that the adapter supports.

Accessing help and additional options

Access the **agentCfg** help menu to view the list of available arguments that you can use.

Modifying registry settings

Use the **Registry Settings** option to access the various types of registry settings that you can modify based on your requirements.

1. Access the **Agent Main Configuration Menu**.

For more information, see [“Starting the adapter configuration tool” on page 29](#).

2. At the **Main menu** prompt, type F.

The **Registry Menu** is displayed.

```
Agent Registry Menu
-----
A. Modify Non-encrypted registry settings.
B. Modify encrypted registry settings.
C. Multi-instance settings.
X. Done
Select menu option:
```

3. Type the letter of the preferred menu option

Related tasks

Starting the adapter configuration tool

Start the **agentCfg** tool to access the configuration menu, where you can modify the different adapter parameters.

Viewing configuration settings

Use the **Configuration Settings** option to display the adapter information such as its version, ADK version, and adapter log file name.

Changing protocol configuration settings

The adapter uses the DAML protocol to communicate with the Identity server. By default, when the adapter is installed, the DAML protocol is configured for a non-secure environment. Use the **Protocol Configuration** option to configure the protocol properties for the adapter.

Changing the configuration key

Use the **Change Configuration Key** option to set the configuration key. The configuration key is used as a password to access the configuration tool for the adapter.

Changing activity logging settings

Use the **Activity Logging** option to enable or disable log files that monitor various system activities.

Modifying non-encrypted registry settings

Use the **Modify Non-encrypted registry settings** option to modify the registry settings that do not use encryption.

Changing advanced settings

Use the **Advanced Settings** option to change the adapter thread count settings for the different types of requests.

Viewing statistics

Use the **Statistics** option to view the event log of the adapter.

Changing code page settings

Use the **Codepage Support** option to view the list of codes that the adapter supports.

Accessing help and additional options

Access the **agentCfig** help menu to view the list of available arguments that you can use.

Modifying non-encrypted registry settings

Use the **Modify Non-encrypted registry settings** option to modify the registry settings that do not use encryption.

1. At the **Agent Registry Menu**, type A.

The **Non-encrypted Registry Settings Menu** is displayed.

```
mailAgent Registry Items
-----
01. DATEFORMAT 'MDY'
02. ENROLE_VERSION '6.0'
03. PASSEXPIRE 'TRUE'
04. SYSEXEC 'IBMUSER.ISIMACF2.EXEC'
-----
                        Page 1 of 1

A.  Add new attribute
B.  Modify attribute value
C.  Remove attribute

X.  Done

Select menu option:
```

The following table describes the non-encrypted registry keys and their available settings:

Key	Description
DATEFORMAT	Specifies the date format that must match with the configured date format of the adapter.
DSKEEP	Specify TRUE to keep temporary reconciliation data sets and FALSE to delete temporary reconciliation data sets at the end of a reconciliation.

<i>Table 9. Non-encrypted registry keys (continued)</i>	
Key	Description
ENROLE_VERSION	Specifies the version of IBM Security Verify Governance.
HEADER	Specify the @HEADER string as specified in the ACFFDR. The fields that are specified in this string will be collected during a single account lookup.
RESWORD	Any comma-separated string that is found in the RESWORD registry setting value is added to the hardcoded reserved words list during request processing.
PASSEXPIRE	Specifies the default action that the adapter must perform when the adapter receives a password change request. TRUE indicates that passwords must be set as expired. FALSE indicates that passwords must be set as non-expired.
SYSEXEC	Specifies the data set that contains the REXX executable programs ISIMEXIT and ISIMEXEC .
PASSGEN	<p>Registry setting for changing phrases:</p> <ul style="list-style-type: none"> • PASSGEN=ADD: Generate random password on ADD account with pass phrase • PASSGEN=MOD: Generate random password on MODIFY account with pass phrase • PASSGEN=NEVER: Never generate a random password • PASSGEN=BOTH: Always generate a random password <p>If not specified, the default PASSGEN value is BOTH.</p> <p>Note:</p> <p>It is not guaranteed that random passwords generated meet the site-specific password.</p> <p>With the PASSGEN value set to NEVER or MOD, new accounts can be requested only by using a password.</p> <p>When you are add a new account with a pass phrase, with PASSGEN set to NEVER or MOD, the following error is returned:ERR:yy/mm/dd hh:mm:ss caacf2Add: pass phrases can NOT be used for INSERT for user <LID></p>
PWD_CONFIG	PWD_CONFIG allows a maximum of 5 comma-separated strings, which are randomly selected by the adapter to generate random passwords.
PWP_CONFIG	PWP_CONFIG allows a maximum of 3 comma-separated strings, which are randomly selected by the adapter to generate random password phrases.
PWPMOD	<p>Registry settings for changing passwords:</p> <ul style="list-style-type: none"> • PWPMOD = RANDOM: Generate a random phrase on MODIFY account with password • PWPMOD=DISABLE: Disables pass phrase usage for this LID on MODIFY account with password • PWPMOD=IGNORE: No changes are made for the pass phrase when the request is for changing a password <p>If not specified, the default PWPMOD value is set to RANDOM.</p> <p>It is not guaranteed that random passwords generated meet the site-specific password.</p>

<i>Table 9. Non-encrypted registry keys (continued)</i>	
Key	Description
AUTOPWP	<p>Registry setting for changing phrases:</p> <p>PWPMOD=DISABLE ensures that the pass phrase usage for a specified LID is disabled on account MODIFY. When you change a password for this LID, an additional registry setting is introduced to specify whether PWPALLOW must be automatically re-enabled when it receives a request to set a pass phrase for a LID.</p> <ul style="list-style-type: none"> • AUTOPWP=TRUE: Automatically set PWPALLOW when receiving a request to change a pass phrase • AUTOPWP=FALSE: Does not automatically set anything for the phrase when the request is for changing a phrase <p>If not specified, the default AUTOPWP value is set to TRUE.</p>
RECHLQ	<p>Specifies a high-level qualifier for the data sets that are allocated during reconciliation. If a value is not specified, the agentID is set as high-level qualifier. If the agentID cannot be determined, the default value ISIAGNT is set as a high-level qualifier.</p>
TSCOMD	<p>Specify TRUE to use tsocmd or FALSE to use IRXEXEC. The default value is TRUE.</p>
UID	<p>Specify the @UID string as specified in the ACFDR. The fields that are specified in this string will be collected during a single account lookup.</p>

2. Type the letter of the preferred menu option

<i>Table 10. Attribute configuration option description</i>	
Option	Configuration task
A	Add new attribute
B	Modify attribute value
C	Remove attribute

3. Type the registry item name and press **Enter**.
4. If you selected option A or B, type the registry item value.
5. Press **Enter**.

The **Non-encrypted Registry Settings Menu** displays the new settings.

Related tasks

Starting the adapter configuration tool

Start the **agentCfg** tool to access the configuration menu, where you can modify the different adapter parameters.

Viewing configuration settings

Use the **Configuration Settings** option to display the adapter information such as its version, ADK version, and adapter log file name.

Changing protocol configuration settings

The adapter uses the DAML protocol to communicate with the Identity server. By default, when the adapter is installed, the DAML protocol is configured for a non-secure environment. Use the **Protocol Configuration** option to configure the protocol properties for the adapter.

Changing the configuration key

Use the **Change Configuration Key** option to set the configuration key. The configuration key is used as a password to access the configuration tool for the adapter.

Changing activity logging settings

Use the **Activity Logging** option to enable or disable log files that monitor various system activities.

Modifying registry settings

Use the **Registry Settings** option to access the various types of registry settings that you can modify based on your requirements.

Changing advanced settings

Use the **Advanced Settings** option to change the adapter thread count settings for the different types of requests.

Viewing statistics

Use the **Statistics** option to view the event log of the adapter.

Changing code page settings

Use the **Codepage Support** option to view the list of codes that the adapter supports.

Accessing help and additional options

Access the **agentCfig** help menu to view the list of available arguments that you can use.

Changing advanced settings

Use the **Advanced Settings** option to change the adapter thread count settings for the different types of requests.

You can change the adapter thread count settings for the following types of requests.

- System Login Add
- System Login Change
- System Login Delete
- Reconciliation

This thread counts determines the maximum number of requests that the adapter processes. You can change these settings.

1. Access the **Agent Main Configuration Menu**.

For more information, see [“Starting the adapter configuration tool” on page 29](#).

2. At the **Main menu** prompt, type G to display the **Advanced Settings Menu**.

The following screen displays the default thread count settings.

```
Advanced Settings Menu
A. Single Thread Agent (current:FALSE)
B. ADD max. thread count. (current:3)
C. MODIFY max. thread count. (current:3)
D. DELETE max. thread count. (current:3)
E. SEARCH max. thread count. (current:3)
F. LOOKUP max. thread count. (current:3)
G. Allow User EXEC procedures (current:FALSE)
H. Archive Request Packets (current:FALSE)
I. UTF8 Conversion support (current:TRUE)
J. Pass search filter to agent (current:FALSE)
X. Done
Select menu option:
```

3. Type the letter of the preferred menu option

For a description of each option, see [Table 11 on page 44](#).

<i>Table 11. Options for the advanced settings menu</i>	
Option	Description
A	Forces the adapter to submit only 1 request at a time. The default value is FALSE.
B	Limits the number of Add requests that can run simultaneously. The default value is 3.
C	Limits the number of Modify requests that can run simultaneously. The default value is 3.
D	Limits the number of Delete requests that can run simultaneously. The default value is 3.
E	Limits the number of Search requests that can run simultaneously. The default value is 3.
F	Limits the number of Lookup requests that can run simultaneously. The default value is 3.
G	Determines whether the adapter can perform the pre-exec and post-exec functions. The default value is FALSE. Note: Enabling this option is a potential security risk.
H	This option is no longer supported.
I	This option is no longer supported.
J	Currently, this adapter does not support processing filters directly. This option must always be FALSE.

4. Change the value and press Enter to display the **Advanced Settings Menu** with new settings.

Related tasks

Starting the adapter configuration tool

Start the **agentCfg** tool to access the configuration menu, where you can modify the different adapter parameters.

Viewing configuration settings

Use the **Configuration Settings** option to display the adapter information such as its version, ADK version, and adapter log file name.

Changing protocol configuration settings

The adapter uses the DAML protocol to communicate with the Identity server. By default, when the adapter is installed, the DAML protocol is configured for a non-secure environment. Use the **Protocol Configuration** option to configure the protocol properties for the adapter.

Changing the configuration key

Use the **Change Configuration Key** option to set the configuration key. The configuration key is used as a password to access the configuration tool for the adapter.

Changing activity logging settings

Use the **Activity Logging** option to enable or disable log files that monitor various system activities.

Modifying registry settings

Use the **Registry Settings** option to access the various types of registry settings that you can modify based on your requirements.

Modifying non-encrypted registry settings

Use the **Modify Non-encrypted registry settings** option to modify the registry settings that do not use encryption.

Viewing statistics

Use the **Statistics** option to view the event log of the adapter.

Changing code page settings

Use the **Codepage Support** option to view the list of codes that the adapter supports.

Accessing help and additional options

Access the **agentCfg** help menu to view the list of available arguments that you can use.

Viewing statistics

Use the **Statistics** option to view the event log of the adapter.

1. Access the **Agent Main Configuration Menu**.

For more information, see [“Starting the adapter configuration tool” on page 29](#).

2. At the **Main menu** prompt, type H to display the activity history for the adapter.

```
Agent Request Statistics
-----
Date          Add          Mod          Del          Ssp          Res          Rec
-----
10/19/2004   000000      000004      000000      000000      000000      000004
-----
X. Done
```

3. Type X to return to the **Main Configuration Menu**.

Related tasks

Starting the adapter configuration tool

Start the **agentCfg** tool to access the configuration menu, where you can modify the different adapter parameters.

Viewing configuration settings

Use the **Configuration Settings** option to display the adapter information such as its version, ADK version, and adapter log file name.

Changing protocol configuration settings

The adapter uses the DAML protocol to communicate with the Identity server. By default, when the adapter is installed, the DAML protocol is configured for a non-secure environment. Use the **Protocol Configuration** option to configure the protocol properties for the adapter.

Changing the configuration key

Use the **Change Configuration Key** option to set the configuration key. The configuration key is used as a password to access the configuration tool for the adapter.

Changing activity logging settings

Use the **Activity Logging** option to enable or disable log files that monitor various system activities.

Modifying registry settings

Use the **Registry Settings** option to access the various types of registry settings that you can modify based on your requirements.

Modifying non-encrypted registry settings

Use the **Modify Non-encrypted registry settings** option to modify the registry settings that do not use encryption.

