Version 1 Release 1

IBM Z Service Management Explorer User Guide

SC27-9702-00

Note

Before using this information and the product it supports, read the information in “Notices” on page 51.

Last Updated: December 21, 2020

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: http://www.ibm.com/software/tivoli/solutions/service-availability/index.html.

Chapter 1. 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 requires Zowe 1.10 or higher and 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 OMEGAMON for CICS on z/OS
- IBM OMEGAMON for CICS TG on z/OS
- IBM OMEGAMON for DB2 Performance Expert 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 v1.1.3.

Version 1.1.3 - December 2020

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

- You can configure an optional Hot Standby (secondary) TEMS host. See Configuring IZSME.
- Circular and linear gauges are available for display of workspace data.
- You can view simple history data. See Setting a time span to display.
- HTML navigation is supported in IBM Tivoli OMEGAMON for Db2 Performance Expert. For more information, see HTML Navigation.
- IZSME now supports Agent Builder agents.

Product 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 Linux and Windows.

Zowe

IZSME requires Zowe version 1.10 or later. Applying PTFs UO01939 and UO01940 will upgrade Zowe to version 1.10.0.

You can download Zowe here:

https://www.ibm.com/support/knowledgecenter/SSVHRS_1.0.0/download.html

Java

IZSME requires Java version 8 or later.

Node

IZSME requires Node.js version 12 or later.

Web Browser

IZSME works with the current versions of Chrome, Firefox, and Microsoft Edge.

Supported Databases

IZSME currently supports Db2.

Design comparison: IZSME and TEP

IZSME is designed to be familiar to Tivoli Enterprise Portal (TEP) users, with some design differences between the two products.

Server-side column sorting

In both TEP and IZSME, when viewing large amounts of tabular data, only a subset of the rows will be transferred from the server to the client at any given moment, for performance reasons. However, IZSME implements column sorting differently.

- TEP uses client-side sorting, which means that the sort is only applied to the subset of rows that exist in the client. For example, on a descending sort, the first row will have the highest value from the subset of data on the client. This is usually not the highest value in the full dataset.
- IZSME uses server-side sorting, so the sort request is applied to all of the rows, and the top fraction of rows (by default, 100 rows) are sent to the client. For example, in an ascending sort, the entire dataset is sorted and the dataset's highest values shown.

Server-side filtering

In both TEP and IZSME, filters can be applied to tabular data and various types of charts so that only data that conforms to the filter is shown. However, IZSMEuses a different filtering implementation:

- TEP will first transfer a subset of data to the client (for example, 100 records), and then apply the filter to the client-side data resulting, usually, in less data than could be accommodated and with irregular paging.
- IZSME uses server-side filtering, so the filter is applied on the server before sending the data to the client.

Plot charts cover longer timeframe

In both TEP and IZSME, historical data can be plotted on a chart:

- TEP allows a maximum of 24 hours of historical data to be used in the plot chart.
- IZSME allows up to 96 hours of historical data to be used in the plot chart.

Chapter 2. Installation and Configuration

The steps for using SMP/E to install IZSME are described in the Program Directory.

After completing these steps, some additional steps are required for deploying IZSME in a Zowe instance. These are described in the topics that follow. When these steps are done, IZSME will be shown as a plug-in app on the Zowe desktop.

Installing IZSME on z/OS systems

To install IZSME involves first installing Zowe on z/OS, then installing IZSME into a Zowe instance. This topic describes the installation procedure for installing IZSME into a Zowe instance. For details on installing Zowe itself, see Installing Zowe z/OS components.

Note: IZSME requires Zowe version 1.10 or higher.

Be sure to note all the requirements specified as required in Configuring the Zowe Instance for IZSME below, in order to get IZSME installed successfully. For example, disabling node clustering in Zowe is required; the `ZLUX_NO_CLUSTER=1` must be set in the `instance.env` file, or else IZSME will not connect to the database.

Once Zowe has been installed, the next step is to install IZSME itself with SMP/E. The SMP/E package provides a number of sample JCLs in `#tgthlq.SIUWSAMP` that must be run to install IZSME into Zowe instances.

After applying the SMP/E processes described in the IZSME Program Directory, follow the steps below to install IZSME using tools provided with the package. In each case, the JCL will have instructions on how to customize the job before running it.

Note: If you have enabled role-based access control (RBAC), make sure to provide access to the IZSME plugin for all roles that need access by editing the `allowedPlugins.json` file. For details on how to do this, see the Zowe User Guide under Controlling access to applications.

Initial Install

The following jobs are required for the initial (first) installation of Service Management Explorer.

1. **IUWMUNPX**

   This job uses `unpax` to unarchive the IZSME runtime file into the IZSME installation directory. This job normally only needs to be run once.

   Follow the customization instructions inside the script.

2. **IUWMINST**

   This job calls an installation script that deploys IZSME to a pre-installed Zowe instance.

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

   Follow the customization instructions inside the script.

   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).

   Once you have run this installation script, follow the steps under Configuring the Zowe Instance for IZSME, below.

Applying Maintenance to an existing IZSME installation

The following jobs are required for maintenance (upgrades) of IZSME. They should not be run when installing IZSME from scratch or for the first time:

1. **IUWMUPPT**

   This job uses unpax to unarchive an IZSME PTF. It will upgrade the target IZSME installation directory. If you have installed the same IZSME installation directory into multiple Zowe instances, simply running this JCL will upgrade the IZSME plug-in for all such Zowe instances.

