1.1.8

IBM Z Service Management Explorer User Guide

Note

Before using this information and the product it supports, read the information in “Notices” on page 63.

Last updated: 2024-07-30

This edition applies to version 1, release 1, of IBM Z Service Management Explorer (product number 5698-A79) and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

About this information

The IBM Z Service Management Explorer describes the Tivoli® Enterprise Portal features for working with your IBM® Tivoli Monitoring products.

Users of this book should be familiar with performance monitoring concepts. If you use the Tivoli Data Warehouse, you need to be familiar with the operating system that hosts the warehouse.

The document assumes no previous experience with IBM Tivoli Monitoring. To learn more about this family of products: https://www.ibm.com/docs/en/tivoli-monitoring.

Introduction to IBM Z Service Management Explorer

IBM Z Service Management Explorer (IZSME) is a web-based replacement for the Tivoli Enterprise Portal (TEP), with the same layout, so users will be immediately familiar with the interface and workflow. The difference is that while TEP is a Java client, IZSME is a web application running as a Zowe™ desktop plug-in, eliminating the need for users to install and maintain desktop Java and TEP software.

Because the IZSME interface is a Zowe desktop plug-in, one or more IZSME windows may be open on the Zowe desktop alongside other Zowe plug-in windows, all within a single web browser tab or on multiple tabs. The Zowe plug-in for IZSME connects directly to an existing Tivoli Enterprise Portal Server (TEPS) or Tivoli Enterprise Monitoring Server (TEMS), so no change is required to the TEPS or TEMS infrastructure, and all custom workspaces defined by the user will be visible in IZSME. IZSME can fully coexist with TEP, meaning that edits to workspaces by TEP are immediately visible in IZSME. The TEPS server must be running in order to use IZSME.

IZSME supports Chrome, Firefox, and Microsoft Edge. The TEPS, LDAP, and Zowe authentication types are supported for user logins.

Supported products

IBM Z Service Management Explorer (IZSME) can be used with a variety of IBM products. This interface is customizable and provides many menus, options, and types of reports that allow customers to more easily view data and perform actions that would normally require many more steps.

IZSME currently supports the following IBM products:

- IBM Tivoli Advanced Allocation Management for z/OS
- IBM Tivoli Advanced Audit for DFSMShsm
- IBM Tivoli Advanced Backup and Recovery
- IBM Tivoli Advanced Catalog Management for z/OS
- IBM Tivoli Advanced Reporting and Management for DFSMShsm
- IBM Tivoli Allocation Optimizer for z/OS
- IBM Tivoli Automated Tape Allocation Manager
- IBM Tivoli Composite Application Manager (ITCAM) for Application Diagnostics
- IBM Tivoli Tape Optimizer for z/OS
- IBM Z® OMEGAMON for CICS
- IBM Z OMEGAMON for CICS TG
- IBM OMEGAMON for Db2 Performance Expert on z/OS
- IBM OMEGAMON for IMS on z/OS
- IBM OMEGAMON for Messaging on z/OS
- IBM MQ Monitoring Agent
- IBM Integration Bus Monitoring Agent
- IBM OMEGAMON for Storage on z/OS
- IBM Z OMEGAMON for JVM
- IBM Z OMEGAMON Monitor for z/OS
- IBM Z OMEGAMON Network Monitor

What's new in IZSME

These new features are available in IZSME v1.1.8.

Version 1.1.8

This version of IBM Z Service Management Explorer contains the following enhancements and changes:

- Take Action is now available from the Navigator, the Situation Event Console, and workspace views. This allows you to respond quickly when predefined situations become true. See Take Action from the Navigator, Situations and Workspaces
- You can now purge CICS transactions from IZSME. See “Purging CICS tasks” on page 33. **Required OMEGAMON for CICS PTF**: UJ07731.
- IZSME has improved management of agent status information. To achieve better performance and more accurate display of agent status, INODESTS tables are now updated every 30 seconds, regardless of whether the browser requested an update. To reduce resource costs, updates are incremental; changes only, not the entire table, and tables that have not been used in at least 600 seconds are not updated.

IMPORTANT: Securing communications with mutual auth TLS

IZSME must be configured to use mutual authentication to secure communications between Java Sidecar and the Zowe Node server. Sites that have previously configured AT-TLS for a previous version of IZSME will need to configure AT-TLS again, to enable mutual authentication TLS with version 1.1.8. See “Configuring mutual auth TLS to secure Node - JavaSidecar communications” on page 18 for details.

IZSME Environment Requirements

IBM Z Service Management Explorer (IZSME) requires several products and tools to be installed in your environment:

z/OS

IZSME will run on z/OS V02.02.00 or later.

Make sure you have the following minimum disk space and memory available:

- Disk (DASD): 550 MB of file systems storage, either HFS or zFS
- Memory: 1.5 GB of Central Storage

Other operating systems

The Tivoli Enterprise Monitoring Server (TEMS) can be used with zLinux, Linux, UNIX and Windows.

Zowe

IZSME requires Zowe version 1.20 or later. Applying PTFs UO01969 and UO01980 will upgrade Zowe to version 1.20.1.

You can download Zowe here:

IBM Z Distribution for Zowe

Java

IZSME requires Java version 8.

Node

IZSME requires Node.js version from 12 to 18 (inclusive).

Web Browser

IZSME works with three of the web browsers supported by Zowe: Chrome, Firefox, and Microsoft Edge. Safari is not supported. For more information, see Zowe Desktop requirements (client).

Supported TEPS Databases

IZSME requires that the database used by the TEPS for managing workspaces/users must be Db2. There are currently no plans to support other databases, particularly the embedded Derby database.

Installation and Configuration

Use the topics in this section to install and configure IBM Z Service Management Explorer (IZSME).

Installing IZSME on z/OS systems

Perform the necessary steps to install, maintain, configure, and start IBM Z Service Management Explorer (IZSME) on a z/OS system.

About this task

Installing IZSME on z/OS involves installing Zowe on z/OS, installing IZSME on z/OS, and then installing IZSME as a plug-in in the Zowe instance. Additional configuration options are also available for customizing the Zowe instance for IZSME.

The following procedure provides a high-level overview of this process with links to individual tasks.

Procedure

1. If not already installed, install Zowe on z/OS. For details about installing Zowe, see Installing Zowe z/OS components.

   Important: IZSME requires Zowe 1.20 or later. Zowe 2.0 and 2.1 are not supported; Zowe 2.2 and later are supported.
2. Using SMP/E, install IZSME on z/OS as described in the Program Directory for IBM Z Service Management Explorer 6.3.2.

   The SMP/E package provides a number of sample jobs in the `#tgthlq.SIUWSAMP` data set that are used in subsequent steps.
3. (Optional) If you have enabled role-based access control (RBAC), make sure to provide access to the IZSME plug-in for all roles that need access by editing the `allowedPlugins.json` file. For more information, see “Role-based access control (RBAC)” on page 19.
4. Depending on the Zowe version you have installed, install IZSME into your Zowe instance using one of the following procedures:

   - “Install IZSME in Zowe 2” on page 5.
   - “Install IZSME in Zowe 1” on page 6.

   Note: If you are migrating from Zowe 1 to Zowe 2, you can move your IZSME data from Zowe 1 to Zowe 2. For details, see “Migrate IZSME data from Zowe 1 to Zowe 2” on page 7.
5. “Apply maintenance to an existing IZSME installation” on page 8.
6. (Optional) “Configure the Zowe instance for IZSME” on page 9.
7. “Start IZSME” on page 10.

Install IZSME in Zowe 2

Use this procedure to install IZSME into a Zowe 2 instance.

Before you begin

The following requirements apply:

- You can install IZSME in Zowe 2.2 and later; Zowe 2.0 and 2.1 are not supported.
- The minimum required IZSME PTF level is OA64754.

About this task

This task uses the following sample jobs that are provided in data set *#tgthlq*.SIUWSAMP:

IUWMUNPX
IUWMUPPT

In each job, the JCL provides instructions about how to customize the job before running it.

The following instructions explain how to install IZSME in Zowe 2.

Procedure

1. (For Zowe 2.3 through 2.7 only) If you are using Zowe 2.3 through 2.7, before you install IZSME, you must disable Zowe Configuration Manager by adding the following line to the zowe.yaml configuration file:

   ```
   zowe.useConfigmgr: false
   ```

   Note: For more information about zowe.useConfigmgr, see Zowe release notes for version 2.8.0.
2. Install the IZSME base by running job IUWMUNPX, which extracts the base IZSME runtime files into the IZSME installation directory. Follow the customization instructions inside the script.
3. Update the IZSME runtime files by running job IUWMUPPT, which extracts an IZSME PTF. Follow the customization instructions inside the script.
4. Install the IZSME components into Zowe by running the following command:

   ```
   <ZOWE_RUNTIME_DIRECTORY>/bin/zwe components install -c <ZOWE_YAML> -o <IZSME_HOME>
   ```

   where:

   ZOWE_RUNTIME_DIRECTORY is the absolute path to the Zowe runtime directory
   ZOWE_YAML is the absolute path to the Zowe YAML file for an instance
   IZSME_HOME is the absolute path to the IZSME directory
5. Because IZSME does not support node clustering, you must disable node clustering in the Zowe instance by adding the following line to the zowe.yaml configuration file:

   ```
   zowe.environments.ZLUX_NO_CLUSTER: 1
   ```
6. Restart the Zowe server.

Install IZSME in Zowe 1

Use this procedure to install IZSME into a Zowe 1 instance.

Before you begin

IZSME requires Zowe 1.20 or later.

About this task

This task uses the following sample jobs that are provided in data set *#tgthlq*.SIUWSAMP:

IUWMUNPX
IUWMINST
IUWMUPPT

In each job, the JCL provides instructions about how to customize the job before running it.

The following instructions explain how to install IZSME in Zowe 1.

Procedure

1. Install the IZSME base by running job `IUWMUNPX`, which extracts the base IZSME runtime files into the IZSME installation directory. Follow the customization instructions inside the script.
2. Deploy IZSME into a pre-installed Zowe instance by running job `IUWMINST`. Follow the customization instructions inside the script.

   Note: You can deploy the same IZSME installation into multiple Zowe instances. If you do so, all Zowe instances will have their IZSME upgraded every time you apply maintenance to the IZSME installation.

   Tip: After you have run this script for the first time, you can set the IZSME installation directory to read-only (that is, it can be mounted read-only).
3. Update the IZSME runtime files by running job `IUWMUPPT`, which extracts an IZSME PTF. Follow the customization instructions inside the script.
4. Because IZSME does not support node clustering, you must disable node clustering in the Zowe instance by adding the following line to the `instance.env` file:

   ```
   ZLUX_NO_CLUSTER=1
   ```
5. Restart the Zowe server.

Migrate IZSME data from Zowe 1 to Zowe 2

Use this procedure to migrate your IZSME data from Zowe 1 to Zowe 2.

Before you begin

You must have IZSME installed in Zowe 2. For more information, see "Install IZSME in Zowe 2" on page 5.

About this task

You can use an IZSME instance from Zowe 1 in Zowe 2. By migrating the IZSME data, all configured connections, downloaded SDA files, and settings will be available in Zowe 2. The minimum required PTF level is OA64754.

Use the following steps to migrate your IZSME data from Zowe 1 to Zowe 2.

Procedure

1. Copy IZSME data from Zowe 1 to Zowe 2 by issuing the following z/OS® UNIX System Services commands:

   ```
   cp -R <ZOWE_V1_INSTANCE_DIRECTORY>/workspace/app-server/ZLUX/pluginStorage/
   com.rs.om.webportal <ZOWE_V2_INSTANCE_DIRECTORY>/workspace/app-server/ZLUX/pluginStorage/
   com.rs.om.webportal

   cp -R <ZOWE_V1_INSTANCE_DIRECTORY>/workspace/app-server/ZLUX/pluginStorage/
   com.rs.tep.queryhandler <ZOWE_V2_INSTANCE_DIRECTORY>/workspace/app-server/ZLUX/pluginStorage/
   com.rs.tep.queryhandler
   ```

   where:

   `ZOWE_V1_INSTANCE_DIRECTORY` is the path to the Zowe 1 instance
   `ZOWE_V2_INSTANCE_DIRECTORY` is the path to the Zowe 2 instance
2. (Optional) If you plan to continue to use your Zowe 1 instance, you must provide a new value for the Java Sidecar listener port range for the Zowe 2 instance; the value for Zowe 2 must be different from the value in Zowe 1. To update the port range, change the value for the `javaListenerPort` property in the `pluginConfig.json` configuration file, which exists in the following location:

   ```
   <ZOWE_V2_INSTANCE_DIRECTORY>/workspace/app-server/ZLUX/pluginStorage/com.rs.tep.queryhandler/
   pluginConfiguration/pluginConfig.json
   ```

where:

`ZOWE_V2_INSTANCE_DIRECTORY` is the path to the Zowe 2 instance

For more information about the port value, see “Configuring Java Sidecar” on page 12.