Changing advanced settings

Use the **Advanced Settings** option to change the adapter thread count settings for the different types of requests.

Changing code page settings

Use the **Codepage Support** option to view the list of codes that the adapter supports.

Accessing help and additional options

Access the **agentCfg** help menu to view the list of available arguments that you can use.

Changing code page settings

Use the **Codepage Support** option to view the list of codes that the adapter supports.

The adapter must be running.

Run the following command to view the code page information:

```
agentCfg -agent adapterAGNT -codepages
```

1. Access the **Agent Main Configuration Menu**.

For more information, see [“Starting the adapter configuration tool” on page 29](#)

2. At the **Main menu** prompt, type I.

The **Code Page Support Menu** for the adapter is displayed.

```
Codepage Support Menu
-----
* Configured codepage: IBM-1047-s390
-----
*
*****
* Restart Agent After Configuring Codepages
*****

A. Codepage Configure.
X. Done

Select menu option:
```

3. Type A to configure a code page.
4. After you select a code page, restart the adapter.

The following screen is a sample session with **agentCfg**, altering the default code page, from US EBCDIC (IBM-1047) to Spanish EBCDIC (IBM-1145).

```
IBMUSER:/u/ibmuser: >agentCfg -ag adapterAGNT
```

```
Enter configuration key for Agent 'adapterAGNT':
```

```
Agent Main Configuration Menu
```

```
-----
```

- A. **Configuration Settings.**
- B. **Protocol Configuration.**
- C. **Event Notification.**
- D. **Change Configuration Key.**
- E. **Activity Logging.**
- F. **Registry Settings.**
- G. **Advanced Settings.**
- H. **Statistics.**
- I. **Codepage Support.**

X. Done

Select menu option:i

```
Codepage Support Menu
```

```
-----
```

```
* Configured codepage: IBM-1047-s390
```

```
-----
```

```
*  
*****  
* Restart Agent After Configuring Codepages  
*****
```

A. Codepage Configure.

X. Done

Select menu option:a

```
Enter Codepage: ibm-1145
```

```
Codepage Support Menu
```

```
-----
```

```
* Configured codepage: ibm-1145
```

```
-----
```

```
*  
*****  
* Restart Agent After Configuring Codepages  
*****
```

A. Codepage Configure.

X. Done

Select menu option:x

5. Type X to return to the **Main Configuration Menu**.

Related tasks

Starting the adapter configuration tool

Start the **agentCfg** tool to access the configuration menu, where you can modify the different adapter parameters.

Viewing configuration settings

Use the **Configuration Settings** option to display the adapter information such as its version, ADK version, and adapter log file name.

Changing protocol configuration settings

The adapter uses the DAML protocol to communicate with the Identity server. By default, when the adapter is installed, the DAML protocol is configured for a non-secure environment. Use the **Protocol Configuration** option to configure the protocol properties for the adapter.

Changing the configuration key

Use the **Change Configuration Key** option to set the configuration key. The configuration key is used as a password to access the configuration tool for the adapter.

Changing activity logging settings

Use the **Activity Logging** option to enable or disable log files that monitor various system activities.

Modifying registry settings

Use the **Registry Settings** option to access the various types of registry settings that you can modify based on your requirements.

Modifying non-encrypted registry settings

Use the **Modify Non-encrypted registry settings** option to modify the registry settings that do not use encryption.

Changing advanced settings

Use the **Advanced Settings** option to change the adapter thread count settings for the different types of requests.

Viewing statistics

Use the **Statistics** option to view the event log of the adapter.

Accessing help and additional options

Access the **agentCfg** help menu to view the list of available arguments that you can use.

Accessing help and additional options

Access the **agentCfg** help menu to view the list of available arguments that you can use.

1. At the **Main menu** prompt, type X to display the UNIX System Services command prompt.
2. Type **agentCfg -help** at the prompt to display the help menu and list of commands.

```
-version                ;Show version
-hostname <value>      ;Target nodename to connect to (Default:Local host
IP address)
-findall                ;Find all agents on target node
-list                  ;List available agents on target node
-agent <value>         ;Name of agent
-tail                  ;Display agent's activity log
-schema                ;Display agent's attribute schema
-portnumber <value>   ;Specified agent's TCP/IP port number
-netsearch <value>    ;Lookup agents hosted on specified subnet
-codepages              ;Display list of available codepages
-help                  ;Display this help screen
```

The following table describes each argument.

Argument	Description
-version	Use this argument to display the version of the agentCfg tool.
-hostname <value>	Use the -hostname argument with one of the following arguments to specify a different host: <ul style="list-style-type: none">• -findall• -list• -tail• -agent Enter a host name or IP address as the value.

<i>Table 12. Arguments and description for the agentCfg help menu (continued)</i>	
Argument	Description
-findall	Use this argument to search and display all port addresses 44970 - 44994 and their assigned adapter names. This option times out the unused port numbers. Therefore, it might take several minutes to complete. Add the -hostname argument to search a remote host.
-list	Use this argument to display the adapters that are installed on the local host of the adapter. By default, the first time you install an adapter, it is either assigned to port address 44970 or to the next available port number. You can then assign all the later installed adapters to the next available port address. After the software finds an unused port, the listing stops. Use the -hostname argument to search a remote host.
-agent <value>	Use this argument to specify the adapter that you want to configure. Enter the adapter name as the value. Use this argument with the -hostname argument to modify the configuration setting from a remote host. You can also use this argument with the -tail argument.
-tail	Use this argument with the -agent argument to display the activity log for an adapter. Add the -hostname argument to display the log file for an adapter on a different host.
-portnumber <value>	Use this argument with the -agent argument to specify the port number that is used for connections for the agentCfg tool.
-netsearch <value>	Use this argument with the -findall argument to display all active adapters on the operating system. You must specify a subnet address as the value.
-codepages	Use this argument to display a list of available codepages.
-help	Use this argument to display the Help information for the agentCfg command.

3. Type **agentCfg** before each argument you want to run, as shown in the following examples.

agentCfg -list

Displays a list of:

- All the adapters on the local host.

- The IP address of the host.
- The IP address of the local host.
- The node on which the adapter is installed.

The default node for the Identity server must be 44970. The output is similar to the following example:

```
Agent(s) installed on node '127.0.0.1'
-----
adapterAGNT      (44970)
```

agentCfg -agent adapter_name

Displays the **Main Menu** of the **agentCfg** tool, which you can use to view or modify the adapter parameters.

agentCfg -list -hostname 192.9.200.7

Displays a list of the adapters on a host with the IP address 192.9.200.7. Ensure that the default node for the adapter is 44970. The output is similar to the following example:

```
Agent(s) installed on node '192.9.200.7'
-----
adapterAGNT      (44970)
```

agentCfg -agent adapter_name -hostname 192.9.200.7

Displays the **agentCfg** tool **Main Menu** for a host with the IP address 192.9.200.7. Use the menu options to view or modify the adapter parameters.

Related tasks

Starting the adapter configuration tool

Start the **agentCfg** tool to access the configuration menu, where you can modify the different adapter parameters.

Viewing configuration settings

Use the **Configuration Settings** option to display the adapter information such as its version, ADK version, and adapter log file name.

Changing protocol configuration settings

The adapter uses the DAML protocol to communicate with the Identity server. By default, when the adapter is installed, the DAML protocol is configured for a non-secure environment. Use the **Protocol Configuration** option to configure the protocol properties for the adapter.

Changing the configuration key

Use the **Change Configuration Key** option to set the configuration key. The configuration key is used as a password to access the configuration tool for the adapter.

Changing activity logging settings

Use the **Activity Logging** option to enable or disable log files that monitor various system activities.

Modifying registry settings

Use the **Registry Settings** option to access the various types of registry settings that you can modify based on your requirements.

Modifying non-encrypted registry settings

Use the **Modify Non-encrypted registry settings** option to modify the registry settings that do not use encryption.

Changing advanced settings

Use the **Advanced Settings** option to change the adapter thread count settings for the different types of requests.

Viewing statistics

Use the **Statistics** option to view the event log of the adapter.

Changing code page settings

Use the **Codepage Support** option to view the list of codes that the adapter supports.

Configuring SSL authentication

To establish a secure connection between the adapter and the Identity server, configure SSL authentication for connections that originate from the Identity server or from the adapter.

Use the Secure Sockets Layer (SSL) authentication with the default communication protocol, DAML.

The Identity server initiates a connection to the adapter to set or retrieve the value of a managed attribute on the adapter. Depending on the security requirements of your environment, you can configure SSL authentication for connections that originate from the adapter.

By configuring the adapter for SSL, the Identity server can verify the identity of the adapter before the server establishes a secure connection.

For example, adapter events can notify the Identity server of changes to attributes on the adapter. In this case, configure SSL authentication for web connections that originate from the adapter to the web server used by the Identity server.

In a production environment, you must enable SSL security. If an external application, such as the Identity server, communicates with the adapter and uses server authentication, enable SSL on the adapter. Enabling SSL verifies the certificate that the application presents.

Related concepts

[Configuring the adapter parameters](#)

You can use the adapter configuration tool, **agentCfg**, to view or modify the adapter parameters.

[Customizing the adapter](#)

You can do specific functions according to your requirements by using the REXX execs that are provided with the adapter installation.

[z/OS UNIX System Services considerations](#)

UNIX System Service creates a task for each child process. If you define `_BPX_SHAREAS=YES` in the `/etc/profile`, the adapter runs in a single address space, instead of multiple address spaces.

[Configuration notes](#)

The ACF2 adapter can handle multiple requests simultaneously. Learn how the adapter processes specific attributes and requests and how it interacts with z/OS during the processing of some of the requests.

Related tasks

[Using the Regis Tool](#)

Start the Regis tool to modify the different adapter parameters.

Overview of SSL and digital certificates

An enterprise network deployment requires secure communication between the Identity server and the software products and components with which the server communicates.

SSL protocol uses signed digital certificates from a Certificate Authority (CA) for authentication. SSL encrypts the data that is exchanged between the applications to secure communication.

Signed digital certificates enable two applications that connect in a network to authenticate their identity. An application that acts as an SSL server presents its credentials to an SSL client for verification. The SSL client verifies that the application is the entity it claims to be. You can configure an application that acts as an SSL server so that it requires the application that acts as an SSL client to present its credentials in a certificate. In this way, the two-way exchange of certificates is completed. For more information on the two-way SSL configuration, see [Defining and Securing Keystores or Truststores](#).

A third-party Certificate Authority issues signed certificates for a fee. Some utilities, such as those provided by OpenSSL, can also provide signed certificates.

You must install a Certificate Authority certificate (CA certificate) to verify the origin of a signed digital certificate. When an application receives a signed certificate from another application, it uses a CA certificate to verify the certificate originator. A Certificate Authority can be:

- Well-known and widely used by other organizations.
- Local to a specific region or a company.

Many applications, such as web browsers, use the CA certificates of well-known certificate authorities. Using a well-known CA eliminates or reduces the task of distributing CA certificates throughout the security zones in a network.

Private keys, public keys, and digital certificates

Keys, digital certificates, and trusted certificate authorities establish and verify the identities of applications.

SSL uses public key encryption technology for authentication. In public key encryption, a public key and a private key are generated for an application. The data encrypted with the public key can be decrypted only with the corresponding private key. Similarly, the data encrypted with the private key can be decrypted only with the corresponding public key. The private key is password-protected in a key database file. Only the owner can access the private key to decrypt messages that are encrypted with the corresponding public key.

A signed digital certificate is an industry-standard method of verifying the authenticity of an entity, such as a server, a client, or an application. To ensure maximum security, a third-party certificate authority provides a certificate. A certificate contains the following information to verify the identity of an entity:

Organizational information

This certificate section contains information that uniquely identifies the owner of the certificate, such as organizational name and address. You supply this information when you generate a certificate with a certificate management utility.

Public key

The receiver of the certificate uses the public key to decipher encrypted text that is sent by the certificate owner to verify its identity. A public key has a corresponding private key that encrypts the text.

Certificate authority's distinguished name

The issuer of the certificate identifies itself with this information.

Digital signature

The issuer of the certificate signs it with a digital signature to verify its authenticity. The corresponding CA certificate compares the signature to verify that the certificate is originated from a trusted certificate authority.

Web browsers, servers, and other SSL-enabled applications accept as genuine any digital certificate that is signed by a trusted certificate authority and is otherwise valid. For example, a digital certificate can be invalidated for the following reasons:

- The digital certificate expired.
- The CA certificate that is used to verify that it expired.
- The distinguished name in the digital certificate of the server does not match with the distinguished name specified by the client.