   Follow the customization instructions inside the script.

   You will need to restart each Zowe to pick up the changes. Normally, you will not need to perform any further steps on applying maintenance unless the specific maintenance level has additional instructions.

Configuring the Zowe Instance for IZSME

To configure the Zowe instance for the following items, edit the `instance.env` file at the top directory of the Zowe instance(s) you used when customizing **IUWMINST.**

Required Change to Disable Node Clustering
IZSME does not currently support node clustering. To disable clustering in the Zowe instance, add the following to the `instance.env` file:

```
ZLUX_NO_CLUSTER=1
```

Optional Change for Smaller Zowe Footprint
IZSME only depends on the DESKTOP component of Zowe, so for the most lightweight instance, add (or modify) LAUNCH_COMPONENT_GROUPS to only include DESKTOP:

```
LAUNCH_COMPONENT_GROUPS=DESKTOP
```

Optional custom background graphics
IZSME allows you to add your own custom background images. JPG and PNG images are supported. Put your graphics files in the `custom-backgrounds` folder: `\instance\users\<user id>\ZLUX \pluginStorage\com.rs.tep.queryhandler\custom-backgrounds`

Running 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 these fields:

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 numeric address or string (session name) of the host for this Tivoli Enterprise Monitoring Server (TEMS).

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, enter the numeric address for the secondary TEMS host that is used at your site; otherwise, leave this field blank.

Database properties – Host
Specify the host address 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.

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.

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.

Configuring security for IZSME

IZSME is often used to manage sensitive data. We recommend encrypting all of the communication channels IZSME uses; this is not required in order to use IZSME, but most organizations need ways to prevent unauthorized users from accessing sensitive data.

You can 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. You can use RACF to and Finally, role-based access control (RBAC) sets 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 in the IBM Knowledge Center:

- 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
`<organization>`	Organization name
`<organization_unit>`	Organization unit name

Table 1. Variables (continued)	
Variable	**Description**
<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 in the IBM Knowledge Center.

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 in the IBM Knowledge Center.

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 communications within IZSME

Inside IZSME, communication between Java Sidecar and Node Server should be secured, as OMEGAMON data is transferred between them.

You can configure AT-TLS rules by customizing the following template and adding it to 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 Server
   EnvironmentUserInstance 0
   TTLSEnvironmentAdvancedParmsRef eAdv1~IUW
   TTLSKeyringParmsRef keyring~IUW
   Trace 4
}
TTLSConnectionAction cAct1~IUW_AS_SRV
{
   HandshakeRole Server
   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 PassThru
   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
}
```

After you customize the variables in this template and add the code to the TLS policy file, if Policy Agent is not configured for auto-refresh, you will need to perform a manual refresh in order to pick up these policy changes.

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 in the IBM Knowledge Center.

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.

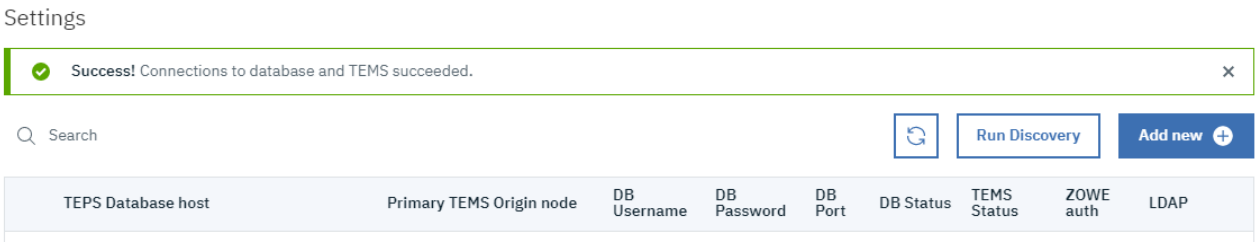
```
TTLSRule IUW_WTEP_AS_HT_CLIENT_<htems_label>
{
   RemoteAddrRef IUW_ADDR_HT_<htems_label>
   RemotePortRangeRef IUW_PORT_HT_<htems_label>
   Userid <server_owner_id>
   Direction Outbound
   Priority 4
   TTLSGroupActionRef gAct1~IUW
   TTLSEnvironmentActionRef eAct1~IUW_AS_CLIENT
   TTLSConnectionActionRef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

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 plugin for all roles that need access by editing the `allowedPlugins.json` file. For details on how to do this, see the Zowe User Guide under Controlling access to applications.

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

Chapter 3. 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.

Chapter 4. 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.

The situation event console and graphic view also show situation event indicators and enable you to respond to events. The Enterprise Status workspace includes the situation event console view.

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 IZSME **Expert Advice** panel.

Chapter 5. 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.

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.

Chapter 6. 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.

The plugin failed to load.

An app did not load. This may be due to the version of Node you are using. An IBM web page indicates that NodeJS v8.16.1 does not function well with Zowe at this time.

Solution: Use Node v8.16.0 instead. See https://docs.zowe.org/stable/troubleshoot/app-framework/app-known-issues.html#desktop-apps-fail-to-load for more information.

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. Also see https://zowe.github.io/docs-site/latest/troubleshoot/troubleshoot-app-framework.html#unable-to-log-in-to-the-zowe-desktop.

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.

Chapter 7. 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.
S	Status message. No user action required.
W	Warning message. Results may not be as expected.
E	Error message. Some may be user-correctable, read the User Response to determine the course of action.

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.

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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