Apply maintenance to an existing IZSME installation

Use this procedure to apply maintenance to an existing IZSME installation.

Before you begin

Locate the latest IZSME maintenance and use SMP/E to apply the PTF to your IZSME libraries.

About this task

This task uses the following sample jobs that are provided in data set `#tgthlq.SIUWSAMP`:

`IUWMUPPT`
`IUWMMPPT` (for Zowe 1 environments only)

In each job, the JCL provides instructions about how to customize the job before running it.

The following instructions explain how to apply maintenance or upgrades to your IZSME installation.

Procedure

The process for applying IZSME maintenance depends on your Zowe version, as follows:

For Zowe 2 environments

1. Update the IZSME runtime files by running job `IUWMUPPT`, which extracts an IZSME PTF. Follow the customization instructions inside the script.

   Note: This job (`IUWMUPPT`) upgrades the target IZSME installation directory. If you have installed the same IZSME installation directory into multiple Zowe instances, running this job upgrades the IZSME plug-in for all Zowe instances.
2. Check if the specific maintenance level has additional instructions and perform further steps if applicable.
3. Restart each Zowe instance to pick up the changes.

For Zowe 1 environments

1. Update the IZSME runtime files by running job `IUWMUPPT`, which extracts an IZSME PTF. Follow the customization instructions inside the script.

   Note: This job (`IUWMUPPT`) upgrades the target IZSME installation directory. If you have installed the same IZSME installation directory into multiple Zowe instances, running this job upgrades the IZSME plug-in for all Zowe instances.
2. Complete the application of maintenance for Zowe 1 environments by running job `IUWMMPPT`.
3. Check if the specific maintenance level has additional instructions and perform further steps if applicable.

   Important: When you apply PTF OA64754 in a Zowe 1 environment, you must perform the following steps after completing the PTF installation:

   a. Delete the following file:

   ```
   <ZOWE_HOME>/workspace/app-server/plugins/com.rs.ctds_common.json
   ```

   b. Run the following command to install IZSME into the Zowe instance:

   ```
   <ZOWE_HOME>/bin/install-app.sh <IZSME_HOME>/ctds_common
   ```

where:

`IZSME_HOME` is the path to the IZSME directory
`ZOWE_HOME` is the path to the Zowe instance directory

4. Restart each Zowe instance to pick up the changes.

Configure the Zowe instance for IZSME

Configure your Zowe instance for IZSME. Configuration varies depending on your Zowe version.

Configuring Zowe 2 environments

The following list provides options for configuring your Zowe 2 instance:

Disable node clustering
(Required) IZSME does not support node clustering. You must disable clustering in the Zowe instance by adding the following line to the `zowe.yaml` configuration file:

```
zowe.environments.ZLUX_NO_CLUSTER: 1
```

Note: If node clustering is not disabled, IZSME will not connect to the database.

Reduce Zowe footprint
(Optional) IZSME depends on only the Zowe Desktop component. For the most lightweight instance, set the following parameter in the `zowe.yaml` configuration file, as follows:

```
zowe.components.gateway: FALSE
```

Disable Zowe Configuration Manager
(Required for Zowe 2.3 through 2.7) If you are using Zowe 2.3 through 2.7, you must disable Zowe Configuration Manager by adding the following line to the `zowe.yaml` configuration file before IZSME installation:

```
zowe.useConfigmgr: false
```

Note: For more information about `zowe.useConfigmgr`, see Zowe release notes for version 2.8.0.

Use custom background graphics
(Optional) IZSME allows you to add your own custom background images. JPG and PNG formats are supported. Put your graphics files in the `backgrounds` folder, which exists in the following location:

```
\instance\users\ZLUX\plugins\com.rs.om.webportal\web\assets\graphics-background-
images\backgrounds
```

Configuring Zowe 1 environments

The following list provides options for configuring your Zowe 1 instance:

Disable node clustering
(Required) IZSME does not support node clustering. You must disable clustering in the Zowe instance by adding the following line to the `instance.env` file:

```
ZLUX_NO_CLUSTER=1
```

Note: If node clustering is not disabled, IZSME will not connect to the database.

Reduce Zowe footprint
(Optional) IZSME depends on only the Zowe Desktop component. For the most lightweight instance, add (or modify) the `LAUNCH_COMPONENT_GROUPS` setting in the `instance.env` configuration file, as follows:

```
DESKTOP: LAUNCH_COMPONENT_GROUPS=DESKTOP
```

Use custom background graphics
(Optional) IZSME allows you to add your own custom background images. JPG and PNG formats are supported. Put your graphics files in the `backgrounds` folder, which exists in the following location:

```
\instance\users\ZLUX\plugins\com.rs.om.webportal\web\assets\graphics-background-
images\backgrounds
```

Start IZSME

After you have completed the installation steps, you are ready to start using Zowe and IZSME. The next time you start Zowe, the new **IBM Z Service Management Explorer** plug-in will be displayed on the **Zowe** applications menu.

Configuring IZSME

After installing *IBM Z Service Management Explorer*, the next step is to configure it for your environment. You can add, edit, or delete a Tivoli Enterprise Portal Server (TEPS) for IZSME.

When you open IZSME for the first time, a window displays with a message that there is no Tivoli Enterprise Portal Server (TEPS) defined as the default server. You must configure at least one TEPS to use as the default server, and the TEPS must be running in order to use IZSME.

Adding a new TEPS to the list

To configure a new TEPS for use, follow the steps below.

1. From the window that displays the `No default TEPS is configured` message, click on the **Settings** gear icon in the top right corner. The **Settings** screen will be displayed.
2. Click the **Add new** button at the top of the screen. The **Add Connection** window is displayed.
3. Specify values for the following fields.

   Note: Chinese characters are not supported in any of the fields in the configuration user interface. To connect IZSME to TEPS databases, Tivoli Data Warehouse, and LDAP servers, you will not be able to use Chinese characters for the following fields:

   - Database schema name
   - Administrator username and password for connecting to databases and LDAP servers
   - DNS names for TEMS and other servers configured here

   Zowe authentication
   Specify whether or not Zowe authentication should be enabled. When Zowe authentication is enabled (the default), users will be authenticated against Zowe when they choose this configuration upon launching IZSME.

   TEMS properties – Host
   Specify the host name or IP address for this Tivoli Enterprise Monitoring Server (TEMS). This setting is the host name or IP address of the machine where the hub TEMS is installed.

   TEMS properties – Port
   Specify a numeric value for the port. The standard port value is 1918.

   Hot Standby TEMS Host (optional)
   This optional field allows you to specify a secondary High Availability TEMS host in case the primary TEMS is not available. If you wish to specify a secondary TEMS, specify the host name or IP address of the machine where the secondary TEMS is installed. If you do not want to specify a secondary High Availability TEMS, leave this field blank.

   Database properties – Host
   Specify the host name for this TEPS database.

Database properties – Port
Specify a numeric value for the port. The standard port value is 50000.

Database properties – Username
Specify the user ID of the person who has access to this database.

Database properties – Password
Specify the password associated with the Username.

JDBC URL
This URL is built for you automatically based on the values you specify in the other fields on this screen. If you are using the default database name (TEPS), you do not need to change the URL. However, if you are not using the default database name, you can change the URL to suit your environment. Any changes made to the URL will be changed in the fields above vice versa.

Also, you may need to specify the *currentSchema* special register. For example, if the schema for TEPS tables is ITMUSER (and that is not the database username you entered), you would edit the JDBC URL as shown in this example:

```
jdbc:db2://myhost:50000/TEPS
```

Change to:

```
jdbc://myhost:50000/TEPS:currentSchema=ITMUSER;
```

Note: The JDBC URL must end with a semi-colon (;) or an error message will display.

TEPS properties – Host
Specify the host name or IP address for this Tivoli Enterprise Portal Server (TEPS). This setting is the host name or IP address of the machine where the TEPS is installed.

TEPS properties – Port
Specify a numeric value for the port.

4. Click **Test**, on the right side of the **Database properties** section, to verify that these values are acceptable. If not, try a different value.
5. Click **Save** to add this TEPS to the list.

Editing a TEPS configuration

To edit a TEPS configuration:

1. Click the **Settings** gear icon in the top right corner.
2. On the **Settings** window, highlight the line you want to change.
3. Click the **kabob menu** (three vertical dots) in the header bar. (You may need to page right to see the rest of the screen.)
4. Click **Edit**.
5. The **Edit Connection** window displays the current settings for this highlighted line.
6. Change the values you need to adjust and click **Save**. If you do not want to make any changes, click **Cancel**.

Viewing a list of existing Tivoli Enterprise Portal Servers (TEPS)

To view a list of TEPS servers that have already been defined for IZSME, click the **Settings** gear icon in the top right corner. A **star** appears next to the first item on the list, indicating that this TEPS is the default server. All of the information in this window was provided when each of the TEPS was added to the list.

The **DB Status** column shows the status of the TEPS database:

- Available – The connection is good.
- Error – No connection was made.

- Unknown – No connection has been attempted yet.

The **TEMS Status** column shows the status of the Tivoli Enterprise Monitoring Server. The status can be one of the following:

- Available – The connection is good.
- Error – No connection was made.
- Unknown – No connection has been attempted yet.

Configuring an LDAP connection

IZSME uses Lightweight Directory Access Protocol (LDAP) to connect to various directories. You can specify one LDAP connection for each TEPS:

1. Click the **Settings** gear icon in the top right corner. You will see the **Settings** screen with several columns of data and the **LDAP** column on the far right side.
2. Right-click anywhere in the LDAP column to see a list of options. Choose **Configure LDAP**.
3. Turn on LDAP authentication by moving the slide to "On".
4. Specify the **LDAP Host**.
5. Specify a number for the **LDAP Port**. An example of the port number is 389.
6. Specify the **Username** and **Password** for the Root directory.
7. The **Repository base entry distinguished name** field is where all the values you have previously specified are listed as one long name. An example is listed under the entry field.
8. Click **Save**. The **Settings** screen will indicate **On** for LDAP in the default TEPS database.

Configuring Java Sidecar

Java Sidecar is a Java process that must be running in order to start IZSME. Java Sidecar listens on a port. The default port is 20202; if this port is not available, Java Sidecar will attempt to use the next 19 ports in succession until it finds an available port, going as far as 20221. You can specify a different range of ports by specifying the `javaListenerPort` property in the `pluginConfig.json` configuration file:

```
{
  "javaListenerPort": "20202",
  "javaVMArguments": [],
  "classPath": "../lib/jar/*",
  "cache": {

[etc.]
```

The `javaListenerPort` property specifies "the first of 20 ports the Java Sidecar will try to listen on." So in the above example, the Java Sidecar will start with port 20202, and if that port is not available, will continue with the next port, until it finds an available port, if there is one in that group of 20 ports.

The `pluginConfig.json` file is located in `[zowe_instance_dir]/workspace/app-server/ZLUX/pluginStorage/com.rs.tep.queryhandler/pluginConfiguration/`. If you do not currently have a `pluginConfig.json` file, you will need to create it, as well as the directories leading to the file. Make sure that the App Server process has read access to this file.

Note: It is possible that two instances of Java Sidecar can be briefly running at the same time. As a result, there must be at least two ports available, within the 20-port range specified by `javaListenerPort`.

Address space naming

By default, Java Sidecar will start with the same address space name as the App Server (Node.js process). For example, if you accept the default ZOWE_PREFIX (ZWE), both the App Server and the Java sidecar would have the name ZWE1DS1 (for ZOWE_INSTANCE=1).

The Java Sidecar is started by the App Server process, so its name will always relate to the name of the App Server. If there are different values for ZOWE_PREFIX and ZOWE_INSTANCE, then App Server and Java Sidecar will have slightly different names. However, the root of the names will be the same (starting

with ${ZOWE_PREFIX}${ZOWE_INSTANCE}. See Creating and configuring the Zowe instance directory for more information about Zowe naming.