Self-signed certificates

Use self-signed certificates to test an SSL configuration before you create and install a signed certificate that is provided by a Certificate Authority.

A self-signed certificate contains a public key, information and signature of the certificate owner. It also has an associated private key but it does not verify the origin of the certificate through a third-party Certificate Authority.

After you generate a self-signed certificate on an SSL server application, you must:

1. Extract it.
2. Add it to the certificate registry of the SSL client application.

This procedure is equivalent to installing a CA certificate that corresponds to a server certificate. However, you do not include the private key in the file when you extract a self-signed certificate to use as the equivalent of a CA certificate.

Use a key management utility to do the following tasks:

- Generate a self-signed certificate.
- Generate a private key.
- Extract a self-signed certificate.
- Add a self-signed certificate.

Use of self-signed certificates depends on your security requirements. To obtain the highest level of authentication between critical software components, do not use self-signed certificates or use them selectively. You can authenticate applications that protect server data with signed digital certificates. You can use self-signed certificates to authenticate web browsers or IBM Security Verify Adapters.

If you are using self-signed certificates, you can substitute a self-signed certificate for a certificate and CA certificate pair.

Certificate and key formats

Certificates and keys are stored in the files with various formats.

.pem format

A privacy-enhanced mail (.pem) format file begins and ends with the following lines:

```
-----BEGIN CERTIFICATE-----  
-----END CERTIFICATE-----
```

A .pem file format supports multiple digital certificates, including a certificate chain. If your organization uses certificate chaining, use this format to create CA certificates.

.arm format

An .arm file contains a base-64 encoded ASCII representation of a certificate, including its public key, not a private key. The .arm file format is generated and used by the IBM Key Management utility.

.der format

A .der file contains binary data. You can use a .der file for a single certificate, unlike a .pem file, which can contain multiple certificates.

.pfx format (PKCS12)

A PKCS12 file is a portable file that contains a certificate and a corresponding private key. Use this format to convert from one type of SSL implementation to another. For example, create and export a PKCS12 file with the IBM Key Management utility. You can then import the file to another workstation with the certTool utility.

DAML SSL implementation

When you start the adapter, it loads the available connection protocols. The DAML protocol is the only available protocol that supports SSL authentication. You can specify DAML SSL implementation.

The DAML SSL implementation uses a certificate registry to store private keys and certificates. The certTool key and certificate management tool manages the location of the certificate registry. You do not need to specify the location of the registry when you perform certificate management tasks.

You can modify the value for the ISIM_ADAPTER_CIPHER_LIST environment variable to meet your organizations requirements. For an overview of all possible options, please consult the OpenSSL website: <https://www.openssl.org/docs/man1.0.2/man1/ciphers.html>.

Configuring certificates for SSL authentication

To establish a secure connection between the adapter and the Identity server, configure SSL authentication for connections that originate from the Identity server or from the adapter. You can configure the adapter for one-way or two-way SSL authentication with signed certificates.

- [“Configuring certificates for one-way SSL authentication” on page 54](#)
- [“Configuring certificates for two-way SSL authentication” on page 55](#)
- [“Configuring certificates when the adapter operates as an SSL client” on page 55](#)
- [“Managing the SSL certificates” on page 56](#)

Configuring certificates for one-way SSL authentication

In this configuration, the Identity server and the adapter use SSL.

Client authentication is not set on either application. The Identity server operates as the SSL client and initiates the connection. The adapter operates as the SSL server and responds by sending its signed certificate to the Identity server. The Identity server uses the installed CA certificate to validate the certificate that is sent by the adapter.

In Figure 2 on page 54, Application A operates as the Identity server, and Application B operates as the IBM Security Verify Adapter.

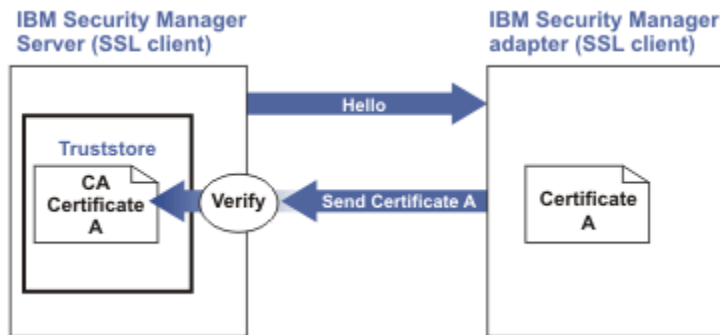


Figure 2. One-way SSL authentication (server authentication)

To configure one-way SSL, do the following tasks for each application:

1. On the adapter, complete these steps:
 - a) Start the certTool utility.
 - b) Configure the SSL-server application with a signed certificate issued by a certificate authority.
 - i) Create a certificate signing request (CSR) and private key. This step creates the certificate with an embedded public key and a separate private key and places the private key in the PENDING_KEY registry value.
 - ii) Submit the CSR to the certificate authority by using the instructions that are supplied by the CA. When you submit the CSR, specify that you want the root CA certificate that is returned with the server certificate.
2. On the Identity server, complete one of these steps:
 - If you used a signed certificate that is issued by a well-known CA:
 - a. Ensure that the Identity server stored the root certificate of the CA (CA certificate) in its keystore. See <https://www-01.ibm.com/support/docview.wss?uid=ibm10713583>.
 - b. If the keystore does not contain the CA certificate, extract the CA certificate from the adapter and add it to the keystore of the server.
 - If you generated the self-signed certificate on the Identity server, the certificate is installed and requires no additional steps.

- If you generated the self-signed certificate with the key management utility of another application:
 - a. Extract the certificate from the keystore of that application.
 - b. Add it to the keystore of the Identity server.

Configuring certificates for two-way SSL authentication

In this configuration, the Identity server and the adapter use SSL.

Configure the adapter and the Identity server for one-way SSL authentication.

If you use signed certificates from a CA:

- The CA provides a configured adapter with a private key and a signed certificate.
- The signed certificate of the adapter provides the CA certification for the Identity server.

The adapter uses client authentication. After the adapter sends its certificate to the server, the adapter requests identity verification from the server. The server sends its signed certificate to the adapter. Both applications are configured with signed certificates and corresponding CA certificates.

In [Figure 3 on page 55](#), the Identity server operates as Application A and the IBM Security Verify Adapter operates as Application B.

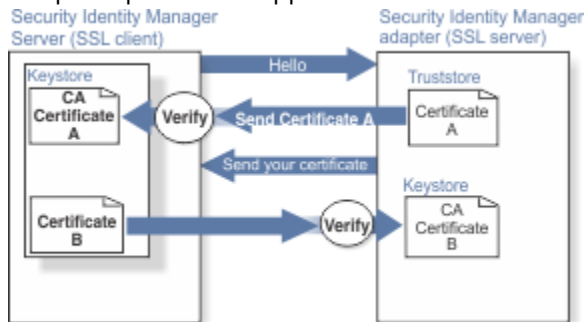


Figure 3. Two-way SSL authentication (client authentication)

1. On the Identity server, complete these steps:
 - a) Create a CSR and private key.
 - b) Obtain a certificate from a CA.
 - c) Install the CA certificate.
 - d) Install the newly signed certificate.
 - e) Extract the CA certificate to a temporary file.
2. On the adapter, add the CA certificate that was extracted from the keystore of the Identity server to the adapter.

After you configure the two-way certificate, each application has its own certificate and private key. Each application also has the certificate of the CA that issued the certificates.

Configuring certificates when the adapter operates as an SSL client

In this configuration, the adapter operates as both an SSL client and as an SSL server.

This configuration applies if the adapter initiates a connection to the web server, which is used by the Identity server, to send an event notification. For example, the adapter initiates the connection and the web server responds by presenting its certificate to the adapter.

[Figure 4 on page 56](#) describes how the adapter operates as an SSL server and as an SSL client. When the adapter communicates with the Identity server, the adapter sends its certificate for authentication. When the adapter communicates with the web server, the adapter receives the certificate of the web server.

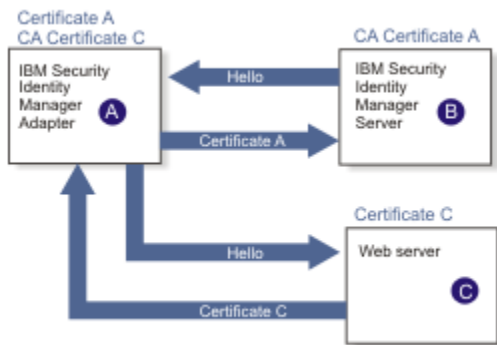


Figure 4. Adapter operating as an SSL server and an SSL client

If the web server is configured for two-way SSL authentication, it verifies the identity of the adapter. The adapter sends its signed certificate to the web server. To enable two-way SSL authentication between the adapter and web server, complete these steps:

1. Configure the web server to use client authentication.
2. Follow the procedure for creating and installing a signed certificate on the web server.
3. Install the CA certificate on the adapter with the certTool utility.
4. Add the CA certificate corresponding to the signed certificate of the adapter to the web server.

You might want the software to send an event notification when the adapter initiates a connection to the web server, which is used by the Identity server.

Managing the SSL certificates

You can use the certTool utility to manage private keys and certificates.

- [“Starting the certTool utility” on page 56.](#)
- [“Generating a private key and certificate request” on page 58](#)
- [“Installing the certificate” on page 59](#)
- [“Installing the certificate and key from a PKCS12 file” on page 59](#)
- [“Viewing the installed certificate” on page 59](#)
- [“Installing a CA certificate” on page 59](#)
- [“Viewing CA certificates” on page 60](#)
- [“Deleting a CA certificate” on page 60](#)
- [“Registering a certificate” on page 60](#)
- [“Viewing registered certificates” on page 61](#)
- [“Unregistering a certificate” on page 61](#)
- [“Exporting a certificate and key to PKCS12 file” on page 61](#)

Starting the certTool utility

Use the certTool utility to generate a private key and certificate request, install and delete certificates, register and unregister certificates, and list certificates.

From the **Main** menu of the certTool utility, you can complete these tasks:

- Generate a CSR and install the returned signed certificate on the adapter.
 - Install root CA certificates on the adapter.
 - Register certificates on the adapter.
1. Browse to the Windows Command Prompt.

2. Log on to the adapter
3. In the command prompt, change to the <adapter_readwrite_home>/bin directory of the adapter.
4. Type certTool at the prompt. The **Main menu** is displayed.

```

Main menu - Configuring agent: adapterAGNT
-----
A. Generate private key and certificate request
B. Install certificate from file
C. Install certificate and key from a PKCS12 file
D. View current installed certificate

E. List CA certificates
F. Install a CA certificate
G. Delete a CA certificate

H. List registered certificates
I. Register a certificate
J. Unregister a certificate

K. Export certificate and key to PKCS12 file

X. Quit

Choice:

```

5. Type the letter of the preferred menu option

Options A through D generates a CSR and installs the returned signed certificate on the adapter.

A. Generate private key and certificate request

Generate a CSR and the associated private key that is sent to the certificate authority.

B. Install certificate from file

Install a certificate from a file. This file must be the signed certificate, which the CA returned in response to the CSR that option A generated.

C. Install certificate and key from a PKCS12 file

Install a certificate from a PKCS12 format file that includes both the public certificate and a private key. If options A and B are not used to obtain a certificate, the certificate that you use must be in PKCS12 format.

D. View current installed certificate

View the certificate that is installed on the z/OS system where the adapter is installed.

Options E through G installs the root CA certificates on the adapter. A CA certificate validates the corresponding certificate from the client, such as the server.

E. List CA certificates

List the installed CA certificates. The adapter communicates only with servers whose certificates are validated by one of the installed CA certificates.

F. Install a CA certificate

Install a new CA certificate so that certificates generated by this CA can be validated. The CA certificate file can either be in X.509 or PEM encoded formats.

G. Delete a CA certificate

Remove one of the installed CA certificates.

Options H through K apply to adapters that must authenticate the application to which the adapter is sending information. An example of an application is the Identity server or the web server. Use these options to register certificates on the adapter.

H. List registered certificates

List all registered certificates that are accepted for communication.

I. Register a certificate

Register a new certificate. The certificate for registration must be in Base 64 encoded X.509 format or PEM.

J. Unregister a certificate

Remove a certificate from the registered list.

K. Export certificate and key to PKCS12 file

Export a previously installed certificate and private key. You are prompted for the file name and a password for encryption.

You must install the CA certificate corresponding to the signed certificate of the Identity server to either:

- Configure the adapter for event notification.
- Enable client authentication in DAML.

Generating a private key and certificate request

Use the **Generate private key and certificate request** certTool option to generate a private key and a certificate request for secure communication between the adapter and IBM Security Verify Governance.

A certificate signing request (CSR) is an unsigned certificate in a text file. When you submit an unsigned certificate to a Certificate Authority (CA), the CA signs the certificate with a private digital signature included in their corresponding CA certificate. When the certificate signing request is signed, it becomes a valid certificate. A CSR file contains information about the organization, such as the organization name, country, and the public key for its web server.

A CSR file looks similar to the following example:

```
-----BEGIN CERTIFICATE REQUEST-----
MIIB1jCCAT8CAQAwgZUxEjAQBgNVBAoTCWFjY2VzczM2MDEUMBGA1UECXMW5n
aw5lZXJpbmcxEDA0BgNVBAMTB250YWdlbnQxJDAiBgkqhkiG9w0BCQEFW50Ywd1
bnRAYWNjZXNzMzYwLmNvbTElMAkGA1UEBhMCVVMxEzARBgNVBAgTCkNhbG1mb3Ju
awExDzANBgNVBAcTBklydm1uZTCBnzANBgkqhkiG9w0BAQEFAA0BjQAwYkCgYEA
mR6AcPnwF6hLLc72BmUkAwaXcebtXCoCnnTH9uc8VuMHPbIMAgjuC4s91hPri1G7
Utlb0fy6X3R3kbeR8apRR9uLYrPIvQ1b4NK0whsyti6syCySaFQIB6V7RPBatFr
6XQ9hpsARdkGytZmGTgGTJ1hSS/jA6mbxpgmttz9HPECAwEAaAAMA0GCSqGSIb3
DQEBAgUAA4GBADxA1cDkvXhgZntHkwT9tCTqUNV9sim8N/U15HgMRh177jVaHJqb
N1Er46vQSS000k4z21/Xw0mFkNNTXRV19TLZZ/D+9mGZcDobc0+1bAK1ePwyufxK
Xqdpu3d433H7xfJJSNYLYBFkrQJesITqKft0Q45gIjywIrbctVUCepL2
-----END CERTIFICATE REQUEST-----
```

1. At the **Main menu** of the certTool utility, type A. The following prompt is displayed:

```
Enter values for certificate request (press enter to skip value)
-----
Organization:
```

2. At **Organization**, type your organization name and press **Enter**.
 3. At **Organizational Unit**, type the organizational unit and press **Enter**.
 4. At **Agent Name**, type the name of the adapter for which you are requesting a certificate and press **Enter**.
 5. At **Email**, type the email address of the contact person for this request and press **Enter**.
 6. At **State**, type the state that the adapter is in and press **Enter**.
For example, type TX if the adapter is in Texas. Some certificate authorities do not accept two letter abbreviations for states. In this case, type the full name of the state.
 7. At **Country**, type the country that the adapter is in and press **Enter**.
 8. At **Locality**, type the name of the city that the adapter is in and press **Enter**.
 9. At **Accept these values**, do one of the following actions and press **Enter**:
 - Type Y to accept the displayed values.
 - Type N and specify different values.
- The private key and certificate request are generated after the values are accepted.
10. At **Enter name of file to store PEM cert request**, type the name of the file and press **Enter**. Specify the file that you want to use to store the values you specified in the previous steps.
 11. Press **Enter** to continue. The certificate request and input values are written to the file you specified. The file is copied to the adapter data directory and the **Main** menu is displayed again.

You can now request a certificate from a trusted CA by sending the .pem file that you generated to a certificate authority vendor.

Installing the certificate

Use the **Install certificate from file** certTool option to install the certificate on the adapter, from a file returned by the CA in response to the generated CSR.

After you receive your certificate from your trusted CA, you must install it in the adapter registry.

1. If you received the certificate as part of an email message, take the following actions:
 - a) Copy the text of the certificate to a text file.
 - b) Copy that file to the <adapter_readwrite_home>/data directory.
2. At the **Main menu** of the certTool utility, type C. The following prompt is displayed:

```
Enter name of certificate file:
-----
```

3. At **Enter name of certificate file**, type the full path to the certificate file and press **Enter**.

Installing the certificate and key from a PKCS12 file

If the certTool utility did not generate a CSR to obtain a certificate, you must install both the certificate and private key. Use the **Install certificate and key from a PKCS12 file** certTool option to install a certificate from a PKCS12 format file that includes both the public certificate and a private key.

Store the certificate and the private key in a PKCS12 file.

The CA sends a PKCS12 file that has a .pfx extension. The file can be password-protected and it includes both the certificate and private key.

To install the certificate from the PKCS12 file, complete these steps:

1. Copy the PKCS12 file to the <adapter_readwrite_home>/data directory.
2. At the **Main menu** of the certTool utility, type C. The following prompt is displayed:

```
Enter name of PKCS12 file:
-----
```

3. At **Enter name of PKCS12 file**, type the full path to the PKCS12 file that has the certificate and private key information and press **Enter**. You can type DamlSrvr.pfx.
4. At **Enter password**, type the password to access the file and press **Enter**.

The certificate and private key is installed in the adapter registry, and the **Main Menu** is displayed again.

Viewing the installed certificate

Use the **View current installed certificate** certTool option to view the certificate that is installed on the z/OS system where the adapter is installed.

1. At the **Main menu** of the certTool utility, type D.
2. The utility displays the installed certificate. The following example shows an installed certificate:

```
The following certificate is currently installed.
Subject: c=US,st=California,l=Irvine,o=DAML,cn=DAML Server
```

Installing a CA certificate

Use the **Install a CA certificate** certTool option to install root CA certificates on the adapter.

If you use client authentication, you must install a CA certificate that is provided by a certificate authority vendor.

1. At the **Main menu** of the certTool utility, type F. The following prompt is displayed:

```
Enter name of certificate file:
```

2. At **Enter name of certificate file**, type the name of the certificate file, such as `CACert.der` and press **Enter** to open the file. The following prompt is displayed:

```
e=admin@ibm.com,c=US,st=California,l=Irvine,o=IBM,ou=Engineering,cn=Eng
Install the CA? (Y/N)
```

3. At **Install the CA**, type Y to install the certificate and press **Enter**.

The certificate file is installed in the `Dam\CACerts.pem` file.

Viewing CA certificates

Use the **List CA certificates** certTool option to view the private keys and certificates that are installed for the adapter.

The certTool utility installs only one certificate and one private key. You can list the CA certificate on the adapter.

1. At the **Main menu** of the certTool utility, type E.
2. The utility displays the installed CA certificates. The following example shows an installed CA certificate:

```
Subject: o=IBM,ou=SampleCACert,cn=TestCA
Valid To: Wed Jul 26 23:59:59 2006
```

Deleting a CA certificate

Use the **Delete a CA certificate** certTool option to delete a CA certificate from the adapter directories.

1. At the **Main menu** of the certTool utility, type G to display a list of all CA certificates that are installed on the adapter.

```
0 - e=admin@ibm.com,c=US,st=California,l=Irvine,o=IBM,ou=Engineering,cn=Eng
1 - e=support@ibm.com,c=US,st=California,l=Irvine,o=IBM,ou=Support,cn=Support
Enter number of CA certificate to remove:
```

2. At **Enter number of CA certificate to remove**, type the number of the CA certificate that you want to remove and press **Enter**.

The CA certificate is deleted from the `Dam\CACerts.pem` file and the certTool utility displays the **Main Menu**.

Registering a certificate

Use the **Register a certificate** certTool option to register certificates on the adapter. Adapters that must authenticate to the application to which it is sending information must have a registered certificate. An example of an application is the Identity server or the web server.

1. At the **Main menu** of the certTool utility, type I. The following prompt is displayed:

```
Enter name of certificate file:
```

2. At **Enter name of certificate file**, type the name of the certificate file that you want to register and press **Enter**. The subject of the certificate is displayed. The following prompt is displayed:

```
e=admin@ibm.com,c=US,st=California,l=Irvine,o=IBM,ou=Engineering,cn=Eng
Register this CA? (Y/N)
```

3. At **Register this CA**, type Y to register the certificate, and press **Enter**.

The certificate is registered to the adapter and the certTool displays the **Main Menu**.

Viewing registered certificates

The adapter accepts only those requests that present a registered certificate when client validation is enabled. Use the **List registered certificates** certTool option to list all registered certificates that are accepted for communication.

1. At the **Main menu** of the certTool utility, type H.
2. The utility displays the registered certificates. The following example shows a list of the registered certificates:

```
0 - e=admin@ibm.com,c=US,st=California,l=Irvine,o=IBM,ou=Engineering,cn=Eng
1 - e=support@ibm.com,c=US,st=California,l=Irvine,o=IBM,ou=Support,cn=Support
```

Unregistering a certificate

Use the **Unregister a certificate** certTool option to remove an adapter certificate from the registered list.

1. At the **Main menu** of the certTool utility, type J to display the registered certificates. The following example shows a list of registered certificates:

```
0 - e=admin@ibm.com,c=US,st=California,l=Irvine,o=IBM,ou=Engineering,cn=Eng
1 - e=support@ibm.com,c=US,st=California,l=Irvine,o=IBM,ou=Support,cn=Support
```

2. Type the number of the certificate file that you want to unregister and press **Enter**.

```
e=admin@ibm.com,c=US,st=California,l=Irvine,o=IBM,ou=Engineering,cn=Eng
Unregister this CA? (Y/N)
```

3. At **Unregister this CA**, type Y to unregister the certificate and press **Enter**.

The certificate is removed from the list of registered certificate for the adapter and the certTool utility displays the **Main Menu**.

Exporting a certificate and key to PKCS12 file

Use the **Export certificate and key to PKCS12 file** certTool option to export a previously installed certificate and private key to a PKCS12 file.

1. At the **Main menu** of the certTool utility, type K. The following prompt is displayed:

```
Enter name of PKCS12 file:
```

2. At **Enter name of PKCS12 file**, type the name of the PKCS12 file for the installed certificate or private key and press **Enter**.
3. At **Enter Password**, type the password for the PKCS12 file and press **Enter**.
4. At **Confirm Password**, type the password again and press **Enter**.

The certificate or private key is exported to the PKCS12 file and the certTool displays the **Main Menu**.

Customizing the adapter

You can do specific functions according to your requirements by using the REXX execs that are provided with the adapter installation.

- [“ISIMEXIT command usage” on page 62](#)
- [“ISIMEXEC command usage” on page 63](#)

Related concepts

[Configuring the adapter parameters](#)

You can use the adapter configuration tool, **agentCfig**, to view or modify the adapter parameters.

[Configuring SSL authentication](#)

To establish a secure connection between the adapter and the Identity server, configure SSL authentication for connections that originate from the Identity server or from the adapter.

z/OS UNIX System Services considerations

UNIX System Service creates a task for each child process. If you define `_BPX_SHAREAS=YES` in the `/etc/profile`, the adapter runs in a single address space, instead of multiple address spaces.

Configuration notes

The ACF2 adapter can handle multiple requests simultaneously. Learn how the adapter processes specific attributes and requests and how it interacts with z/OS during the processing of some of the requests.

Related tasks

Using the Regis Tool

Start the Regis tool to modify the different adapter parameters.

ISIMEXIT command usage

ISIMEXIT is a REXX command. Use this command to start a REXX exec in response to a processing request from the Identity server.

You can implement the following instances where the **ISIMEXIT** exec gets control:

Pre add processing

The request to add a user is received; however, it is not yet processed.

Post add processing

The request to add a user is completed successfully.

Pre modify processing

The request to modify a user is received; however, it is not yet processed.

Post modify processing

The request to modify a user is completed successfully.

Pre delete processing

The request to delete a user is received, however, it is not yet processed.

Post delete processing

The request to delete a user is completed successfully.

Exit processing might indicate success (zero return code) or failure (non-zero return code) to convey to the adapter. For the pre- add, pre-modify, and pre-delete exits, any non-zero return code returns a failure for the current ACF2 user that is processed. For the post add, post modify, and post delete exits, a non-zero return code returns a warning for the current ACF2 user that is processed.

You might call other programs and perform file Input/Output (I/O) as necessary. Processing is performed under the authority of the ACF2 ID that runs the ACF2 commands to accomplish the function. You might run a valid TSO command if it does not prompt for a terminal user for input.

Ensure that the **ISIMEXIT** exec is available independent of whether it performs any functions. The sample **ISIMEXIT** provided has an **exit 0** as the first executable statement. You must modify this exit to meet your requirements.