Normal Login to IZSME

After you have configured a default TEPS, the login screen will appear the next time you start IZSME. The default database is listed under the **Log in to IZSME** heading. This is the TEPS database that you specified when configuring LDAP.

You will need to provide the following information on the login screen:

Logon ID
Type the logon ID, such as a user ID, that was assigned to you to access IZSME.

Password
If a password is required for this logon ID, type the password here.

Performance tuning: number of rows per page

Adjusting IZSME settings can improve performance, when reading large tables. The `maxRowsInPageRequest` setting lets you paginate the results of a query for faster response.

When IZSME is reading a large table, a user may experience slow performance because of the large number of rows displayed per page. To reduce the delay, you can limit the number of rows that are displayed at any one time, by paginating the display. When IZSME displays the results of a query, the status line at the bottom of the panel will indicate how many lines are displayed per page, and how may pages the entire search set contains. For example, it might say **Items per page 200** and **1 of 13 pages**, with an arrow button to retrieve the next 200 results.

Changing the default page size

The default setting is 200 items per page. If you want to change the setting, ask your system administrator to do so, following these instructions.

The default setting of 200 rows per page overrides the number of rows specified in the view definition in Tivoli Enterprise Portal. Because IZSME sorting and filtering is done on the server, large page sizes are much less necessary than in the Tivoli Enterprise Portal, where sorting and filtering are performed in the client, which can make it hard to find the data you need when the page size is smaller than the result set.

You can change this value by editing the `pluginConfig.json` file, which resides in <IZSME_HOME>/`ctds/teps_utils/config`. The file looks like this:

```
{
  "javaListenerPort": "20202",
  "javaVMArguments": [],
  "classPath": "../lib/jar/*",
  "cache": {
    "navigatorTree": {
      "cacheTimeoutSec": 300,
      "cacheCount": 15
    },
    "physicalTree": {
      "cacheTimeoutSec": 86400,
      "cacheCount": 15
    },
    "customTree": {
      "cacheTimeoutSec": 86400,
      "cacheCount": 15
    },
    "situationTemplates": {
      "validFor": 300000
    }
  },
  "memoryUsageDumpIntervalSec": 900,
  "resourceUsageDumpIntervalSec": 3600,
  "maxRowsInPageRequest": 200
}
```

The `maxRowsInPageRequest` setting specifies the maximum number of rows to be displayed per page. A value greater than zero (0) will limit the maximum displayed rows. If you want to display the entire result set in one page instead of limiting the number of rows displayed, specify a value of **-1**.

Enabling a concise user activity log

You can configure IZSME to generate a concise user activity log, with only the minimal information you need in order to diagnose problems quickly.

With concise user activity logging, you can tell what workspace a user visited; and which users have logged on. The resulting log presents the minimum necessary information so that the logs don't get too large. The user activity log can be controlled separately from other IZSME logging.

The user activity log is configured in the `server.json` file:

```
<ZOWE_INSTANCE>/workspace/app-server/serverConfig/server.json
```

For security purposes, write access to this file should be limited to an administrator. For more information on the `server.json` file itself, see this example server.json file.

To specify the level of severity or debugging verbosity, add the following lines:

```
  "logLevels": {
  "com.rs.tep.queryhandler.logonattempts": 3,
  "com.rs.tep.queryhandler.useractivity:" 3,
}
```

The minimum logging level for the user activity log is 3.

The following are examples of log entries for `logonattempts` and `useractivity`.

Logger: com.rs.tep.queryhandler:logonattempts

Log level used: 3

Log message:

```
2021-05-05 23:29:55.969 <ZWED:22328> mshelby DEBUG
(com.rs.tep.queryhandler:logonattempts,logonAttemptsLogger.js:25) Logon attempt {
  user: 'sysadmin',
  izSMEInstanceId: 'hUE5lYghwfBOtBKnaSrw',
  tepsConfigurationId: '0904fd16-655a-4ec3-8ac2-e6c3ea8b70af',
  status: 'SUCCESS'
}
```

The message status can be SUCCESS, FAILED, or ERROR.

Logger: com.rs.tep.queryhandler:useractivity

Log levels used: 3 (first example), 4 (second example)

Log messages:

```
2021-05-05 23:33:13.311 <ZWED:7460> mshelby DEBUG (com.rs.tep.queryhandler:useractivity,log-
utils.js:99) User visits workspace {
  workspaceId: 'deec9cbb19',
  izSMEInstanceId: 'sV0v8O01lsln1Y4wn1MO',
  navigatorPathString: 'Enterprise | z/OS Systems'
} 1620257593311.9
```

```
2021-05-05 23:33:13.312 <ZWED:7460> mshelby FINER (com.rs.tep.queryhandler:useractivity,log-
utils-impl.js:15) User visits workspace with navigator path [
  { id: 'PHYSICAL_ENTERPRISE', type: 'ROOT', name: 'Enterprise' },
  { id: 'ed8cf67d@MVS', type: 'SYSTEMS', name: 'z/OS Systems' }
] 1620257593311.9
```

For more information on the log levels in Zowe, see Log levels.

Configuring security for IZSME

IZSME is often used to manage sensitive data. You should encrypt all of the communication channels IZSME uses.

You should configure AT-TLS to provide security for communication channels between IZSME and other entities including the Zowe Node server and zssServer, and the Hub TEMS.

Note: The Node - JavaSidecar communication channel must be secured using mutual authentication AT-TLS, as described in "Configuring mutual auth TLS to secure Node - JavaSidecar communications" on page 18.

You can use RACF and role-based access control (RBAC) to set the authorization levels for groups of users (such as administrators and business users).

To secure communication between the Zowe Node Server and the zssServer, see the Zowe documentation under Configuring ZSS for HTTPS. Secure communications between the Live CT/DB Adapter and your TEPS database(s) will use secure JDBC.

Secure communications with IZSME

The following topics include details about creating specific AT-TLS rules to achieve secure communication, as well as using RACF to create groups with different levels of authorization, as a way of implementing RBAC. The examples are intended as a guide; you can organize your AT-TLS rules differently, depending on the requirements of your site. For more information on using AT-TLS with z/OS, see these topics:

- Application Transparent Transport Layer Security (diagram illustrating how AT-TLS works)
- Application Transparent Transport Layer Security (AT-TLS) (discussion of AT-TLS and applications)
- Setting up AT-TLS
- Configuring and activating the policy agent (PAGENT)

Variables required for configuring security

These are the variables used to configure RACF, register certificates, and configure AT-TLS rules, which are described in the topics that follow.

Table 1. Variables

Variable	Description
`<ca_cert_label>`	CA certificate label
`<ca_cert_name>`	Certificate name
`<cert_label>`	Internal certificate label
`<country_code>`	Two character alphabetic ISO country code
`<htems_certificate_dataset>`	Dataset with certificate, extracted from HTEMS
`<htems_cert_label>`	HTEMS certificate label
`<htems_ip_address>`	IP address of HTEMS
`<htems_label>`	HTEMS label, added to configuration items name to define the item's target
`<htems_spipe_port>`	HTEMS SPIPE port
`<java_sidecar_port>`	Value, specified as `javaListenerPort` in product environment
`<location>`	Location name

Table 1. Variables (continued)	
Variable	**Description**
<organization>	Organization name
<organization_unit>	Organization unit name
<ring_name>	RACF Key Ring name
<server_owner_id>	User ID that runs Zowe™/IZSME
<state>	State or province
<yyyy/mm/dd>	Date (with format)

Managing certificates for AT-TLS

Internal security requires creating or obtaining an X.509 certificate and connecting it to a keyring. You can customize these command templates and use them to create the certificates. For background, see Configuring RACF and Authentication via client digital certificates.

Creating a CA certificate

```
RACDCERT CERTAUTH GENCERT +
SUBJECTSDN(CN(<ca_cert_name>) +
OU(<organization_unit>) +
O(<organization>) +
L(<location>) SP(<state>) C(<country_code>)) +
KEYUSAGE(CERTSIGN) +
WITHLABEL(<ca_cert_label>) +
NOTAFTER(DATE(<yyyy/mm/dd>)) +
SIZE(2048)
```

Creating a certificate signed by certificate authority

```
RACDCERT ID(<server_owner_id>) GENCERT +
SUBJECTSDN(CN(<cert_name>) +
OU(<organization_unit>) +
O(<organization>) +
L(<location>) SP(<state>) C(<country_code>)) +
KEYUSAGE(HANDSHAKE) +
WITHLABEL(<cert_label>) +
NOTAFTER(DATE(<yyyy/mm/dd>)) +
SIZE(2048) +
SIGNWITH(CERTAUTH LABEL(<ca_cert_label>))
```

Creating a keyring

```
RACDCERT ID(<server_owner_id>) ADDRING(<ring_name>)
```

Connecting certificates to the keyring

```
RACDCERT ID(<server_owner_id>) CONNECT(ID(<server_owner_id>) LABEL(<cert_label>)
RING(<ring_name>) DEFAULT)

RACDCERT ID(<server_owner_id>) CONNECT(CERTAUTH LABEL(<ca_cert_label>) RING(<ring_name>))
```

Refreshing profiles

The changes take effect when you refresh the certificate profiles.

```
SETROPTS RACLIST(DIGTRING,DIGTCERT) REFRESH
```

Configuring and registering certificates

For each TEMS that will be using SPIPE and AT-TLS to communicate with IZSME, you must extract the certificate from TEMS, place it into a dataset, register the certificate in RACF, and attach it to the keyring.

The certificate should be extracted in a binary format such as Distinguished Encoding Rules (DER, with the `.der` file extension) and transferred to a dataset for registration in RACF. See Securing communications and Secure communication between components.

Attach certificate to RACF and to keyring

Customize this template to register the certificate in RACF and attach it to the keyring, so it can be used for AT-TLS communication.

```
RACDCERT CERTAUTH ID(<server_owner_id>) ADD(<htems_certificate_dataset>) TRUST
WITHLABEL(<htems_cert_label>)

RACDCERT ID(<server_owner_id>) CONNECT(CERTAUTH LABEL(<htems_cert_label>) RING(<ring_name>))
```

Repeat this procedure for each TEMS that will be using SPIPE and AT-TLS with IZSME.

Finally, refresh the certificate profiles so that the changes will take effect.

```
SETROPTS RACLIST(DIGTRING,DIGTCERT) REFRESH
```

Securing TEMS-to-IZSME communication

IZSME communicates with TEMS in two ways:

- Using ZSS, to extract TEMS data
- Using Java Sidecar, to extract SDA data

Both of these connections are covered by one rule, securing connection to a specific TEMS using an SPIPE port.

Note: This section must be repeated for each HTEMS that will be using SPIPE and AT-TLS to communicate with IZSME.

Configure the SPIPE port on HTEMS

The SPIPE port should be configured on HTEMS for external communications to make IZSME-TEMS connections with AT-TLS security enabled possible. For background, see Communication between components.

Configure AT-TLS rules for TEMS-IZSME communication

Customize this configuration template and add it to your environment's TLS policy file. Add these rules to the rules you created previously for securing IZSME internal communications; these TEMS rules will use some of the same configuration items that were created in the internal rules.

```
TTLSRule IUW_WTEP_AS_HT_CLIENT_<htems_label>
{
   RemoteAddrRef IUW_ADDR_HT_<htems_label>
   RemotePortRangeRef IUW_PORT_HT_<htems_label>
   Userid <server_owner_id>
   Direction Outbound
   Priority 4
   TTLSGroupActionRef gAct1~IUW
   TTLSEnvironmentActionRef eAct1~IUW_AS_CLIENT
   TTLSConnectionActionRef cAct1~IUW_AS_CLIENT_HT_<htems_label>
}
IpAddr IUW_ADDR_HT_<htems_label>
{
   Addr <htems_ip_address>
}
PortRange IUW_PORT_HT_<htems_label>
```

```
{
   Port <htems_spipe_port>
}
TTLSConnectionAction cAct1~IUW_AS_CLIENT_HT_<htems_label>
{
   HandshakeRole Client
   TTLSCipherParmsRef cipher-IUW
   TTLSConnectionAdvancedParmsRef cAdv1~IUW_HT_<htems_label>
   CtraceClearText On
   Trace 4
}
TTLSConnectionAdvancedParms cAdv1~IUW_HT_<htems_label>
{
   ResetCipherTimer 0
   SecondaryMap Off
   CertificateLabel <htems_cert_label>
}
```

Configuring mutual auth TLS to secure Node - JavaSidecar communications

Mutual authentication TLS must be configured using AT-TLS.

Note: Sites that have previously configured AT-TLS for a previous version of IZSME will need to configure AT-TLS again, to enable mutual authentication TLS with version 1.1.8.

You can configure AT-TLS rules by customizing the following template and adding it to the environment's TLS policy file. Using one keyring for all of the AT-TLS rules will simplify the task of setting up secure communications:

```
TTLSRule IUW_JAVA_AS_SRV
{
 LocalAddr 127.0.0.1
 LocalPortRangeRef IUW_PORT_JAVA
 Userid <server_owner_id>
 Direction Inbound
 Priority 4
 TTLSGroupActionRef gAct1~IUW
 TTLSEnvironmentActionRef eAct1~IUW_AS_SRV
 TTLSConnectionActionRef cAct1~IUW_AS_SRV
}
TTLSRule IUW_JAVA_AS_CLIENT
{
 RemoteAddr 127.0.0.1
 RemotePortRangeRef IUW_PORT_JAVA
 Userid <server_owner_id>
 Direction Outbound
 Priority 4
 TTLSGroupActionRef gAct1~IUW
 TTLSEnvironmentActionRef eAct1~IUW_AS_CLIENT
 TTLSConnectionActionRef cAct1~IUW_AS_CLIENT
}
PortRange IUW_PORT_JAVA
{
 Port <java_sidecar_port>
}
TTLSGroupAction gAct1~IUW
{
 TTLSEnabled On
 Trace 4
 GroupUserInstance 1
}
TTLSEnvironmentAction eAct1~IUW_AS_CLIENT
{
 HandshakeRole Client
 EnvironmentUserInstance 0
 TTLSEnvironmentAdvancedParmsRef eAdv1~IUW
 TTLSKeyringParmsRef keyring~IUW
 Trace 4
}
TTLSEnvironmentAction eAct1~IUW_AS_SRV
{
 HandshakeRole ServerWithClientAuth
 EnvironmentUserInstance 0
 TTLSEnvironmentAdvancedParmsRef eAdv1~IUW
 TTLSKeyringParmsRef keyring~IUW
 Trace 4
}
TTLSConnectionAction cAct1~IUW_AS_SRV
```

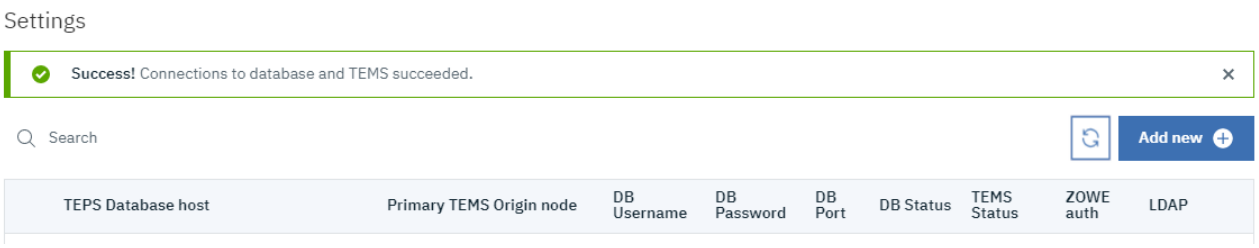
```
{
 TTLSCipherParmsRef cipher-IUW
 TTLSConnectionAdvancedParmsRef cAdv1~IUW
 CtraceClearText On
 Trace 4
}
TTLSConnectionAction cAct1~IUW_AS_CLIENT
{
 HandshakeRole Client
 TTLSCipherParmsRef cipher-IUW
 TTLSConnectionAdvancedParmsRef cAdv1~IUW
 CtraceClearText On
 Trace 4
}
TTLSConnectionAdvancedParms cAdv1~IUW
{
 ResetCipherTimer 0
 SecondaryMap Off
 CertificateLabel <cert_label>
}
TTLSKeyringParms keyring~IUW
{
 Keyring <server_owner_id>/<ring_name>
}
TTLSEnvironmentAdvancedParms eAdv1~IUW
{
 ClientAuthType Required
 CertValidationMode RFC5280
 ApplicationControlled Off
 SSLv2 Off
 SSLv3 Off
 TLSv1 Off
 TLSv1.1 Off
 TLSv1.2 On
}
TTLSCipherParms cipher-IUW
{
 V3CipherSuites TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256
 V3CipherSuites TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384
 V3CipherSuites TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256
 V3CipherSuites TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384
 V3CipherSuites TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256
 V3CipherSuites TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384
 V3CipherSuites TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256
 V3CipherSuites TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384
}
```

Role-based access control (RBAC)

Creating RACF user profiles and groups with different levels of authorization is a simple way of implementing RBAC for your IZSME users.

Note: When you enable RBAC, make sure to provide access to the IZSME plug-in for all roles that need access by editing the `allowedPlugins.json` file. For details on how to do this, see Controlling app access for all users in the Zowe documentation.

In IZSME, a **configuration** is a combination of a specific TEPS and HTEMS. After you start IZSME, you can display the current configurations, which are displayed on the **Settings** panel, by clicking the gear icon:



Under this heading, the panel lists all the configurations currently set up in your environment, with the specific TEPS database host, primary TEMS origin node, and other specifications.

The following example shows how IZSME RACF groups can be set up for different roles:

- **IZSMEADM** - group for application administrators

- **IZSMEUSR** - group for application users

These groups represent the "roles" in Role Based Access Control. If you have two TSO IDs set up for yourself, add your "administrator" TSO ID to **IZSMEADM** and your "general user" ID to **IZSMEUSR**.

These are the general application profiles for all users (user IDs that are in both the **IZSMEUSR** and **IZSMEADM** groups):

- **ZLUX.*.*.COM_RS_CTDS_COMMON.****
- **ZLUX.*.*.COM_RS_MVD_CTDS.****
- **ZLUX.*.*.COM_RS_DISCOVERY_BASE.****
- **ZLUX.*.*.COM_RS_TEP_QUERYHANDLER.****
- **ZLUX.*.*.COM_RS_OM_WEBPORTAL.****

These profiles are for application administrators only (**IZSMEADM** group):

- **ZLUX.*.SVC.COM_RS_OM_WEBPORTAL.CONFIG.PUT.**** - API for changing configuration file
- **ZLUX.*.SVC.COM_RS_TEP_QUERYHANDLER.SECURECONFIG.PUT.**** - API for changing configuration file
- **ZLUX.*.SVC.COM_RS_OM_WEBPORTAL.QUERYHANDLER.POST.JAVALOGLEVEL** - API for changing log level for JavaSidecar
- **ZLUX.*.COR.**** - Zowe API for administrators

Enabling non-expiring sessions

You can set up a user ID to run IZSME with a session that does not expire, or with a different timeout period from the default. This is useful, for example, if you want to have an overhead monitor in your data center that always shows IZSME a high-level "data center health" display.

You can create a group of user IDs with a session timeout value different from the default. These IDs are specified by creating a file called `timeout.json` in the `serverConfig` folder in the Zowe™ instance:

```
<ZOWE_INSTANCE>\workspace\app-server\serverConfig\timeouts.json
```

For security purposes, write access to this file should be limited to an administrator. For for information, see an example `server.json` file.

This example illustrates the file format:

```
{
"users": {
   "ab1234": 400,
   "abxyz": -1
 },
 "groups": {
   "ZOWEUSERS": 200
 }
}
```

When one of the specified user IDs logs in, the user's expiration time will be the value specified in the configuration file.

The values specified for `users` set the timeout period, in seconds; in the example above, the timeout period for user `ab1234` would be 400 seconds. To set an unlimited (non-expiring) session, specify a value of **-1**. In the example, user `abxyz` will have a non-expiring session.

For more information on configuring Zowe, see Configuring Zowe Application Framework.

Getting started using IZSME

IBM Z Service Management Explorer is a web portal into your monitored environment.

Architecture

Client

IBM Z Service Management Explorer is a browser-based user interface for viewing and monitoring your enterprise network.

Server

IZSME connects to its application server, the Tivoli® Enterprise Portal Server (TEPS), which is a collection of software services that enable retrieval, manipulation and analysis of data from the monitoring agents on your enterprise. The TEPS connects to the Tivoli Enterprise Monitoring Server (TEMS), which acts as a collection and control point for alerts received from the monitoring agents, and collects performance and availability data. The main, or hub, TEMS (HTEMS) correlates the monitoring data collected by agents and remote servers and passes it to the TEPS for presentation and evaluation.

Agent

Tivoli Enterprise Monitoring Agents (TEMAs) are installed on the systems whose applications or resources you want to monitor. The monitoring agent collects the monitored data, and passes it to the TEMS to which it is connected. The client gathers the current values of the monitored properties, or attributes, and displays them in views. It can also test the values against a threshold and display an event indicator when that threshold is exceeded.

Related concepts

Predefined tools

IBM Z Service Management Explorer comes with some predefined tools designed to help you get up to speed quickly.

Related information

IZSME tour

This topic briefly introduces the Navigator, workspaces, and situations.

Predefined tools

IBM Z Service Management Explorer comes with some predefined tools designed to help you get up to speed quickly.

Use these tools to begin monitoring and visualizing data immediately. Some definitions are ready to use; others are turned off until you activate them:

Workspaces
: The Navigator is the panel that appears at top-left when you enter IZSME. The workspaces that open when you click a Navigator item are predefined. They provide real-time visual data from managed systems, and they provide historical values when historical data collection has been configured. The predefined workspaces also provide a starting point for designing your own workspaces.

Queries
: The predefined workspaces are populated with data from predefined queries. Creating your own queries from these predefined queries enables you to add or remove attributes, apply a sort order, and pre-filter the data.

Situations
: The tests for conditions that you want to be alerted for are available in the predefined situations.

Managed system groups

The Tivoli Enterprise Monitoring Server and every IBM® Tivoli Monitoring product has at least one predefined managed system group, indicated by an asterisk at the beginning of the list name, such as *NT_SYSTEM for the Windows OS agent. When you assign one of these managed system groups to a situation, policy, historical collection configuration, or custom Navigator, all managed systems with that agent installed are selected.

Related concepts

Architecture

Related information

IZSME tour

This topic briefly introduces the Navigator, workspaces, and situations.

IZSME tour

This topic briefly introduces the Navigator, workspaces, and situations.

Related concepts

Architecture

Predefined tools

IBM Z Service Management Explorer comes with some predefined tools designed to help you get up to speed quickly.

Navigator

The Navigator shows the hierarchy of your network, with *enterprise* at the top, followed by the *operating platform*, etc.:

1. Open a operating platform level (for example, Linux®, UNIX, Windows, or z/OS Systems) by clicking the right-arrow icon for the level you want to look at.

   Opening a level in the Navigator reveals the next level in that branch.
2. Open the next operating platform level to see the names for the systems running on that platform.
3. Open any system to see the monitoring agents installed on that system for monitoring applications and resources; and, below agents, the elements, or attributes, for which the agent can collect data.

Tip: You can close the tree entirely by clicking the arrow icon to the left of the Enterprise item.

Workspaces

Every item in the Navigator has a default workspace that opens when you select it. Multiple workspaces can also be accessed from a single navigator item. When you start IZSME, the top item in the Navigator, Enterprise, is selected and the Situation Event Console is displayed.

Select another Navigator item by clicking the icon for the operating platform, or the name of the platform itself.

The workspace for the operating platform you selected replaces the one previously displayed.

The Navigator and workspaces allow you to examine your managed enterprise from the highest level to the most detailed.

Situations

In addition to providing a map of your enterprise, the Navigator can alert you to changing conditions. When a condition changes, the associated item is marked with an icon representing each condition: Fatal, Critical, Minor, Warning, Harmless, Informational, or Unknown. The Navigator places one of these icons, called an *alert indicator* or *event indicator*, at each level of the hierarchy, so you can see an alert even if a Navigator branch is closed.

IZSME runs tests called *situations* on systems where monitoring agents are installed. When the conditions of a situation have been met, an event occurs and an event indicator is displayed over the applicable items in the Navigator.

Using the Navigator

The Navigator provides a hierarchical, high-level overview of the status of your monitored environment. The Situation Event Console is a view that serves as the starting point for taking action to address situations on your managed systems.

Navigator overview

The Navigator is the top-left pane in IZSME, which allows you to drill down and display information on the parts of your environment you want to examine. Initially, the Navigator shows your entire enterprise, with the Situation Event Console to the right.