The sample exit provides functions that you might use or customize according to your requirements. For example:

- Defining a user catalog alias in one or more master catalogs at POST ADD or POST MODIFY exit time.
- Defining a user data set profile at POST ADD or POST MODIFY exit time.
- Defining a user OMVS (UNIX System Services) home directory at POST ADD or POST MODIFY exit time.
- Deleting a user data set profiles at PRE DELETE exit time.
- Deleting a user catalog alias at POST DELETE exit time.

Note: Ensure that the Processing ID has appropriate ACF2 authorization to perform the listed exit functions.

The listed information is available to the EXIT.

Table 13. <i>ISIMEXIT</i> processing information			
Parameter #	Meaning	Possible value	Availability
1	Verb Indicates what operation is calling the exit.	ADD, MODIFY, or DELETE.	Always
2	Object The object name of the transaction.	USER indicating a ACF2 user object that is processed.	Always
3	Prepost Qualifies whether this entry is PRE or POST processing entry to the exit.	BEFORE or AFTER.	Always
4	User ID	The ACF2 logonid that is processed.	Always
5	ERACF2NAME	The value of the attribute.	Only ADD BEFORE and AFTER
6	ERACF2USING	The value of the attribute.	Only ADD BEFORE and AFTER

Related concepts

[ISIMEXEC command usage](#)

ISIMEXEC is a REXX command. Use this command for backward compatibility with earlier versions of the adapter.

ISIMEXEC command usage

ISIMEXEC is a REXX command. Use this command for backward compatibility with earlier versions of the adapter.

Note: ISIMEXEC is replaced by ISIMEXIT. ISIMEXEC will be removed from the product in 2020.

The **ISIMEXEC** processing can present a zero or a non-zero return code when the processing is complete. A zero return code indicates successful processing of the **Acf2EXECNAME** attribute. If a non-zero return code is presented on exit, the adapter indicates that the **Acf2EXECNAME** attribute failed.

You can call other programs and perform file I/O as necessary. Processing is performed under the authority of the same ACF2 logonid that runs the ACF2 commands. You can run a valid TSO command if it does not prompt for a terminal user for input.

Table 14. <i>ISIMEXEC</i> processing information			
Parameter #	Source	Value	Availability
1	IBM Security Verify Governance attribute of erUid	The value of the erUid .	Always, because this attribute accompanies all requests.
2	IBM Security Verify Governance attribute of erAcf2EXECNAME	The value of the erAcf2EXECNAME .	Always, because the availability of this attribute indicates that this exit must be started.

Parameter #	Source	Value	Availability
3	IBM Security Verify Governance attribute of erAcf2EXECVAR	The value of the erAcf2EXECVAR .	Based on the request generated by the Identity server.

When the **erAcf2EXECNAME** attribute is available and optionally, the **erAcf2EXECVAR** attribute is available, the **ISIMEXEC** exit point is started as a TSO command in the command executor.

You cannot run the following command cannot during the add operation. However, you can run the command any time during the modify operation:

```
%ISIMEXEC erUid erAcf2EXECNAME erAcf2EXECVAR
```

If the **erAcf2EXECVAR** attribute is available during an add operation, run the command after the add operation. However, only the **erUid** attribute is available on the ACF2 user profile.

When the **ISIMEXEC** is processed, the **erAcf2EXECNAME** attribute can represent anything that you want to process. It provides a second-level command or exec name that you want to run.

Note:

- You can prevent the running of unauthorized commands for processing by interrogating the **erAcf2EXECNAME** attribute because **ISIMEXEC** always receives control.
- **ISIMEXEC** is never started during a delete command because the adapter presents only the **erUid** attribute.

Related concepts

[ISIMEXIT command usage](#)

ISIMEXIT is a REXX command. Use this command to start a REXX exec in response to a processing request from the Identity server.

Using the Regis Tool

Start the Regis tool to modify the different adapter parameters.

1. Browse to the Windows command prompt.
2. Log on to the TSO on the z/OS® operating system that hosts the adapter.
3. Run the **ovms** command. Press Enter to enter the UNIX System Services environment.

Note: You can also use a telnet session to enter the UNIX System Services environment.

4. In the command prompt window, change to the `read/write/bin` subdirectory of the adapter. If the adapter is installed in the default location for the `read/write` directory, run the **./regis -<option>** command.

The following options are available for the Regis tool:

```
-version                ;show regis version
  -registry             < value > ;Registry File
  -encryptkey           < value > ;Encryption key for string data
  -setstring            < value > ;Set Registry String, [key::value]
  -getstring            < value > ;Get Registry String
  -create                ;Create Registry (Default:registry)
  -list                 < value > ;List Registry Contents (Default:registry)
  -delete               < value > ;Delete Registry key
  -script                ;Produce output for scripting
```



```

-protocol      < value > ;Protocol (Default:DAML)
-installpath   < value > ;Set agent's install path
-property      < value > ;Property name for protocol
-value        < value > ;Argument value
-logdir       < value > ;Agent's logfile directory
-logfile      < value > ;Agent's logfile name
-mainproperty  < value > ;Set main property
-instanceclass < value > ;Create instance class [class::item::encrypt].
-instanceaset  < value > ;Create instance class [class::instance::item::value]

```

The `-registry <readwrite_home/data/<adapterid.dat>` option is required for all options except `-version`.

Related concepts

[Configuring the adapter parameters](#)

You can use the adapter configuration tool, **agentCfg**, to view or modify the adapter parameters.

[Configuring SSL authentication](#)

To establish a secure connection between the adapter and the Identity server, configure SSL authentication for connections that originate from the Identity server or from the adapter.

[Customizing the adapter](#)

You can do specific functions according to your requirements by using the REXX execs that are provided with the adapter installation.

[z/OS UNIX System Services considerations](#)

UNIX System Service creates a task for each child process. If you define `_BPX_SHAREAS=YES` in the `/etc/profile`, the adapter runs in a single address space, instead of multiple address spaces.

[Configuration notes](#)

The ACF2 adapter can handle multiple requests simultaneously. Learn how the adapter processes specific attributes and requests and how it interacts with z/OS during the processing of some of the requests.

Regis Command Examples

Examples can be found in installation job 'hlq'.CNTL(J4).

Modifying DAML protocol properties

```

/var/ibm/isi/bin/regis -reg /var/ibm/isi/data/ISIAGENT.dat -protocol DAML -property PASSWORD
-value newpassword

/var/ibm/isi/bin/regis -registry /var/ibm/isi/data/ISI.DAT -protocol daml -list

```

Modifying non-encrypted registry settings

```

/var/ibm/isi/bin/regis -reg /var/ibm/isi/data/ISIAGENT.dat -setstring PASSEXPIRE::TRUE

```

Modifying main properties

```

/var/ibm/isi/bin/regis -reg /var/ibm/isi/data/ISIAGENT.dat -mainproperty Agent_MaxFile -value 5
/var/ibm/isi/bin/regis -reg /var/ibm/isi/data/ISIAGENT.dat -mainproperty Agent_Debug -value TRUE
/var/ibm/isi/bin/regis -reg /var/ibm/isi/data/ISIAGENT.dat -mainproperty Agent_Detail -value TRUE

```

z/OS UNIX System Services considerations

UNIX System Service creates a task for each child process. If you define `_BPX_SHAREAS=YES` in the `/etc/profile`, the adapter runs in a single address space, instead of multiple address spaces.

By defining this setting, you can use the same name to start and stop a task. Newer releases of z/OS create two address spaces with this environment variable set, for example `ISIAGNT` and `ISIAGNT1`. In this case, the task must be stopped by issuing the **stop** command to the task `ISIAGNT1`. This setting affects other areas of UNIX System Services. See the *z/OS UNIX System Services Planning*, document GA22-7800.

You must correctly define the time zone environment variable (`TZ`) in `/etc/profile` for your time zone. The messages in the adapter log then reflect the correct local time. See *z/OS UNIX System Services Planning*, document GA22-7800, for more details about this setting.

Related concepts

[Configuring the adapter parameters](#)

You can use the adapter configuration tool, **agentCfg**, to view or modify the adapter parameters.

[Configuring SSL authentication](#)

To establish a secure connection between the adapter and the Identity server, configure SSL authentication for connections that originate from the Identity server or from the adapter.

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You can do specific functions according to your requirements by using the REXX execs that are provided with the adapter installation.

[Configuration notes](#)

The ACF2 adapter can handle multiple requests simultaneously. Learn how the adapter processes specific attributes and requests and how it interacts with z/OS during the processing of some of the requests.

Related tasks

[Using the Regis Tool](#)

Start the Regis tool to modify the different adapter parameters.

Configuration notes

The ACF2 adapter can handle multiple requests simultaneously. Learn how the adapter processes specific attributes and requests and how it interacts with z/OS during the processing of some of the requests.

Timezone support

The adapter converts all date values to UTC before it forwards them to the Identity server. The adapter uses the `$TZ` timezone variable, specified in the environment settings for the adapter account, for example, `ITIAGNT`. The timezone variable specifies the offset that it must use to convert the local timezone to UTC. If there is no offset specified, the adapter assumes that the received date can be returned as UTC without any further conversion.

For instance, the `TZ` definition in `/etc/profile` or the adapter account-specific profile must be `TZ=EST5`, or `TZ=EST5EDT` for Daylight Saving Time, rather than `TZ=EST`.

OMVS AUTOUID

ACF2 adapter 6.0.6 and later supports auto-assignment of OMVS UIDs by using `AUTOUID`.

When you create a user in the Identity server account form, enter 'AUTOUID'(case sensitive) in the attribute field. For example:

```
'INSERT IBMUSER UID(2345)' .
```

When the adapter receives the string AUTOUID from the Identity server, the adapter runs the following command:

```
INSERT <USER> AUTOUID
```

For example

```
INSERT IBMUSER AUTOUID
```

Passwords

ACF2 adapter 6.0.5 and later support the reconciliation of password profile attributes. The following attributes are available:

- #PSWDCNT
- #PWD-TOD
- KEYFROM

All attributes are implemented as read-only and can be modified only with ACF2. The adapter is configured to replace the # sign in the attribute name with an additional P for internal usage. The account form on the Identity server uses the correct label to display the attribute value for a selected account.

For example, attribute #PWD-TOD is displayed as #PWD-TOD on the Identity server on the account form for a specific account. In the adapter log file, the initialized attribute is referred to as PPWD-TOD. PPWD-TOD is also the name of the attribute that is provided in the ACF2 and IBM Security Verify Governance schema files that are used by the adapter.

Password phrases

ACF2 adapter 6.0.4 and later, support ACF2 pass phrases. A pass phrase in ACF2 is an authentication mechanism that allows the secret string to be 9 - 100 characters. When you set passwords from the Identity server, a string lesser than or equal to 8 characters is treated as a password. A string more than 8 characters is treated as a pass phrase. Starting with adapter version 6.0.13, the implementation of random password and pass phrase generation has changed. Random passwords and pass phrases are generated by using a configuration string, which determines the type and number of characters to be generated.

The default built-in string for passwords is an\$NaANa

The default built-in string for pass phrases is an\$NaANa/#aaNAa

The password generator generates passwords as follows:

- For every occurrence of A, the adapter randomly generates a letter from A-Z
- For every occurrence of a, the adapter randomly generates a letter from a-z
- For every occurrence of N (uppercase!), the adapter randomly generates a numeric character from 0 - 9
- For any other character (including lowercase n), the adapter echoes that character back

Internally the adapter ensures that it does not generate the same characters consecutively. The built-in strings can be modified by using new registry settings:

- PWD_CONFIG for password configuration strings
- PWP_CONFIG for pass phrase configuration strings

PWD_CONFIG allows a maximum of 5 comma-separated strings, which are randomly selected by the adapter to generate random passwords. The size of each string must be 5 - 8 characters long. If a shorter string is specified, the adapter reports an error and tries another string. If a longer string is specified, the adapter uses only the first 8 characters to generate a password. The configuration string is not allowed to contain any of the following hard-coded reserved words:

ACF, APPL, APR, ASDF, AUG, BASIC, CADAM, DB2, DEC, DEMO, ENT, FEB, FOCUS, GAME, IBM, IMS, JAN, JUL, JUN, LOG, MAR, MAY, NET, NEW, NOV, OCT, OTIS, PASS, ROS, SEP, SIGN, SONI, SYS, TEST, TSO, TSYS, VALID, VTAM, WELC, XXXX, 0000, 1111, 1234, 222, 3333, 4444, 5555, 6666, 7777, 8888, 9999, ', "

If a reserved word is found in the configuration string, the adapter reports an error.

After receiving an error, the adapter attempts to select another random configuration string. After two failed attempts, the adapter stops processing and returns an error. The adapter considers the first 4 characters of the *logonid* for the request it is processing as a reserved word. The adapter also reports an error if the first 4 characters of the *logonid* are part of the configuration string.