Types of Navigator views

Physical view
The default Navigator view is Physical and shows the hierarchy of your monitored enterprise. As new managed systems come on- or offline, the Physical view changes accordingly.

Custom views
Your configuration may also have custom views. These views are selectable from the Navigator toolbar. They display event indicators (described below), but unlike the Physical view, custom views can be edited.

Logical view
IZSME initially has one custom Navigator view called Logical with a single Navigator item for Enterprise.

Workspaces

A workspace is a working area (pane) of IZSME. Selecting an item in the Navigator opens its default workspace.

Situation event indicators

When a situation becomes "true," an event indicator (a small colored icon) appears next to the corresponding Navigator icon.

Event indicators are classified by severity, from highest to lowest: Fatal, Critical, Minor, Warning, Harmless, Informational, or Unknown. As you move up the Navigator hierarchy, multiple events are consolidated to show only the indicator for the event with the highest severity.

Click on an event indicator to open a listing of the situations that are true for the Navigator item and any branching items. You can display additional columns by clicking on a row, then using the arrow keys to move to the left and right.

Acknowledged	The situation event has been acknowledged.
Expired	The acknowledgement has expired and the situation is still true.
Reopened	The acknowledgement was canceled before it had expired and the situation is still true.
Stopped	The situation has been stopped.
Error	The situation is not functioning properly.

Status Unknown	The monitoring server detects that an agent is offline. The agent might have been taken offline intentionally, there might be a communication problem, or the agent or the system it is running on might have stopped or be failing. The situation flyover listing on this icon shows *STATUS_UNKNOWN, which is not actually a situation, but the notation for a problem on the managed system. Consider recycling the agent.

Understanding situation events

IZSME and the products in your environment come with a set of predefined situations. You can use these unmodified or use them as templates to create your own custom situations.

Situation formula

Situation formulas consist of one or more expressions. For example, a situation that checks for free disk space below 20% has an expression that uses the Logical Disk attribute "Free Megabytes" and reads as `Free Megabytes < 20`. The situation will read data samples taken at the managed system at set intervals, such as once a day for the disk space situation in our example.

Other situations might be more elaborate, such as the predefined situation called Bottleneck Memory. It embeds two situations: one that tests for excessive memory paging activity (>100 pages per second), and one that tests for processor time over 70%. If both of these situations are true at the same time, the Bottleneck Memory situation becomes true and opens an event.

Situation event indicators

When a situation is associated with a managed system, it also has a state: Fatal, Critical, Minor, Warning, Harmless, Informational, or Unknown. As you move up the Navigator hierarchy, multiple events are consolidated to show only the indicator of the highest severity. Go to the lowest level of the hierarchy in the Navigator and you see the event indicator over the attribute category for which it was written.

Situation Event Console

The Enterprise Status workspace includes the Situation Event Console view.

When there are more than 100 situations, the Situation Event Console will be paginated, instead of displaying the entire list of situations in one scrollable list. At the bottom of the Situation Event Console, the number of items per page will be displayed, along with an indicator of how many pages of situations are available; for example, **1 of 2 pages**, with arrow buttons that let you bring up the next or the previous page. You can change the **Items per page** to display 100, 150, or 200 situations; the default is 100. Click the **Items per page** field, then select the number of situations per page. Sorting is unaffected by the number of situations displayed. Regardless of the setting, the entire list of situations will be sorted.

Event flyover list

In the Navigator, you can click the event indicator icon to the left of a list item (for example, the list item for your managed systems might be **z/OS Systems**), to open a listing of open situations, with this information for each:

Event state
Situation name
Name of the system on which the event occurred
Event timestamp
Display item, if one was specified
Situation status

You can click on an event in the list, then use the right-arrow key to display columns to the right of the ones shown initially.

To display the **Situation Event Results** workspace, right-click on a situation.

Situation Event Results workspace

The **Situation Event Results** workspace shows the values of the attributes at the time when the situation first became "true" (Initial Situation Values) and at the present time (Current Situation Values). The **Expert Advice** panel at lower-right displays advice for the situation.

Expert advice is currently available only for product-provided situations. The advice is not editable, and when you create a new situation or use a situation created at your site with Tivoli Enterprise Portal, the advice will not be available in the **Expert Advice** panel.

Using workspaces

The workspace is the working area of IZSME, divided into panes to show different views.You can start monitoring activity and system status immediately with the predefined workspaces, or you can create your own workspaces to look at conditions specific to your site.

Workspace characteristics

Every Navigator item has at least one predefined workspace that you can open. Every workspace characteristics such as editable properties and views.

Views

A view is a pane, or frame, in the workspace containing a chart or table showing data from one or more monitoring agents. Other types of views such as the topology view and graphic view can give a broader overview of the network. Specialized view such as the browser view and terminal view are also available. You can increase the number of views in a workspace by splitting a view into two separate views.

The data for a table, chart, or relational table-based topology view is chosen by the query it uses. Collectively, they are called *query-based views*. The query specifies the attributes to include in the view. Although each view uses one query, you can add more views to the workspace, and each can use a different query. The queries can be for different monitoring agents, including those for the Tivoli Enterprise Monitoring Server for showing information that is common to your monitored environment (such as all the managed systems and all the situation events). You can also include queries of JDBC or ODBC data sources by writing custom SQL queries.

Links

The link feature enables you to define a link from one workspace to another. Then you can quickly jump to a related or more detailed workspace to investigate system conditions.

The simplest type of a link originates from the Navigator item: When you right-click that Navigator item, the pop-up menu shows the defined links for the item. Select one to open the linked workspace.

A more specific link originates from a table or from a chart data point to another workspace. Information from one of the attributes in the selected row, bar, pie segment, or plot point is used to determine the content of the target workspace.

You can also define more complex links and use the predefined links that come with your IBM Tivoli Monitoring product.

Navigator level

The monitoring agents available for reporting in a workspace are those assigned to that branch of the Navigator. If you are not sure which monitoring agents are included, do one of the following:

- Expand the branch of the Navigator
- Right-click the Navigator item and select Properties to see which managed systems are assigned.
- Open one of the workspaces at the enterprise, platform, or system level of the Navigator Physical view

This same principle applies to attribute groups. The lowest level of the Navigator Physical view, for example, is the attribute level. The views you can show for the workspaces at that level can draw only from the attribute groups represented by that level. If you were to build a workspace for the **Disk** Navigator item, for example, you could create a chart with data from the **Logical Disk** attributes and another with data from the **Physical Disk** attributes.

Refreshing a workspace

You can refresh the data that is displayed in the workspace on demand or at a set interval.

About this task

IZSME receives monitoring data from monitoring agents whenever you open a workspace that includes query-based views. The default setting for most predefined workspaces is *On Demand*, which means retrieved data remains static until you refresh manually.

Procedure

- To refresh a workspace manually, click the refresh icon . To set a refresh interval, click the menu icon (the three-dot icon at top-right), and select **Refresh Every** and one of the intervals: 30 seconds; 60 seconds; 5 minutes; 15 minutes; 60 minutes; or On Demand. **Note:** You can set the refresh interval, but the setting will be active only for the currently opened IZSME instance. In addition, be aware that refreshing the workspace creates a certain amount of network traffic. The refresh requests travel to the hub monitoring server and then to the monitoring agent. The information is returned by the same route.

What to do next

Be aware that the more frequent the automatic refresh, the more network traffic you create. These requests travel from the portal client to the portal server and to the hub monitoring server before reaching the monitoring agent. They might also pass through a remote monitoring server to reach the monitoring agent. The information is returned by the same route.

Setting a time span to display

IZSME can display data for a period of hours, days, weeks, months, or years, in addition to showing real time data. If historical data collection has been configured for the managed systems you are using, you can display historical data.

About this task

If historical data collection has been enabled, the **Specify Time Span for Query** icon is on the left, just under the title bar in each view (pane) in the current workspace. When you click the icon, you can specify the time span in any of three ways:

- Real time
- Real time plus Last *n* Hours (maximum 48)
- Last *n* Hours/Days/Weeks/Months/Quarters/Years (maximum 32 years)

The **Real time plus Last** option is enabled for the bar chart, plot chart, and area chart. If you are working with tabular data, this option is not available.

The **Cancel** button discards any changes and closes the **Choose the time span** pane.

The **Apply** button applies your settings.

Any changes you have made to the settings will be reset (discarded) when you leave the current workspace.

For more information, see Overview of historical data collection and reporting.

Using workspace filters

Workspace filters let you narrow down the information displayed in the **Enterprise Networks** view.

Procedure

1. Log in and open IZSME.
2. From the **View** menu in the Navigator at top-left, select the **Enterprise_Networks** navigator tree.
3. From the **Enterprise Networks Navigation** view at the top-left, select any row containing text that ends with `Find`, such as **Enterprise Connections Find**. Click on the icon to the left of the name, or right-click on the name itself and select **Link to** > **Enterprise Connections Find** (or the name you have selected), to display the **Workspace filters** panel.
4. Fill in at least one filter value. The asterisk (*) that initially appears allows you to specify a partial search term, with the asterisk serving as a wildcard. For example, if you wanted to search all System IDs beginning with R, you would enter R*.
5. Submit the dialog by selecting **Apply**. Data will be displayed in the workspace views using the filters you entered.

Launching directly to a workspace

An application can launch IZSME and go directly to a workspace you are interested in. This saves time, by allowing you to go directly to a workspace you use frequently, instead of having to navigate to the workspace after you log into IZSME.

Procedure

1. Select the link, button, or other control that launches IZSME from the application.
2. If prompted, log into Zowe with your username and password. IZSME will open automatically.
3. Depending on the configuration of your site, you may see the following message: **External Launch: There is more than 1 TEPS configuration match found for launch data provided. Choose any configuration to proceed.** Select from the **Server** drop-down menu above the message, choose the TEPS you want to use, and complete the login procedure with your IZSME username and password. You will be taken directly to the workspace that has been set up to launch from your application, or to a navigation tree from which you can choose the path to the workspace.

Launching directly to a Situation Event Result workspace

Applications can launch IZSME and go directly to a Situation Event Result workspace you are interested in, instead of requiring you to navigate there each time.

About this task

If you have an application outside IZSME, for example, Service Management Unite, that receives situation event data from OMEGAMON, the application can be coded to launch IZSME and go straight to that Situation Event Results workspace.

The workflow is similar to right clicking on a situation in the IZSME situation event console, then selecting a situation from the list that appears.

Procedure

1. Select the link, button, or other control that launches IZSME from the application.
2. The direct launch can be set up to go to the Zowe desktop or to go directly to IZSME. If prompted, log into Zowe with your username and password; IZSME will start automatically.
3. Depending on the configuration of your site, you may see the following message: **External Launch: There is more than 1 TEPS configuration match found for launch data provided. Choose any**

configuration to proceed. Select from the **Server** drop-down list above the message, choose the TEPS you want to use, and complete the login procedure with your username and password for IZSME. Applications can be configured to launch IZSME at one specific situation, or to give you choices based on different views (for example, **Physical** or another view defined by your administrator). In the latter case, the **Select situation** panel will be displayed; this lets you navigate to a situation. The panel has columns for Severity, Impact, and other criteria you can use to determine the situation you want to view. Once you have selected the situation, the **Navigator** will show the navigation tree down to the situation displayed, and the **Initial Situation Values**, **Current Situation values**, **Command View**, and **Expert Advice** panels will be displayed.

Take Action from the Navigator, Situations and Workspaces

Take Action lets you enter a predefined command and run it on any system in your managed network, in response to conditions monitored by the OMEGAMON products in your environment.

Predefined actions might include canceling a Db2 thread, purging CICS tasks, starting or stopping an MQ channel, or other maintenance actions frequently taken to keep systems running.

Some monitored applications provide predefined **Take Action** commands. You can customize those commands in Tivoli Enterprise Portal and create command definitions of your own, then invoke them on the system you choose. Customized Take Action commands cannot be created in IZSME, but any customized Take Action commands you have created in Tivoli Enterprise Portal will be accessible in IZSME.

You can access **Take Action** from the **Navigator**, the **Situation Event Console**, or a workspace view, by right-clicking an item in the **Navigator**, a situation in the **Situation Event Console**, or a task in a workspace, then selecting **Take Action**.

Choose one of the available predefined actions from the **Action to execute** field. This is the action that will be sent to the destination system(s).