Reserved word and short *logonid* validation is case insensitive. Reserved word and short *logonid* validation is repeated for the generated password. If the adapter detects a reserved word and a short *logonid* as part of the generated password, the adapter stops processing and returns an error.

A new registry setting allows specifying additional reserved words: RESWORD.

Any comma-separated string that is found in the RESWORD registry setting value is added to the hard-coded reserved words list during request processing.

PWP_CONFIG allows a maximum of 3 comma-separated strings that are randomly selected by the adapter to generate random password phrases.

The adapter requires the size of each string to be 9 - 100 characters long. The string must have the minimal length that is specified in the ACF2 Password phrase rules. If a string of less than 9 characters is specified, the adapter reports an error and tries another string. If a string of more than 100 characters is specified, the adapter uses only the first 100 characters to generate a password phrase.

The configuration string is not allowed to contain single or double quotation marks.

If a single or double quotation mark is found in the configuration string, the adapter reports an error. After receiving an error, the adapter attempts to select another random configuration string. After two failed attempts, the adapter stops processing and returns an error.

For information on how to add and modify registry settings, see [“Modifying non-encrypted registry settings”](#) on page 40.

Other password phrase-related registry settings

Adapter version 6.0.8 introduced additional registry settings for pass phrase.

These additional registry settings allow customization of the actions to be taken when using the adapter to set pass phrases. You set the pass phrases using the password field on the Identity server.

Registry setting for changing phrases

PASSGEN=ADD (generate random password on ADD account with pass phrase)

PASSGEN=MOD (generate random password on MODIFY account with pass phrase)

PASSGEN=NEVER (never generate a random password)

PASSGEN=BOTH (always generate a random password)

If not specified, PASSGEN defaults to BOTH

Note:

- IBM does not guarantee that the generated random passwords meet the site specific password rules.
- With PASSGEN set to NEVER or MOD, new accounts can only be requested using a password. When attempting to add a new account using a pass phrase with PASSGEN set to NEVER or MOD, the following error is returned:

```
ERR:yy/mm/dd hh:mm:ss caacf2Add: pass phrases can NOT be used for INSERT for user <LID>
```

Registry settings for changing passwords

1. PWPMOD = RANDOM (generate a random phrase on MODIFY account with password)
2. PWPMOD=DISABLE (does not generate a random phrase, it disables pass phrase usage for this LID on MODIFY account with password)
3. PWPMOD=IGNORE (no changes are made for the pass phrase when the request is for changing a password)

If not specified PWPMOD defaults to RANDOM.

Note: IBM does not guarantee that the generated random pass phrases meet the site specific pass phrase rules.

PWPMOD=DISABLE ensures the pass phrase usage for a specified LID is disabled on account MODIFY. When changing a password for this LID, an additional registry setting is introduced to specify whether PWPALLOW is automatically re-enabled when it receives a request to set a pass phrase for a LID.

1. AUTOPWP=TRUE (automatically set PWPALLOW when it receives a request to change a pass phrase)
2. AUTOPWP= FALSE (don't automatically set anything for the phrase when the request is for changing a phrase)

If not specified, AUTOPWP defaults to TRUE.

Make sure that the ACF2 requirements for pass phrases are included in the Identity server rules for passwords. The requirements include setting the minimum characters in the password string to be more than 8 in the password policy. If the rules for password phrases employed at your installation site are not reflected in the Identity server password policies, then ACF2 might reject the entered pass phrase.

In the existing documentation, all references to an ACF2 password now encompass both ACF2 passwords and pass phrases.

Temporary data set creation

Temporary data sets that are generated during reconciliation have a high-level qualifier (HLQ). The HLQ is equal to the adapter *logonid* instead of the generic HLQ. As such, the data sets are cataloged in the adapter *logonid* user catalog.

Custom Boolean attributes

The ACF2 adapter supports custom Boolean attributes that are defined as

- <PRIVILEGENAME> when privilege is granted to a user or
- NO <PRIVILEGENAME> when the user is not granted the privilege.

For example, MYCICS or NOMYCICS is specified for a specific ACF2 *logonid*.

Single account lookup

The LOOKUP transaction type uses the (eruid=<userid>) filter in IBM Security Verify Governance for the reconciliation of a single account. This transaction type ensures that no Pdu entries are created for entries that do not match the eruid specified in the search filter in the server request. For debugging this type of processing, more messages for the _ermPduAddEntry process are added in the Base Logging level (BSE). Unfiltered requests or requests with more than one account that is specified in the search filter still result in a full reconciliation that uses the standard SEARCH transaction.

To support multiple threads for LOOKUP transactions, a new registry setting is added to the **agentCfg** tool, which can be configured from the Advanced Settings Menu.

Advanced Settings Menu

```
-----
A. Single Thread Agent (current:FALSE)
B. ADD max. thread count. (current:3)
C. MODIFY max. thread count. (current:3)
D. DELETE max. thread count. (current:3)
E. SEARCH max. thread count. (current:3)
F. LOOKUP max. thread count. (current:3)
G. Allow User EXEC procedures (current:FALSE)
H. Archive Request Packets (current:FALSE)
I. UTF8 Conversion support (current:TRUE)
J. Pass search filter to agent (current:FALSE)
X. Done
Select menu option:
```

The single account lookup is performed using the ACF2 report utility ACFRPTSL. Unlike the previous implementation, only the account that matches the `euuid` specified in the search filter is retrieved using ACFRPTSL. The ACFRPTSL report utility requires no additional configuration.

Specifying an empty prefix value

Running an ACF2 insert command with `prefix()` sets the default prefix (DFT-PFX) to the LID (12345) but it sets the restrictions to `PREFIX()`.

See the command output below as executed directly in ACF2:

```
LID
insert 12345 name(abc) password(my1thPs!) prefix()
12345
ACCESS          ACC-CNT(0) ACC-DATE(00/00/00) ACC-TIME(00:00)
PASSWORD        KERB-VIO(0) KERBCURV() PSWA1TOD(00/00/00-00:00)
                PSWA2TOD(00/00/00-00:00) PSWD-DAT(00/00/00) PSWD-EXP
                PSWD-INV(0) PSWD-TOD(06/07/18-20:00) PSWD-VIO(0)
                PSWDCVIO(0) PWP-DATE(00/00/00) PWP-VIO(0)

TSO
STATISTICS      DFT-PFX(12345)
                CRE-TOD(06/07/18-20:00) SEC-VIO(0)
                UPD-TOD(06/07/18-20:00)

RESTRICTIONS    PREFIX()
```

Note: The Identity server does not forward a blank value for `prefix`, unless the previously specified value for `prefix` is removed.

If a policy runs an Account Modify operation directly after adding an account with the LID specified as `PREFIX`, the Identity server registers the value that is specified for `PREFIX` for that account without running a reconciliation and the policy that modifies the account might blank the `PREFIX` value.

Related concepts

[Configuring the adapter parameters](#)

You can use the adapter configuration tool, **agentCfig**, to view or modify the adapter parameters.

[Configuring SSL authentication](#)

To establish a secure connection between the adapter and the Identity server, configure SSL authentication for connections that originate from the Identity server or from the adapter.

[Customizing the adapter](#)

You can do specific functions according to your requirements by using the REXX execs that are provided with the adapter installation.

[z/OS UNIX System Services considerations](#)

UNIX System Service creates a task for each child process. If you define `_BPX_SHAREAS=YES` in the `/etc/profile`, the adapter runs in a single address space, instead of multiple address spaces.

Related tasks

[Using the Regis Tool](#)

Start the Regis tool to modify the different adapter parameters.

Chapter 6. Troubleshooting

Troubleshooting is a systematic approach to solving a problem. The goal of troubleshooting is to determine why something does not work as expected and how to resolve the problem. This topic provides information and techniques for identifying and resolving problems that are related to the adapter, including troubleshooting errors that might occur during the adapter installation.

Note: If you encounter a problem, enable all levels of activity logging (debug, detail, base, and thread). The adapter log contains the main source of troubleshooting information. See [“Changing activity logging settings”](#) on page 37.

Techniques for troubleshooting problems

Certain common techniques can help with the task of troubleshooting. The first step in the troubleshooting process is to describe the problem completely.

Problem descriptions help you and the IBM technical-support representative find the cause of the problem. This step includes asking yourself basic questions:

- What are the symptoms of the problem?
- Where does the problem occur?
- When does the problem occur?
- Under which conditions does the problem occur?
- Can the problem be reproduced?

The answers to these questions typically lead to a good description of the problem, which can then lead you to a problem resolution.

What are the symptoms of the problem?

When you start to describe a problem, the most obvious question is "What is the problem?" This question might seem straightforward; however, you can break it down into several more-focused questions that create a more descriptive picture of the problem. These questions can include:

- Who, or what, is reporting the problem?
- What are the error codes and messages?
- How does the system fail? For example, is it a loop, hang, crash, performance degradation, or incorrect result?

Where does the problem occur?

Determining where the problem originates is not always easy, but it is one of the most important steps in resolving a problem. Many layers of technology can exist between the reporting and failing components. Networks, disks, and drivers are only a few of the components to consider when you are investigating problems.

The following questions help you to focus on where the problem occurs to isolate the problem layer:

- Is the problem specific to one operating system, or is it common across multiple operating systems?
- Is the current environment and configuration supported?
- Do all users have the problem?
- (For multi-site installations.) Do all sites have the problem?

If one layer reports the problem, the problem does not necessarily originate in that layer. Part of identifying where a problem originates is understanding the environment in which it exists. Take some time to completely describe the problem environment, including the operating system and version, all

corresponding software and versions, and hardware information. Confirm that you are running within an environment that is a supported configuration. Many problems can be traced back to incompatible levels of software that are not intended to run together or are not fully tested together.

When does the problem occur?

Develop a detailed timeline of events that lead up to a failure, especially for those cases that are one-time occurrences. You can most easily develop a timeline by working backward: Start at the time an error was reported (as precisely as possible, even down to the millisecond), and work backward through the available logs and information. Typically, you use the first suspicious event that you find in a diagnostic log.

To develop a detailed timeline of events, answer these questions:

- Does the problem happen only at a certain time of day or night?
- How often does the problem happen?
- What sequence of events leads up to the time that the problem is reported?
- Does the problem happen after an environment change, such as upgrading or installing software or hardware?

Responding to these types of questions can give you a frame of reference in which to investigate the problem.

Under which conditions does the problem occur?

Knowing which systems and applications are running at the time that a problem occurs is an important part of troubleshooting. These questions about your environment can help you to identify the root cause of the problem:

- Does the problem always occur when the same task is being done?
- Is a certain sequence of events required for the problem to occur?
- Do any other applications fail at the same time?

Answering these types of questions can help you explain the environment in which the problem occurs and correlate any dependencies. Remember that just because multiple problems might occur around the same time, the problems are not necessarily related.

Can the problem be reproduced?

From a troubleshooting standpoint, the ideal problem is one that can be reproduced. Typically, when a problem can be reproduced you have a larger set of tools or procedures at your disposal to help you investigate. Problems that you can reproduce are often easier to debug and solve.

However, problems that you can reproduce can have a disadvantage: If the problem is of significant business impact, you do not want it to recur. If possible, re-create the problem in a test or development environment, which typically offers you more flexibility and control during your investigation.

- Can the problem be re-created on a test system?
- Do multiple users or applications have the same type of problem?
- Can the problem be re-created by running a single command, a set of commands, or a particular application?

Related concepts

Logs

When the adapter is initially configured, a default directory is selected to store the log files that record the adapter activities. Logs can help you determine the background or cause of an issue and to find the proper solution.

Error messages and problem solving

A warning or error message might be displayed in the user interface to provide information about the adapter or when an error occurs.

Known issues and limitations

You might encounter some issues or limitations when you install, configure, or use the adapter.

Adapter SSL information collection for support requests

If you encounter an SSL related problem, you must first gather the necessary information before you contact Support for assistance.

Related tasks

Installing test fixes and diagnostic builds

IBM provides a test fix or diagnostic build if you have a case to report an issue that you encountered while working with the adapter.

Related reference

Frequently asked questions

Logs

When the adapter is initially configured, a default directory is selected to store the log files that record the adapter activities. Logs can help you determine the background or cause of an issue and to find the proper solution.

The log files are kept in the UNIX System Services file system, under the installation path of the adapter, in the read/write log subdirectory.

The adapter log name is the adapter instance name, followed by an extension of .log. When the extension is .log, it is the current log file. Old log files have a different extension such as .log_001, .log_002, .log_003 and so on.

Details	Example values
Installation path	/var/ibm/isimcaacf2
Adapter log name	CAACF2Agent
Log location	/usr/itim/log/
Log files	<ul style="list-style-type: none">• CAACF2Agent.log• CAACF2Agent.log_001• CAACF2Agent.log_002• CAACF2Agent.log_003

You can use the UNIX System Services **obrowse** command **tail**, or any other UNIX based utility to inspect the adapter logs.

The size of a log file, the number of log files, the directory path, and the detailed level of logging are configured with the **agentCfg** program.

For more information, see [“Configuring the adapter parameters” on page 29](#).

Related concepts

Techniques for troubleshooting problems

Certain common techniques can help with the task of troubleshooting. The first step in the troubleshooting process is to describe the problem completely.

Error messages and problem solving

A warning or error message might be displayed in the user interface to provide information about the adapter or when an error occurs.

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Related reference

Frequently asked questions

Error messages and problem solving

A warning or error message might be displayed in the user interface to provide information about the adapter or when an error occurs.

The following table contains warnings or errors that might be displayed on the user interface if the adapter is installed on your workstation.

<i>Table 16. Error messages, warnings, and corrective actions</i>		
Error message or warning	Additional warnings, messages, or information	Corrective action
CTGIMU107W The connection to the specified service cannot be established. Verify the service information, and try again.	An IO error occurred while sending a request. Error:Connection refused: connect	Ensure that the adapter service is running. For more information about starting the adapter service, see “Restarting the adapter service” on page 16.
	The adapter returned an error status for a bind request. Status code: invalid credentials adapter error message: Authentication Failed	Check the adapter authentication ID and password match the installed values. See the screen for Adapter-specific parameters in “Running the ISPF dialog” on page 9.
	An IO error occurred while sending a request. Error: com.ibm.daml.jndi.JSSESocketConnection.HANDSHAKE_FAILED:	If SSL is enabled, check the configuration. See “Configuring SSL authentication” on page 51. The adapter log contains details about the certificates loaded during initialization.
caacfAdd: User <i>userid</i> add Successful. Some attributes could not be modified.		This warning occurs when a user is created, however, some additional attributes failed. For more information, see the adapter log file.
caacf2Modify: Some attributes unsuccessful.		This warning occurs when a user is modified, however, some additional attributes failed. For more information, see the adapter log file.

Table 16. Error messages, warnings, and corrective actions (continued)

Error message or warning	Additional warnings, messages, or information	Corrective action
caacf2Modify: All attributes unsuccessful.		The modify request failed to set the attributes on the managed resource. For more information, see the adapter log file.
caacf2Search: Reconciliation did not return at least 1 Logonid.		During the reconciliation request, no Logonids were returned. For more information, see the MVS system log and the adapter log.
LDAP: error code 92		Increase the size of the transaction log. See DB2 transaction log size
*BPXI040I PROCESS LIMIT MAXPROCUSER HAS REACHED XX % OF ITS CURRENT CAPACITY OF XX FOR PID=XXX IN JOB ISIAGNT		Increase the amount of processes available to the adapter's CA ACF2 logonid.
ACF04056 ACCESS TO RESOURCE BPX.SRV.<SURROGATID> TYPE RSUR BY <ADAPTERID>		<pre> set res(sur) comp \$KEY(BPX.SRV.<SURROGATID>) TYPE(SUR) UID(<ADAPTERID>) ALLOW SERVICE(READ) store f acf2,rebuild(sur) end </pre>
BSE:_ermAlloc: ERROR: malloc FAILED: size 60: The adapter stops processing when it encounters errors during memory allocation.	<p>The following messages are displayed to indicate that the adapter is aborting from the process:</p> <p>After which, this final error message is written to the adapter log: ERR: "FATAL memory error encountered, shutting down now"</p> <p>TheIdentity server displays Fatal error encountered</p> <p>Memory allocation errors might be caused from inadequate Language Environment (LE) HEAP size settings.</p>	<p>The HEAP size settings can be diagnosed when you enable the following options in the adapter start script:</p> <pre> export _CEE_RUNOPTS='RPTOPTS(ON),RPTSTG(ON) 7 </pre> <p>This script ensures that the adapters started task log displays the current heap size allocations and suggested minimal sizes.</p> <p>For more information regarding storage tuning, see Tuning heap storage.</p>

Related concepts

Techniques for troubleshooting problems

Certain common techniques can help with the task of troubleshooting. The first step in the troubleshooting process is to describe the problem completely.

[Logs](#)

When the adapter is initially configured, a default directory is selected to store the log files that record the adapter activities. Logs can help you determine the background or cause of an issue and to find the proper solution.

Known issues and limitations

You might encounter some issues or limitations when you install, configure, or use the adapter.

Adapter SSL information collection for support requests

If you encounter an SSL related problem, you must first gather the necessary information before you contact Support for assistance.

Related tasks

Installing test fixes and diagnostic builds

IBM provides a test fix or diagnostic build if you have a case to report an issue that you encountered while working with the adapter.

Related reference

Frequently asked questions

Installing test fixes and diagnostic builds

IBM provides a test fix or diagnostic build if you have a case to report an issue that you encountered while working with the adapter.

These fixes can consist of either an <ADAPTER>.UPLOAD.XMI file or a zip file containing a new adapter or ADK binary.

XMI files require a full new install. These are usually provided when several components have changed compared to the release you currently had installed. To ensure that there are no inconsistencies between the versions of the components you have installed and the updated components that were used to create the fix, you must perform the full installation from scratch using the XMI that contains the fix.

You receive a zip file that contains one or more binaries if the changes that the fix requires are limited to the adapter or ADK code. These new binaries must be used to replace the binaries that have the same name in your existing adapter installation.

The steps to install a new ADK binary are identical to the steps to install a new agent binary. The steps to install a new ADK library are also identical to the steps to install a new agent binary with the exception of the location where the libraries are stored. The libraries can be found in and uploaded to the `read_only_home/lib` folder.

Follow the procedures below to install a new agent binary.

1. Extract the binary from the zip file.
2. Stop the adapter.
3. Change the directory with `cd read_only_home/bin` folder.
4. Copy `<adaptype>Agent <adaptype>Agent.save`.
5. Upload `<adaptype>Agent` in binary ftp mode to the adapter host and store it in the `read_only_home/bin` folder.
6. Change the directory with `cd read_only_home/bin` folder.
7. Change the permissions with `chmod 755 <adaptype>Agent`.
8. Specify the extended attributes with `extattr +ap <adaptype>Agent`.
9. Start the adapter.

Related concepts

Techniques for troubleshooting problems

Certain common techniques can help with the task of troubleshooting. The first step in the troubleshooting process is to describe the problem completely.

Logs

When the adapter is initially configured, a default directory is selected to store the log files that record the adapter activities. Logs can help you determine the background or cause of an issue and to find the proper solution.

Error messages and problem solving

A warning or error message might be displayed in the user interface to provide information about the adapter or when an error occurs.

Known issues and limitations

You might encounter some issues or limitations when you install, configure, or use the adapter.

Adapter SSL information collection for support requests

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Related reference

Frequently asked questions

Known issues and limitations

You might encounter some issues or limitations when you install, configure, or use the adapter.

Read-only attributes

The ACF2 schema is customizable and the list of read-only attributes might be unique for your system. The standard list includes:

- ACC-CNT
- ACC-DATE
- ACC-SRCE
- CRE-TOD
- CSDATE
- CSWHO
- GRP-USER
- HOMENODE
- KERBCURV
- LID
- PSWD-MIX
- PSWD-SRC
- PSWD-TOD
- UID
- UPD-TOD
- #PSWDCNT
- #PWD-TOD
- KEYFROM
- PWP-HST
- PWP-TOD
- PWPA1TOD

Unsupported data segments

For the current overview, see the Release Notes in the adapter package.

Special characters in the attribute names

For password profile attributes the adapter is configured to replace the # sign in the attribute name with an additional P for internal usage. The account form on the Identity server uses the correct label to display the attribute value for a given account. To provide an example: Attribute #PWD-TOD is displayed as #PWD-TOD on the Identity server on the account form for a specific account. In the adapter log file, the initialized attribute is referred to as PPWD-TOD which is also the name of the attribute provided in the ACF2 and IBM Security Verify Governance schema files used by the adapter.

Adapter installation generates a schema to be incorporated into the adapter profile, and a matching cross-reference table for the adapter task. When generated, the schema and cross-reference table files, must be scanned for attribute names that contain the following characters -, \$, *. Those characters must be replaced with an alphanumeric character. The adapter profile does not install correctly if the attribute names contain any of these characters.

Before building and importing the profile, you must scan and replace the generated ISIMSCHM file for all references of the invalid attribute name. For example:

```
<!-- ***** -->
<!-- erAcf2ICLASS* -->
<!-- ***** -->
<attribute-type single-value = "true" >
<name>erAcf2ICLASS*</name>
<description>ICLASS-* in segment BASE</description>
<objectidentifier>1.3.6.1.4.1.6054.3.156.1.120</objectidentifier>
<objectidentifier>erAcf2ICLASS*-oid</objectidentifier>
<syntax>1.3.6.1.4.1.1466.115.121.1.15</syntax>
</attribute-type>
...
<attribute ref = "erAcf2ICLASS*" required = "false" />
```

Replace the * with a.

```
<!-- ***** -->
<!-- erAcf2ICLASSa -->
<!-- ***** -->
<attribute-type single-value = "true" >
<name>erAcf2ICLASSa</name>
<description>ICLASS-* in segment BASE</description>
<objectidentifier>1.3.6.1.4.1.6054.3.156.1.120</objectidentifier>
<objectidentifier>erAcf2ICLASSa-oid</objectidentifier>
<syntax>1.3.6.1.4.1.1466.115.121.1.15</syntax>
</attribute-type>
...
<attribute ref = "erAcf2ICLASSa" required = "false" />
```

The generated cross-reference file ACF2SCHM must be updated so the attribute names match. The ACF2 field names must be left untouched. For example change

```
ICLASS-* erAcf2ICLASS* BASE BINARY S * * 000004 0003
```

to

```
ICLASS-* erAcf2ICLASSa BASE BINARY S * * 000004 0003
```

Note:

- Attribute names must not be duplicated. Be sure that the attribute name you are creating does not exist.
- Attribute names are restricted to 14 characters. Replace one existing character with one new character.

Related concepts

[Techniques for troubleshooting problems](#)

Certain common techniques can help with the task of troubleshooting. The first step in the troubleshooting process is to describe the problem completely.

[Logs](#)

When the adapter is initially configured, a default directory is selected to store the log files that record the adapter activities. Logs can help you determine the background or cause of an issue and to find the proper solution.

Error messages and problem solving

A warning or error message might be displayed in the user interface to provide information about the adapter or when an error occurs.

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Related tasks

Installing test fixes and diagnostic builds

IBM provides a test fix or diagnostic build if you have a case to report an issue that you encountered while working with the adapter.

Related reference

Frequently asked questions

Adapter SSL information collection for support requests

If you encounter an SSL related problem, you must first gather the necessary information before you contact Support for assistance.

This information assumes specifications for VTAM® APPLIDs and user IDs indicated in the installation guide. Replace these APPLIDs and user IDs with those IDs you selected for the adapter installation.

- The ACF2 Adapter log file, from the USS file system.
- An excerpt from the MVS SYSTEM log, from the same time frame as the failure.
- A screen capture of the ACF2 service form, describing the connection to this adapter.
- A display from the adapter utility agentCfmg describing the adapter parameters:

F. Registry Settings. -> A. Modify Non-encrypted registry settings

- The results from the following job (include all the output produced). A ACF2 administrator with authority to view all the indicated profiles must run this job.

```
//ACF2LIST JOB ACCT,IBM,CLASS=A,MSGCLASS=X,NOTIFY=&SYSUID
//TMP      EXEC PGM=IKJEFT01,REGION=0K
//SYSTSPRT DD SYSOUT=*
//SYSTSIN  DD *
ACF
SET LID
LIST ISIAGNT
LIST ISIAGNT PROFILE(ALL)
```

ISIAGNT is the name of the adapter started task.

Related concepts

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Related tasks

[Installing test fixes and diagnostic builds](#)

IBM provides a test fix or diagnostic build if you have a case to report an issue that you encountered while working with the adapter.

Related reference

[Frequently asked questions](#)

Frequently asked questions

Where can I find registry and/or permission related errors?

In ISPF, navigate to S (SDSF), LOG.

How can I disable persistent connections between the Identity Server and the adapter?