The **Command** field shows the actual command this action will send to the system.

Some actions will have an **Arguments and values** section, with one or more argument fields. These allow you to enter a value, such as a process ID, to be used with the command sent to the destination system(s). For some commands, there will be several argument fields that allow you to specify values for the arguments to be entered along with the command.

In the **Destination systems** field, you can choose one or more of your managed systems, and have the command sent there.

After you submit the action, the **Action status** panel shows the progress and outcome of the action:

- **Destination**: The system(s) to which the command was sent.
- **Status**: The outcome of the command (complete, in progress, failure, etc.)
- **Return code**: The return code. A code of 0 indicates success.
- **Result**: A message describing the outcome, for non-zero (failure) return codes.

If there are no actions available, either predefined or custom created at your site, the **Take Action** panel will be empty.

Purging CICS tasks

If you are using OMEGAMON for CICS, you can navigate to the Transaction Analysis workspace view and purge (including force purge) one or more CICS tasks.

From the Navigator, open a CICS region, then select **Transaction Analysis**. A list of tasks appears in the workspace view.

Using Purge selected tasks

You can select one or more tasks, right-click, then choose **Purge selected task(s)**. A confirmation box will appear, from which you can proceed with the purge (PURGE TASK) and, optionally, specify that you want to perform a force purge. Keep in mind that forcing the purge will purge the tasks even if data integrity cannot be maintained. Normally, it's best to try a PURGE, which will only purge if data integrity can be maintained, before performing a force purge.

Using Take Action to purge tasks

You can also use **Take Action** to purge CICS tasks. From **Transaction Analysis**, select a task (**Take Action** can only be used with one task), right-click, then choose **Take Action**. The **Take Action** panel will appear; in the **Action to execute** field, select **Purge Task**.

Troubleshooting

This section contains information on common problems and solutions related to installing and configuring IBM Z Service Management Explorer.

Issue with plug-ins

The information below describes what to do when a plug-in cannot be found.

Issue with nodeServer.sh

The information below describes an issue with the nodeServer.sh shell.

Node: not found
You may receive this message while running `./nodeServer.sh`.

Solution: Add `NODE_HOME` to your `.profile` or in your environment.

Issues with Zowe Login

The topics below describe issues that may occur when logging into Zowe.

Authentication failed for 1 types. Types: ['zss"]
Possible causes include the following:

- Wrong username/password
- zssServer is not running. Contact your Zowe administrator.
- ZIS server is not running. Contact your Zowe administrator.
- Configuration/security problems relating to zssServer and ZIS server. Contact your Zowe administrator.

Login fails with no error message, original login reappears.
This is unlikely to happen when you first point your browser at the Zowe web server, but can happen if your Zowe desktop has been up for a while and the session timed out.

It can also happen if your Zowe server is using a certificate that is not considered secure by your browser. Some browsers will periodically force you to re-approve certificates that the browser considers insecure.

Check that the Zowe web server is running and that your browser is accepting the Zowe certificate. The easiest way to do this is to "hard" reload the page (Ctrl-Shift-R), so it will not use the browser cache. If the page fails to reload, that means your web server is not available to your browser.

Gathering other log and output data

The JavaScript console and Zowe application server logs are useful sources of diagnostic information.

JavaScript output is accessed differently in each of the supported browsers:

- For Chrome, see How to Open Google Chrome's JavaScript Console.
- For Firefox, see Debugging JavaScript.
- For Microsoft Edge, see Console.
- For Safari, see Safari Developer Tools.

The Zowe log verbosity determines how much detail is shown in the logs. Verbose logging creates large log files and may slow down performance, but provides more information that can help you troubleshoot a problem.

For information about the Zowe logs, see Log output from the Zowe Application Server. For information on setting the log verbosity, see Logging verbosity.

“Items per page” may differ from the number of bars in Bar chart

"Items per page" reflects the number of rows returned. The number of bars displayed reflects the number of unique "formatted category axis values" were in the returned result. If the "items per page" differs from the number of bars in the chart, consider adding filtering, or using a plot chart with Attribute(s) across multiple rows.

In some cases, maximizing your IZSME view, or zooming out (Ctrl-minus), the “items per page” indicator will not appear, when all the bars fit in the chart view.

IZSME Messages

All messages have a severity code printed as the last character of the message ID.

Table 2. Error message severity codes

Severity Code	Description
I	Information message. No user action required.
W	Warning message. Results may not be as expected.
E	Error message. Some may be user-correctable, read the User Response to determine the course of action.

IUWA001E **Could not parse `queryhandler.data` (/tepUser?userId=<username>) response. HttpReturnCode: <code>. Response: <body>**

Explanation:
An unexpected error occurred during parsing response.

User response:
Contact your system administrator.

IUWA002E **Error occurred while checking that userID `<username>` exists in CT/DB. HttpReturnCode: <code>. Response: <body>**

Explanation:
An unexpected error occurred during parsing response.

User response:
Contact your system administrator.

IUWA003E **Incorrect username or password**

Explanation:
An incorrect username or password was provided when attempting to logon to IZSME.

User response:
Provide correct username and password.

IUWA004E **User ZOWE user id: <zowe_user_id>, IZSME user id: <izsme_user_id>, tepsConfigurationId: <teps_configuration_id> failed to run SQL1 query <sql1_query> to get data from table <table_name>. Table requires one of the following affinities: <table_affinities>, but affinities allowed for user are <user_affinities>**

Explanation:
User cannot run SQL1 query for a certain table, because the table's application is not in the list of allowed applications for `userProblem` requesting allowed affinities for the user.

User response:
Contact your system administrator to change the allowed applications list for this user.

IUWA004W **RBAC error. You have no permissions**

Explanation:
RBAC is enabled. You have no permissions to execute an action or view data.

User response:
Contact your system administrator or check your RBAC profile settings.

IUWA005E **Failed to retrieve configuration. Reason: <reason>**

Explanation:
Problem retrieving TEPS configuration from JSON. Possible reason: Failed to decrypt password with the given key set.

User response:
Contact IBM software support.

IUWA009I **Logon attempt { user, izSMEInstanceId, sessionID, tepsConfigurationId, status, userToken }**

Explanation

Information about logon attempts. Valid status values: SUCCESS, FAILED, ERROR. The following is an example of the message:

```
2021-11-10 14:01:04.504 <ZWED:42144> juser INFO
(com.rs.tep.queryhandler:logonattempts,logonAttemptsLogger.js:19) IUWA009I Logon attempt {
  user: 'sysadmin',
  izSMEInstanceId: 'K27OfOuSK0JZOXHgvdXE',
  sessionID: 'Uow68usK7kk-3BIPe77ods7I57E3BYC9',
  tepsConfigurationId: '0904fd16-655a-4ec3-8ac2-e6c3ea8b70af',
  status: 'SUCCESS',
  userToken: '913932'
}
```

User response:
None required.

IUWAF001E **Fail while requesting user affinities from service "queryHandler.data"**

Explanation:
Problem requesting allowed affinities for user from `queryHandler` dataservice.

User response:
Contact IBM software support.

IUWAF001W **Not found affinities for product <product>**

Explanation:
Problem requesting corresponding affinities for product.

User response:
Contact your system administrator.

IUWAF002W **Failed to get user affinities**

Explanation:
Problem requesting allowed affinities for user.

User response:
Contact IBM software support.

IUWC001E **Cannot connect to database. Check configuration and try again later.**

Explanation:
An incorrect database address, port, username or password was provided in configuration. This message appears during login.

User response:
Ensure that you have provided a valid database address, port, username and password.

IUWC001W **Wrong configuration for 'ctds' dataservice**

Explanation:
An incorrect database address, port, username or password was provided in configuration. This message appears during login to IZSME.

User response:

Ensure that you have provided a valid database address, port, username and password.

IUWC002E **Data for TEMS testing not correct**

Explanation:
An incorrect Tivoli Enterprise Monitoring Server (TEMS) address or port was provided in the configuration.

User response:
Ensure that the TEMS address and port are valid.

IUWC002W **Error occurred while parsing ctds response body. Body: <body>**

Explanation:
Unexpected error during parsing response.

User response:
Contact your system administrator.

IUWC003E **Check the data, username and password for the database.**

Explanation:
An incorrect database address, port, username or password was provided in configuration. This message appears during a test of the Db2 connection.

User response:
Ensure that the database address, port, username and password are valid.

IUWC003W **CTDS respond with error: <error>**

Explanation:
Unexpected error during parsing response.

User response:
Contact your system administrator.

IUWC004E **CTDS dataservice is configured wrong. Check it and try again.**

Explanation:
Incorrect TEMS address or port was provided in configuration.

User response:
Ensure that you have provided a valid TEMS address and port.

IUWC005E **Could not connect to database. Reason: <reason>**

Explanation:
An incorrect database address, port, username or password was provided in configuration. Key set (public-private pair and AES-256) is not generated or was modified.

User response:
Ensure that the database address, port, username and password are valid.

IUWC005W **Error saving configuration <err>**

Explanation:
Configuration was not saved successfully.

User response:
Contact your system administrator.

IUWC006I **Current log level is <response>**

Explanation:
System shows the configured log level.

User response:
None required.

IUWC007E **Cannot get log level message <error>**

Explanation:

Incorrect call `getLogLevel` method or cannot get log level message.

User response:
Ensure that RBAC is set to **true**.

IUWC007W **Error parsing request body to `TepsConfiguration`**

Explanation:
Configuration was not parsed successfully.

User response:
Contact your system administrator.

IUWC008E **Cannot set log level message**

Explanation:
Incorrect call `setLogLevel` method or cannot set log level message.

User response:
Check parameters and ensure that RBAC is set to **true**.

IUWC009I **Set log level successfully `<response>`**

Explanation:
Set new log level and show result.

User response:
None required.

IUWC009W **Error retrieving configuration `<err>`**

Explanation:
The configuration was not retrieved successfully.

User response:
Contact your system administrator.

IUWC010W **Configuration path is not set**

Explanation:
The configuration path has not been specified.

User response:
Contact your system administrator.

IUWC011W **Configuration file does not exist**

Explanation:
The configuration file has not been created.

User response:
Contact your system administrator.

IUWC012W **Problem parsing configuration file `<parseError>`**

Explanation:
An error occurred parsing the configuration file.

User response:
Contact your system administrator.

IUWC013W **TEPS configuration with id: `<id>` not found**

Explanation:
The configuration has not been specified.

User response:
Contact your system administrator.

IUWC015W **Database type <dbType> is not supported**

Explanation:
The specified database type is not supported.

User response:
Contact your system administrator.

IUWC016W **<dbType> database is not configured properly. Configuration id <tepsConfigurationId>**

Explanation:
The database is not configured properly.

User response:
Contact your system administrator.

IUWC017E **Failed to prepare decrypted AES-256 key. Reason: <error>**

Explanation:
An error occurred generating keys during installation, or the private key file was replaced.

User response:
Contact your system administrator.

IUWD001E **Error on getting SQL queries. No queries for execution.**

Explanation:
There are no queries that can be executed.

User response:
Check to see if there are queries assigned to the table.

IUWD002E **Error occurred while getting SQL queries. Omit this error and continue with other requests. Error message: <error>.**

Explanation:
Error occurred getting SQL queries.

User response:
None required.

IUWD003E **Error occurred while fetching the table data. Omit this error and continue with other requests. Error message: <error>.**

Explanation:
Error occurred fetching data.

User response:
None required.

IUWD004W **Empty REQUEST.KFWQUERY.appl, <productCode> product is used instead.**

Explanation:
Application for current request is empty, other suitable product code will be used.

User response:
None required.

IUWE001E **TOKEN function call failed: tokens = <tokens>, delims= <delims>, token=<token>.**

Explanation:
Token string contains fewer tokens than token index.

User response:
If you recently changed an expression manually, review the expression to check for accuracy. Otherwise, contact your system administrator.

IUWE002E **Check this TOSTR function call: value= <value>, radixAttr = <radixAttr>.**

Explanation:
Function TOSTR is used for converting numbers to strings. Value type is not a number.

User response:
If you recently changed an expression manually, review the expression to check for accuracy. Otherwise, contact your system administrator.

IUWE003E **Non-string argument of TOINT function: <value>**

Explanation:
Function TOINT is used for converting strings to numbers. Value type is not a string.

User response:
If you recently changed an expression manually, review the expression to check for accuracy. Otherwise, contact your system administrator.

IUWE004E **No type defined for node. id: <id>, name: <name>**

Explanation:
Missing NODE type in tree path. Problem in tree topology.

User response:
Contact your system administrator.

IUWE006E **ReplaceVars: Cannot replace variable <varName> in string: <str>**

Explanation:
Variable from expression is not found.

User response:
If you recently changed an expression manually, review the expression to check for accuracy. Otherwise, contact your system administrator.

IUWE007E **<Expression> <EvalResult> <EvalError>**

Explanation:
Unexpected error during expression evaluation.

User response:
If you recently changed an expression manually, review the expression to check for accuracy. Otherwise, contact your system administrator.

IUWE008E **Error checking link availability: <error>**

Explanation:
Unexpected error during link availability check.

User response:
If you recently changed an expression manually, review the expression to check for accuracy. Otherwise, contact your system administrator.

IUWI001E **Required installation parameter not found: <Parameter_Name>**

Explanation:
Required parameter was not set while calling installation jobs.

User response:
Provide requested parameter <Parameter_Name>.

IUWI002E **Installation folder does not exist: <Folder_Name>**

Explanation:
The folder that was passed as the parameter for installation does not exist.

User response:
Check the path and provide the correct value, or create the folder shown in the error message text.

IUWI003W **Optional parameter '<Parameter_Name>' not set, using default value '<Value>'**

Explanation:
An optional parameter was not provided; the default value is being used.

User response:
None required, but check to see if this parameter should be specified instead of the default value.

IUWI004E **Wrong parameter format. Correct format: <Format>**

Explanation:
The installation parameter failed a format check.

User response:
Review the parameter's format and correct so that it uses the format shown in the message.

IUWI005E **Errors found during installation configuration. Exiting**

Explanation:
Errors occurred during configuration verification.

User response:
Review the log and address installation errors.

IUWI006E **Unknown/Unsupported version of ZOWE: <ZOWE_Version>**

Explanation:
The ZOWE version number provided is not currently supported, or was not registered at installation.

User response:
Review the version number and contact IBM software support if necessary.

IUWI007E **Target folder already contain unpaxed IZSME files. Actions: <Actions_Description>.**

Explanation:
The target folder for unpax already contains IZSME files.

User response:
Follow the actions description provided in the message, or delete old IZSME files from the previous installation.

IUWI008E **Found old Zowe version, major <IUW_SERV_ZOWE_H_VER> , minor <IUW_SERV_ZOWE_M_VER>. Supported versions: Zowe <ZOWE_VER> and above. If you wish to use an earlier version, results will be unpredictable.**

Explanation:
The indicated Zowe version is not supported.

User response:
Review the provided version number. Contact IBM Software Support if necessary.

IUWI009I **Found javaHome property in pluginConfig.json. Checking Java executable <PLUGIN_JAVA_HOME_EXECUTABLE>.**

Explanation:
Displays java home property.

User response:
None required.

IUWI010W **javaHome property isn't specified in pluginConfig.json.**

Explanation:
The `javaHome` property is missing.

User response:
Add this property to the `pluginConfig.json`.

IUWI011I **ZOWE_JAVA_HOME environment variable is specified. Checking Java executable <ZOWE_JAVA_HOME_EXECUTABLE>.**

Explanation:
Informational message.

User response:
None required.

IUWI012W **ZOWE_JAVA_HOME environment variable isn't specified..**

Explanation:
This variable is missing.

User response:
None required. For more information on the Zowe environment, see Installing Zowe on z/OS.

IUWI013I **JAVA_HOME environment variable is specified. Checking Java executable <ZOWE_JAVA_HOME_EXECUTABLE>.**

Explanation:
Informational message.

User response:
None required.

IUWI014W **JAVA_HOME environment variable isn't specified..**

Explanation:
This variable is missing.

User response:
None required. For more information on the Zowe environment, see Installing Zowe on z/OS.

IUWI015I **Checking 'java' in PATH.**

Explanation:
Informational message.

User response:
None required.

IUWI016E **Failed to find Java.**

Explanation:
Failed to find Java in PATH.

User response:
Check to verify that Java exists in PATH.

IUWI017I **Java information: $(<$JAVA_EXECUTABLE_TO_CHECK_VERSION> version).**

Explanation:
Java version information is displayed.

User response:
None required.

IUWI018W **Version for Java <JAVA_EXECUTABLE_TO_CHECK> is not supported. Required version 1.8 and higher.**

Explanation:
The current Java version is not supported.

User response:
Install Java 1.8 or later.

IUWI019I **Java version $(<$JAVA_EXECUTABLE_TO_CHECK_VERSION> version) is supported.**

Explanation:
Java version information is displayed.

User response:
None required.

IUWI020W **Unable to find java executable at $ (<$JAVA_EXECUTABLE_TO_CHECK_VERSION> version).**

Explanation:
Java executable is missing.

User response:
Contact your system administrator.

IUWI021I **Starting generate security keys**

Explanation:
Security keys are being generated.

User response:
None required.

IUWI022E **Specified path <path_value> is incorrect**

Explanation:
Install process cannot be run with incorrect <path_value>.

User response:
Correct the installation path and run the install process again.

IUWI023E **Error occurred while trying to create subdirectories for <key_path>**

Explanation:
Install process could not create subdirectories for <key_path>.

User response:
Make sure the installing user ID has permissions to create the subdirectories for key_path.

IUWI024E **Could not generate key string. Key was not initialized.**

Explanation:
Install process could not generate key string..

User response:
Correct the key_path and run the install process again.

IUWI025E **Error occurred while writing key into the <key_path>**

Explanation:
Install process could not generate key string..

User response:
Check that the installing user ID has write permission for the file and path and that the file has not been opened by another process.

IUWI026E **Error occurred while encrypting AES-256 key using public key. <error> <error>**

Explanation:
AES-256 key could not be encrypted using public key.

User response:
Contact your system administrator.

IUWI027I **Key generation completed successfully!**

Explanation:
Information message.

User response:
None required.

IUWI027W **Unknown option: <option>**

Explanation:
The option supplied is unknown for install script.

User response:
Check the installation instructions for the valid options.

IUWI028I **Start setting permissions <CHMOD_ACCESS_PERMISSIONS> for key files.**

Explanation:
Access permissions will be changed for key files.

User response:
None required.

IUWI029I **Finish setting permissions.**

Explanation:
Access permissions have been changed for key files.

User response:
None required.

IUWI030E **Error occurred while generating security keys.**

Explanation:
An error occurred during security key generation.

User response:
Contact your system administrator.

IUWI031I **Option – `forceGenerateKeys` specified. Key files will be overwritten.**

Explanation:
Current key files will be overwritten.

User response:
None required.

IUWI032E **Some keys already exist. Changing keys will mean all already encrypted passwords cannot be decrypted. If you want to overwrite keys use `--forceGenerateKeys` option..**

Explanation:
Conflicts exist with current key files.

User response:
If you want to overwrite keys, run install process with `--forceGenerateKeys`. Otherwise, contact your system administrator.

IUWI033E **Option `--izsmeUnpaxLocation` is required.**

Explanation:
The install process requires this option.

User response:
Rerun install process with all required options.

IUWI034E **Directory <IZSME_UNPAX_LOCATION> specified in `--izsmeUnpaxLocation` doesn't exist.**

Explanation:

The install process cannot unpack ISME into the passed directory.

User response:
Check to make sure the directory exists, then check the value passed to the install script.

IUWI036I	**Backup permission for <PUBLIC_KEY_PATH> to <PUBLIC_KEY_PERMISSION_BACKUP>.**

Explanation:
Informational message.

User response:
None required.

IUWI037I	**Backup permission for <PRIVATE_KEY_PATH> to <PRIVATE_KEY_PERMISSION_BACKUP>.**

Explanation:
Informational message.

User response:
None required.

IUWI038I	**Backup permission for <AES256_KEY_PATH> to <AES256_KEY_PERMISSION_BACKUP>.**

Explanation:
Informational message.

User response:
None required.

IUWI039I	**Option `--forceLessSecureCrypto` specified. Key files permissions would be set to 440.**

Explanation:
Key files permissions will be set to 440.

User response:
None required.

IUWI040W	**Could not find Java executable in PATH**

Explanation:
The Java executable was not found.

User response:
Contact your system administrator.

IUWJ001E	**Live CT/DB Adapter has failed <attempts count> times since in the last <time range> minutes. To prevent excess resource consumption it will not be auto-restarted until Zowe is restarted.**

Explanation:
Java Sidecar was unavailable for external reasons, and the limit on auto-restart attempts was exceeded.

User response

Contact your system administrator. There may be issues with the server environment; Java Sidecar may not have enough RAM available.

Module: Java Sidecar

IUWJ002E	**Failed to read plugin configuration file in <configFolder> directory. Use default parameters.**

Explanation:
The plug-in configuration file cannot be read in the current configuration folder.

User response:
Check to make sure the configuration file exists and is in the configuration folder.

IUWJ002W **Java Sidecar is down. Going to start it again...**

Explanation:
Java Sidecar was unavailable. It will be re-started automatically.

User response
None required.

Module: Java Sidecar

IUWJ004W **Could not find executable via config file, ZOWE_JAVA_HOME, or JAVA_HOME, will use Java from PATH/path if possible.**

Explanation:
Java home variable cannot be found in current config file, will use Java from PATH/path.

User response:
None required.

IUWJ005I **PATH='<PATH>'; path='<path>';**

Explanation:
The Java Sidecar path is displayed..

User response:
None required.

IUWJ006I **About to spawn java CT/DB Adapter with class = <javaClassname>, with classpath = <javaClasspath>, and with port = <javaListenerInitialPort>, at address <javaListenerAddress> using executable <javaExecutable>**

Explanation:
This message provides information about Java Sidecar.

User response:
None required.

IUWL001E **Error on filter assigns clone <error>**

Explanation:
Object cannot be cloned.

User response:
Contact your system administrator.

IUWL002E **Error on expression augmentation <error>**

Explanation:
Expression cannot be parsed.

User response:
Contact your system administrator.

IUWN001E **Unable to parse response while getting information for origin nodes. Inner message: <error>**

Explanation:
Error parsing response.

User response:
Contact your system administrator.

IUWN001W **Failed to get applications which are allowed for user <username>. Inner error: <error>**

Explanation:
Failed to get applications.

User response:
Contact your system administrator.

IUWN002E **Failed to get info for origin nodes. Inner error: <error>**

Explanation:
Error parsing information.

User response:
Contact your system administrator.

IUWQ001E **Request to CT/DB Adapter failed. This service may not be properly configured, or servers that it depends on are not running.**

Explanation:
Request failed.

User response:
Contact your system administrator.

IUWQ002E **Request failed. "level" parameter is required (number between 0 and 5)**

Explanation:
Incorrect log level value.

User response:
Change the log level to the correct value.

IUWQ003E **`handleJavaLogLevelRequest` failed. Error: RBAC is disabled.**

Explanation:
Could not change log level.

User response:
Enable Role Based Access Control.

IUWQ004E **`handleJavaLogLevelRequest` method `<method>` not implemented.**

Explanation:
Log level request method is not implemented.

User response:
Contact your system administrator.

IUWQ005E **Failed to launch java CT/DB Adapter. Check that java 8 or higher is in the path of userid of the Zowe Application Server (currently <username>). Error=<error>.**

Explanation:
The current version of Java is not correct.

User response:
Check to ensure that Java 8 or later is in the path. If the error persists, contact your system administrator.

IUWQ005W **QueryHandler instance <instanceId>. Socket encountered error: <error.message>.**

Explanation:
The Query Handler encountered an error.

User response:
Contact your system administrator.

IUWQ006W **Failed to create query handler with new resources. Error: `<error>`**

Explanation:

Failed to use new SDA jars. There may be a problem copying jars, or a failure to configure or start the Java process.

User response
Check to ensure that enough disk space is available and that environment variables are set correctly.

Module: SDA

IUWQ007I **Query handler is going to use existing resources folder `'jars/classpath.<id>'`**

Explanation:
The necessary SDA jars were prepared and will be used in the Java classpath.

User response
None required.

Module: SDA

IUWC008E **Cannot set log level message**

Explanation:
Incorrect call `setLogLevel` method or cannot set log level message.

User response:
Check parameters and ensure that RBAC is set to **true**.

IUWQ008I **Started new `queryHandler` with id=`<id>`**

Explanation:
New query handler has started.

User response
None required.