The first is in IBM Security Verify Governance. The setting must be explicitly placed in `enRole.properties: com.ibm.daml.jndi.DAMLContext.POOL_MAX_SIZE=0`

This effects disable the connection pool.

The other setting is on the adapter side. Invoke `agentCfg` and navigate to **B. Protocol Configuration** > **C. Configure Protocol** > **A. DAML** > **K. READ_TIMEOUT** and specify a value in seconds. For example, 30 seconds. Save and restart the adapter. This causes the adapter to timeout any socket that has not responded within 30 seconds.

How can I monitor if the adapter is up and running?

To check the availability of your adapter, ensure that the `DAML_PORT` is listening. The default port is 45580. If you probe and the port is not listening, the adapter is down.

Why is my registry file cleared?

There might be several causes. To determine the cause, provide an answer to the following questions when contacting support:

- Were there any messages in the SDSF SYSLOG (S.LOG) at the time the adapter was started and the registry file had been reset?
- Is it possible the adapter was started before the file system was mounted?
- Does the `read_only_home` directory exist when the filesystem is not mounted?
- Can you find registry files that have been created in `/tmp`?
- Is the file system shared between different hosts?
- Does the registry file exist on the file system at the time it was reset?

It might be useful to collect the output from the following commands at the time a correct, configured registry file is active and compare that output to the output for the same commands after an IPL when you notice the registry is reset:

```
df -k /adapter_readwrite_home
ls -Elg /adapter_readwrite_home/data
/adapter_readwrite_home/bin/regist /adapter_readwrite_home/data/<adapter_name>.dat -list
```

How can I see what information is being send and received to and from the adapter by the ISIM server?

Edit `enRoleLogging.properties` in `$ISIM_HOME\data` to set the DAML line `logger.trace.com.ibm.daml.level` and the remote services line `logger.trace.com.ibm.itim.remoteservices.level` to `DEBUG_MAX`.

The `daml.level` setting enables full tracing for DAML based adapters and the remote services trace captures information that includes SSL communication and account details.

How do I resolve ICH420I PROGRAM XXXX FROM LIBRARY ISP.SISPLOAD CAUSED THE ENVIRONMENTTO BECOME UNCONTROLLED errors?

Add the **PROGRAM** profile to the ISP .SISPLOAD data set.

```
RALTER PROGRAM **ADDMEM('ISP.SISPLOAD'//NOPADCHK)  
SETROPTS WHEN(PROGRAM) REFRESH
```

Related concepts

Techniques for troubleshooting problems

Certain common techniques can help with the task of troubleshooting. The first step in the troubleshooting process is to describe the problem completely.

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A warning or error message might be displayed in the user interface to provide information about the adapter or when an error occurs.

Known issues and limitations

You might encounter some issues or limitations when you install, configure, or use the adapter.

Adapter SSL information collection for support requests

If you encounter an SSL related problem, you must first gather the necessary information before you contact Support for assistance.

Related tasks

Installing test fixes and diagnostic builds

IBM provides a test fix or diagnostic build if you have a case to report an issue that you encountered while working with the adapter.

Chapter 7. Uninstalling

To remove an adapter from the Identity server for any reason, you must remove all the components that were added during installation. Uninstalling the adapter involves several tasks such as removing the started JCL task, the directories from the UNIX System Services environment, and the ISPF dialog libraries.

1. Stop the adapter, if it is running. See [“Restarting the adapter service”](#) on page 16.
2. Remove the started task JCL from the system procedure library.
3. Remove the `read-only` and `read/write` directories from the z/OS UNIX System Services environment.
4. Remove the CNTL, EXEC, and LOAD libraries that are related to the adapter.
5. Remove the ISPF dialog libraries for customization.

Chapter 8. Reference

Reference information is organized to help you locate particular facts quickly, such as adapter attributes, registry settings, and environment variables..

Adapter attributes

The Identity server communicates with the adapter by using attributes, which are included in transmission packets that are sent over a network.

The ACF2 for z/OS schema is modifiable which makes the adapter dynamic. The ACF2 installation augments the ACF2 schema before the installation. The augmentation in the schema varies depending on the operating system settings. In this case, you must configure the adapter to support the additional attributes defined in the schema.

The adapter installation process extracts the ACF2 schema and stores it for use at run time. The installation process builds the `schema.dsm1` file. You must merge the `schema.dsm1` file to the `CAACF2Profile.jar` file before importing the profile to the Identity server.

The following table describes the format of the schema file.

Column	Description	Value
1-8	The ACF2 native attribute name.	-
10-24	The IBM Security Verify Governance attribute name.	-
26-33	The segment name.	For the ACF2 LID attributes, they are marked as BASE.
35-42	The attribute type.	CHAR, BOOLEAN, BINARY, HEX FULLTOD, PACKDATE
44	The single or multi-valued attribute	S for single and M for multi-valued.
46	The quotable attributes.	Q for quoted and * for non-quoted.
48	The null fields.	If N is denoted, the field has a null value.
50-55	The internal ACF2 attribute length.	-
57-60	The ACF2 group number assigned to this attribute.	-

The following table describes an example of a ACF2SCHM file that is created during the adapter installation.

ACF2 native attribute name	IBM Security Verify Governance attribute name	Segment name	Attribute type	Single or multi-valued attribute	Quoted attribute	Nullable field	Internal ACF2 attribute length	ACF2 group number assigned to this attribute
ACC-CNT	erAcf2ACCCNT	BASE	BINARY	S	*	*	000004	0003

Table 18. Example of a ACF2SCHM file (continued)

ACF2 native attribute name	IBM Security Verify Governance attribute name	Segment name	Attribute type	Single or multi-valued attribute	Quoted attribute	Nullable field	Internal ACF2 attribute length	ACF2 group number assigned to this attribute
ACC-DATE	erAcf2ACCDATE	BASE	FULLTOD	S	*	*	000008	0003
ACC-SRCE	erAcf2ACCSRCE	BASE	CHAR	S	*	*	000008	0003
ACCOUNT	erAcf2ACCOUNT	BASE	BOOLEAN	S	*	*	000001	0002
ATTR2	erAcf2ATTR2	BASE	HEX	S	*	*	000002	0005
CSDATE	erAcf2CSDATE	BASE	PACKDATE	S	*	*	000004	0001
OPCLASS	erAcf2OPCLASS	CICS	BINARY	M	*	*	000001	0000
ASSIZE	erAcf2ASSIZE	OMVS	BINARY	S	*	*	000004	0004

Registry settings

The adapter has several registry settings. See the table for these registry options, their descriptions, and values, if any.

Table 19. Registry settings and additional information

Option attribute	Default value	Valid value	Description	Required
DATAFORMAT	None	3 characters	The date format for this attribute must match the configured date format in ACF2.	Yes
DSKEEP	TRUE	TRUE or FALSE	Specify TRUE to keep the temporary data sets that are created during a reconciliation. Specify FALSE to delete the temporary data sets at the end of a reconciliation.	Yes
HEADER	LID, NAME, UID, PHONE	Comma separated, single value character fields without spaces	Specify the @HEADER string as defined in the ACF2. The fields from the string are collected during a single account reconciliation.	Yes
PASSEXPIRE	TRUE	TRUE or FALSE	This attribute is the default action that the adapter must perform when the adapter receives a password change request. TRUE indicates that passwords must be set as expired. FALSE indicates that passwords must be set as non-expired.	No
SYSEXEC	None	1 - 44 characters	This attribute identifies the adapter EXEC library	Yes

Table 19. Registry settings and additional information (continued)

Option attribute	Default value	Valid value	Description	Required
PASSGEN	BOTH	ADD, MOD, NEVER, or BOTH	<p>Registry setting for changing phrases:</p> <ul style="list-style-type: none"> • PASSGEN=ADD: Generate random password on ADD account with pass phrase • PASSGEN=MOD: Generate random password on MODIFY account with pass phrase • PASSGEN=NEVER: Never generate a random password • PASSGEN=BOTH: Always generate a random password <p>If not specified, the default PASSGEN value is BOTH.</p> <p>Note:</p> <p>IBM does not guarantee that random passwords generated meet the site-specific password.</p> <p>With the PASSGEN value set to NEVER or MOD, new accounts can be requested only by using a password.</p> <p>When you are adding a new account with a pass phrase with PASSGEN set to NEVER or MOD the following error is returned:ERR:yy/mm/dd hh:mm:ss caacf2Add: pass phrases can NOT be used for INSERT for user <LID></p>	No
PWD_CONFIG	None	comma separated list	<p>PWD_CONFIG will allow a maximum of five (5) comma-separated strings which will be randomly selected by the adapter to generate random passwords.</p> <p>The size of each string should be between 5 and 8 characters long.</p>	No

Table 19. Registry settings and additional information (continued)

Option attribute	Default value	Valid value	Description	Required
PWP_CONFIG	None	comma separated list	<p>PWP_CONFIG will allow a maximum of three (3) comma-separated strings which will be randomly selected by the adapter to generate random password phrases .</p> <p>The adapter requires the size of each string to be between 9 and 100 characters long, the string should however be at minimum as long as the minimal length.</p>	No
PWPMOD	RANDOM	RANDOM, DISABLE, or IGNORE	<p>Registry settings for changing passwords:</p> <ul style="list-style-type: none"> • PWPMOD = RANDOM: Generate a random phrase on MODIFY account with password • PWPMOD=DISABLE: Disables pass phrase usage for this LID on MODIFY account with password • PWPMOD=IGNORE: No changes are made for the pass phrase when the request is for changing a password <p>If not specified, the default PWPMOD value is set to RANDOM.</p> <p>IBM does not guarantee that random passwords generated meet the site-specific pass phrase rules.</p>	No
RESWORD	None	comma separated list	Any comma-separated string found in the RESWORD registry setting value will be added to the hard-coded reserved words list during request processing.	No

Table 19. Registry settings and additional information (continued)

Option attribute	Default value	Valid value	Description	Required
AUTOPWP	TRUE	TRUE or FALSE	<p>Registry setting for changing phrases:</p> <p>PWPMOD=DISABLE ensures pass phrase usage for a specified LID is disabled on account MODIFY.</p> <p>When you are changing a password for this LID, an additional registry setting is introduced to specify if PWPALLOW is automatically re-enabled when receiving a request to set a pass phrase for a LID.</p> <ul style="list-style-type: none"> • AUTOPWP=TRUE: Automatically set PWPALLOW when receiving a request to change a pass phrase • AUTOPWP=FALSE: Does not automatically set anything for the phrase when the request is for changing a phrase <p>If not specified, the default AUTOPWP value is set to TRUE.</p>	No
UID	LID	Comma separated, full length single value character fields without spaces	Specify the @UID string as defined in the ACFFDR. The fields from the string are collected during a single account reconciliation.	Yes
USE_SSL	TRUE	TRUE or FALSE	Registry setting for enabling or disabling SSL. Its default value is TRUE. You must install a certificate when SSL is enabled. For more information, see “Configuring SSL authentication” on page 51.	No
RECHLQ	ISIAGNT	Valid LID	Used when allocating data sets during reconciliation.	No

Environment variables

The adapter consists of several environment variables. See the table for these variables, their descriptions and values, if any.

Table 20. ACF2 Adapter environment variables

Environment variable	Description	Default value	Required
PROTOCOL_DIR	Specify the location of adapter protocol modules, for example, the ./lib directory	LIBPATH	No

Table 20. ACF2 Adapter environment variables (continued)

Environment variable	Description	Default value	Required
REGISTRY	Specify the location of a specific registry file. The registry path is the fully qualified path and the file name of the registry file. The registry name is the adapter name in upper case, with .dat suffixed to the name.	Current working directory.	No
PDU_ENTRY_LIMIT	Specify the maximum number of accounts that are kept in the main storage.	3000	No
LIBPATH	Specify the location of the Dynamic Link Library (DLL) and .so files.	-	Yes
_CEE_RUNOPTS	Language environment run-time options for heap allocation. For more information, see https://www.ibm.com/support/knowledgecenter/en/SSLTBW_2.1.0/com.ibm.zos.v2r1.ceea300/ceea30010.htm .	'HEAP(12500K,8K,ANYWHERE,1K,1K),AN(2450K,4K,ANY,FREE),AL(ON),HEAPP0OLS(ON,8,1,16,1,24,1,32,1,56,2,72,1,136,1,296,1,480,1,848,1,2080,1,4104,2)'	Yes
_CEE_DMPTARG	Language environment DUMP locations.	/tmp	Yes
ISIM_ADAPTER_CIPHER_LIST	Defines the permitted cipher lists. Cipher list consists of one or more cipher strings separated by colons.	HIGH	Yes

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