Module: SDA

IUWC008W **Error retrieving configuration before saving `<err>`**

Explanation:
Configuration was not retrieved successfully.

User response:
Contact your system administrator.

IUWQ010E **Cannot get config instance**

Explanation:
IZSME is not able to access configuration settings.

User response
Contact IBM software support.

Module: Query Generator

IUWQ020E **queryHandler starting is not finished, id=<id>, status <status>, detail status <detail status>**

Explanation:
Query handler is starting and is not ready to process requests to TEMS.

User response:
If this problem occurs regularly, contact IBM software support and provide IZSME logs.

IUWQ021E **queryHandler is shutdown, id=<id>, status <status>, detail status <detail status>**

Explanation:
Query handler is shut down. IZSME cannot communicate with TEMS.

User response:
Contact customer support and provide IZSME logs.

IUWQ022E **Unknown queryHandler status, id=<id>, status <status>, detail status <detail status>**

Explanation:
Query handler status is not recognized. This is an error in IZSME internals and should not normally occur.

User response:
Contact customer support and provide IZSME logs.

IUWQ023E **Unexpected query handler detail status, query handler id=<id>, detail status <detail status>**

Explanation:
Query handler detail status is not recognized. This is an error in IZSME internals and should not normally occur.

User response:
Contact customer support and provide IZSME logs.

IUWQ024I **Query handler detail status update, id=<id>, detail status <detail status>**

Explanation:
Query handler changed status.

User response:
None required.

IUWQ101E **Cannot load table definitions for table $<tableName>**

Explanation
Query Generator failed to retrieve table definitions. Currently, node server tries to take it from SDA directory and uses `ctds_common` tables directory as failback. Possible reasons:

- broken SDA
- broken query definition in workspace definition

User response
None required.

Module: Query Generator

IUWQ102E **Cannot find column metadata in table definitions**

Explanation:
Query Generator failed to find column metadata in table definitions. Possible reason: invalid query definition in workspace definition..

User response
Correct the query definition.

Module: Query Generator

IUWQ103E **Cannot find TDW Warehouse column name for column $<colName>**

Explanation:

Column metadata in table definitions does not contain information about TDW alias for the column listed.

User response
Contact your system administrator.

Module: Query Generator

IUWQ104E **Multi-table queries are not supported**

Explanation:
Multi-table queries are not supported by the application.

User response
Limit your query to a single table.

Module: Query Generator

IUWQ105E **HUB timestamp is expected but not provided**

Explanation:
Caller of `QueryGenerator` did not provide it with `hubTemsTimestamp`.

User response
Contact IBM Software support.

Module: Query Generator

IUWS0001E **Could not read file: <path> Internal error message: <error>**

Explanation:
Problem reading `metadata.json`.

User response
Contact IBM software support.

Module: SDA

IUWS0002E **Could not parse metadata file: <path>**

Explanation:
Problem reading `metadata.json`.

User response
Contact IBM software support.

Module: SDA

IUWS0003E **Could not get files from directory: <path>. Internal error <error>**

Explanation:
Problem reading products directory.

User response
Contact your system administrator.

Module: SDA

IUWS0004E **Could not get information for file: <path>.**

Explanation:
Failed to read information about file in products directory.

User response
Contact your system administrator.

Module: SDA

IUWS0040W **Could not find TPS resource for product <product>. Filter agent: ORIGINNODE - <originnode>, agent version - <version>, local version - <version>.**

Explanation:
Failed to find the TPS resources listed.

User response
Contact IBM software support.

Module: SDA

IUWS001W **Could not get metadata of existing SDA files. Internal error: <error>.**

Explanation:
Problem reading some files from filesystem.

User response
None required. The SDA process will try to download the files automatically as if they were missing.

Module: SDA

IUWS005I **Downloaded SDA files metadata <products>.**

Explanation:
The list of successfully downloaded products.

User response
None required.

Module: SDA

IUWS006W **Could not get configuration lilst. Internal error: <error>**

Explanation:
Problem reading `tepsConfigurations.json` file.

User response
Contact your system administrator.

Module: SDA

IUWS007I **Unpacked SDA files <products>**

Explanation:
The list of successfully unpacked products.

User response
None required.

Module: SDA

IUWS008W **Error occurred while getting SDA metadata. Host: <host>. Port: <port>. Internal error: <error>**

Explanation:
An error occurred while retrieving SDA metadata.

User response
Contact your system administrator.

Module: SDA

IUWS010W **Failed to download SDA files <java response>**

Explanation:
An error occurred downloading the products. The response code is not equal to 200.

User response
Contact your system administrator.

Module: SDA

IUWS011I **Request download for <products>**

Explanation:
If the product is new, or there is a newer version available, a new download request is sent.

User response
None required.

Module: SDA

IUWS012W **Failed to unpack SDA files <java response>**

Explanation:
An error occurred unpacking the products. The response code is not equal to 200.

User response
Contact your system administrator.

Module: SDA

IUWS013W **Downloaded SDA files failed! Internal error: <error>**

Explanation:
An error occurred completing an HTTP request to the Java process.

User response
Contact your system administrator.

Module: SDA

IUWS014I **Unpack SDA files done**

Explanation:
Unpack process is complete. Errors and unpacked products are cached.

User response
None required.

Module: SDA

IUWS015W **Unpack SDA files filed! Internal error: <error>**

Explanation:
Problem completing HTTP request to the Java process.

User response
Contact your system administrator.

Module: SDA

IUWS016I **Request unpack for <products>**

Explanation:
Downloaded products should be unpacked.

User response
None required.

Module: SDA

IUWS017I **Downloaded list is empty**

Explanation:
No products have been downloaded.

User response
None required.

Module: SDA

IUWS018I **Unpacked list is empty. No need to replace query handler**

Explanation:
The query handler should be replaced only if at least one product is unpacked (is new or has a higher version).

User response
None required.

Module: SDA

IUWS019W **No configurations were retrieved**

Explanation:
No configurations are retrieved from `tepsConfigurations.json` file.

User response
Set up at least one entry in the configuration file.

Module: SDA

IUWS020I **Nothing found to unpack**

Explanation:
No products were unpacked in the Java process.

User response
None required.

Module: SDA

IUWS021W **`getResourceJarsPathList`: Couldn't read directory <directory>. Error: <error>**

Explanation:
Problem reading `jars` directory.

User response
Contact your system administrator.

Module: SDA

IUWS022W **`copyDirectory`: Couldn't read directory <directory>. Error: <error>**

Explanation:
Problem reading source directory for copying.

User response
Contact your system administrator.

Module: SDA

IUWS023W **removeDirectory: Couldn't read directory <directory>. Error: <error>**

Explanation:
Problem reading directory for removal.

User response
Contact your system administrator.

Module: SDA

IUWS024W **getResourcesClasspath: Cannot load product resources: <error>**

Explanation:
Problem accessing product resource jars. Fallback jars will be used. Possible reasons: No SDA downloaded, or not enough disk space for copying.

User response
None required. If the problem recurs consistently, contact your system administrator.

Module: SDA

IUWS025W **updateSdaMetadata: failed to write SDA-metadata file. Error: <error>**

Explanation:
Problem writing to the SDA metadata file.

User response
Contact your system administrator.

Module: SDA

IUWS026I **Classpath directory <dir> doesn't exist. Starting to copy JARs from 'current'.**

Explanation:
Copying downloaded SDA jars to a new classpath directory.

User response
None required.

Module: SDA

IUWS027I **Query handler will use existing classpath directory: <dir>.**

Explanation:
The necessary SDA jars have been prepared and will be used in the Java classpath.

User response
None required.

Module: SDA

IUWS028W **Failed to create <path_to_dir> directory.**

Explanation:
Error creating the directory.

User response
Contact your system administrator.

Module: SDA

IUWS029I **Classpath directory with JARs is ready**

Explanation:
The directory with SDA jars `java/classpath.<id>` is ready.

User response
None required.

Module: SDA

IUWS030W **`removeDirectory`: Failed to remove directory `<directory>`**

Explanation:
Error removing directory.

User response
Contact your system administrator.

Module: SDA

IUWS031W **Failed to remove file. Path: `<path>`. Error: `<error>`**

Explanation:
Problem removing file during directory removal.

User response
Contact your system administrator.

Module: SDA

IUWS032W **Failed to parse SDA-metadata. Error: `<error>`**

Explanation:
The `sda/metadata.json` file has wrong JSON format.

User response
Contact IBM software support.

Module: SDA

IUWS033I **`SdaMetadata` retrieved from `<host>:<port>, <sdaMetadata>`**

Explanation:
Informational message.

User response
None required.

Module: SDA

IUWS033W **Failed to read SDA-metadata file. Error: `<error>`**

Explanation:
Error reading `sda/metadata.json` file.

User response
Check to see if the JSON metadata file exists. If it does not, no action is required. If the file does exist, contact IBM software support.

Module: SDA

IUWS034W **Cannot inject column description from prop file: no <columnName> column found in JSON definitions in <tableName> table.**

Explanation:
Metadata may be corrupted.

User response
Contact IBM software support.

Module: SDA

IUWS035E **Failed to inject properties from <fileName>. Error message: <error>**

Explanation:
JSON metadata generator failed to process the properties file to inject table/column descriptions. The `.properties` file may be missing.

User response
Check to see if a `.properties` file exists.

Module: SDA

IUWS035W **Unknown error occurred <error>**

Explanation:
Unknown error.

User response:
Contact IBM Software Support.

IUWS045W **Failed to update <path> for product <product>. Error message: <error>**

Explanation:
Problem writing to `metadata.json` for product.

User response
Contact your system administrator.

Module: SDA

IUWS051E **Error on package.xml search in <product_dir> <error>**

Explanation:
Search error.

User response:
Contact your system administrator.

IUWS052E **Expected 1 package.xml file. Found <count> package.xml files in <product_dir>**

Explanation:
Expected one package.xml file. Found <count> package.xml files in <product_dir>

User response:
Contact your system administrator.

IUWS101I **Request file from host: <host> port: <port> for resource <resource> to save in path: <path>**

Explanation:
Product will be downloaded from HTEMS.

User response
None required.

Module: SDA

IUWS102I **Unpacking jars <products>**

Explanation:
Products will be unpacked.

User response
None required.

Module: SDA

IUWS102W **Failed to download <product_value> product from host <host_value> port <port_value>**

Explanation:
Download failed.

User response:
Contact your system administrator.

IUWS103W **Failed to process unpack request <error>**

Explanation:
Problem unpacking products.

User response
Contact your system administrator.

Module: SDA

IUWS104W **Failed to process download request <error>**

Explanation:
Problem downloading products.

User response
Contact your system administrator or IBM software support.

Module: SDA

IUWS105W **Failed to unpack <product> product <error>**

Explanation:
Problem unpacking product.

User response
Contact your system administrator or IBM software support.

Module: SDA

IUWS106W **Failed to parse request body. Query: <query> <error>**

Explanation:
Problem parsing request in JSON format.

User response
Contact IBM software support.

Module: SDA

IUWS0001E **Could not read file: <path> Internal error message: <error>**

Explanation:
Problem reading `metadata.json`.

User response
Contact IBM software support.

Module: SDA

IUWS0002E **Could not parse metadata file: <path>**

Explanation:
Problem reading `metadata.json`.

User response
Contact IBM software support.

Module: SDA

IUWS0003E **Could not get files from directory: <path>. Internal error <error>**

Explanation:
Problem reading products directory.

User response
Contact your system administrator.

Module: SDA

IUWS0004E **Could not get information for file: <path>.**

Explanation:
Failed to read information about file in products directory.

User response
Contact your system administrator.

Module: SDA

IUWS0040W **Could not find TPS resource for product <product>. Filter agent: ORIGINNODE - <originnode>, agent version - <version>, local version - <version>.**

Explanation:
Failed to find the TPS resources listed.

User response
Contact IBM software support.

Module: SDA

IUWT001E **Problem with getting data from WorkspaceManager service**

Explanation:
INODESTS result set cannot be parsed.

User response:
Contact your system administrator.

IUWT002E **Unable to get products from `inodests`; error: <error>**

Explanation:
Cannot get products from INODESTS.

User response:
Contact your system administrator.

IUWW002E **Problem with getting data from WorkspaceManager service**

Explanation:
There was an issue retrieving data from WorkspaceManager.

User response:
None required.

IUWW003E **Error retrieving workspaces <...>**

Explanation:
There was an issue retrieving data from the workspaces indicated.

User response:
None required.

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