

Oracle® Enterprise Manager

Installation and Configuration Guide for IBM Tivoli Enterprise
Console Connector

Release 12.1.0.3.0

E28571-07

May 2014

E28571-07

Copyright © 2014, Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT RIGHTS Programs, software, databases, and related documentation and technical data delivered to U.S. Government customers are "commercial computer software" or "commercial technical data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, duplication, disclosure, modification, and adaptation shall be subject to the restrictions and license terms set forth in the applicable Government contract, and, to the extent applicable by the terms of the Government contract, the additional rights set forth in FAR 52.227-19, Commercial Computer Software License (December 2007). Oracle USA, Inc., 500 Oracle Parkway, Redwood City, CA 94065.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle is a registered trademark of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.

This software and documentation may provide access to or information on content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services.

Contents

Preface	vii
Audience	vii
Documentation Accessibility	vii
Related Documents	vii
Conventions	viii
1 Introduction to Connector	
1.1 Event Templates	1-1
1.2 Retry	1-1
1.3 Versions Supported	1-1
2 Installing the Connector	
2.1 Installation Platforms	2-2
2.2 Prerequisites	2-2
2.3 Installing the Connector in Enterprise Manager	2-2
2.3.1 Installing the Connector if Enterprise Manager is in "Offline" Mode	2-3
2.4 Installing the IBM TEC Web Service	2-5
2.4.1 Installing and Running the IBM TEC Web Service on Unix	2-5
2.4.1.1 Prerequisites	2-5
2.4.1.2 Installing the Web Service on Unix	2-5
2.4.1.3 Running the Web Service on Unix	2-6
2.4.1.4 Testing the Web Service on Unix	2-7
2.4.1.5 Uninstalling the Web Service on Unix	2-7
2.4.2 Installing and Running the IBM TEC Web Service on Windows	2-7
2.4.2.1 Prerequisites	2-7
2.4.2.2 Installing the Web Service on Windows	2-7
2.4.2.3 Running the Web Service as a Windows Service (Optional)	2-9
2.4.2.4 Running the Web Service on Windows	2-10
2.4.2.5 Testing the Web Service on Windows	2-10
2.4.2.6 Uninstalling the Web Service on Windows	2-10
2.4.3 Exporting the Web Service Installation File	2-11
2.4.3.1 Setting Up EM CLI On Your System	2-11
2.5 Installing and Running the IBM TEC Agent	2-12
2.5.1 Installing the Agent	2-12
2.5.2 Running and Stopping the Agent	2-14

2.5.3	Exporting the Agent Installation File.....	2-14
2.5.4	Uninstalling the TEC Agent	2-14
2.6	Updates to TEC Rules.....	2-14
2.6.1	Handling Data Flowing from Enterprise Manager to TEC	2-14
2.6.2	Removing TEC Rules/BAROC Files.....	2-15
2.7	Uninstalling the Connector.....	2-15

3 Configuring the Connector

3.1	Creating a Connector Instance	3-1
3.2	Configuring the Connector.....	3-2
3.3	Enabling/Disabling the Connector	3-3
3.4	Providing General Settings.....	3-3
3.4.1	Connection Settings.....	3-3
3.4.2	Retry.....	3-4
3.5	Deleting the Connector	3-4
3.6	Testing the IBM TEC Connector	3-4

4 Forwarding Events to IBM TEC

4.1	Setting Event Rules	4-1
4.2	Viewing Events in the IBM TEC Console.....	4-3

5 Working With Event Templates

5.1	Familiarization with Event Templates.....	5-1
5.1.1	Default Templates.....	5-1
5.1.1.1	Create Event Template.....	5-1
5.1.1.2	Update Event Template	5-2
5.1.1.3	Formatted Enterprise Manager Event Contents	5-3
5.1.2	Severity Mapping	5-4
5.1.3	Class Name Mapping.....	5-4
5.2	Customizing Event Templates	5-4
5.2.1	XML Format of Oracle Enterprise Manager Events	5-4
5.2.2	Managing Templates in Oracle Enterprise Manager 12c.....	5-6
5.2.2.1	Edit a Template with Enterprise Manager.....	5-6
5.2.2.2	View Template Code in Enterprise Manager	5-7
5.2.2.3	Delete a Template with Enterprise Manager.....	5-7
5.2.2.4	Restore a Deleted Template with Enterprise Manager	5-7
5.2.3	Changing a Mapping.....	5-8
5.2.3.1	Exporting the Template Files	5-8
5.2.3.2	Modifying Templates.....	5-9
5.2.3.3	Registering Templates	5-10
5.2.3.4	Template Customization Example.....	5-10

6 Enabling SSL for HTTPS

6.1	Configuring Enterprise Manager to use SSL	6-1
6.2	Installing a Self-Signed Certificate	6-1
6.3	Installing a Certificate from a Certificate Authority	6-2

6.4	Importing the Web Service Certificate into Enterprise Manager.....	6-2
7	Troubleshooting the Connector	
7.1	Diagnosing the Problem.....	7-1
7.2	Troubleshooting Web Service Startup Errors	7-3
7.3	JVM Errors	7-3
7.4	Using the Correct URL for TEC Web Service Operations.....	7-4
7.5	Troubleshooting Web Service Operations Errors.....	7-4
7.6	Troubleshooting Errors from Oracle Enterprise Manager.....	7-5
A	Customizing IBM TEC	
A.1	XML Format of IBM TEC Events	A-1
A.1.1	Mappings Between XML Format and Event Field Names	A-1
A.1.2	Extended Fields.....	A-2
A.2	Changing Default Port Numbers.....	A-2
A.2.1	Changing the Web Service Port (8080)	A-2
A.2.2	Changing the Web Service Port (8443)	A-3
B	Enterprise Manager Event Samples	
B.1	Create Sample.....	B-1
B.2	Update Sample	B-4
B.3	Clear Sample.....	B-7
C	Enterprise Manager Event Format	
C.1	EMEvent.xsd.....	C-1
C.2	connectorCommon.xsd	C-3
C.3	externalEvent.xsd.....	C-9
D	TEC Web Service WSDL Format	
D.1	EventService WSDL.....	D-1

Index

Preface

This *Installation and Configuration Guide for IBM Tivoli Enterprise Console (TEC) Connector* provides the information that you require to install and configure the IBM Service Manager Connector that integrates Oracle Enterprise Manager with IBM Service Manager management tools and help desk systems.

Audience

This guide is written for Oracle Enterprise Manager system administrators who want to install and configure the IBM TEC Connector to enable integration between Oracle Enterprise Manager and IBM TEC.

You should already be familiar with Oracle Enterprise Manager.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website

<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

Related Documents

For more information, see the following books in the Oracle Enterprise Manager documentation set:

- *Oracle Enterprise Manager Cloud Control Basic Installation Guide*
- *Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide*
- *Oracle Enterprise Manager Cloud Control Administrator's Guide*
- *Oracle Enterprise Manager Cloud Control Upgrade Guide*
- *Oracle Enterprise Manager Framework, Host, and Services Metric Reference Manual*
- *Oracle Enterprise Manager Command Line Interface*
- *Oracle Enterprise Manager Cloud Control Extensibility Programmer's Guide*

- *Oracle Database 2 Day DBA*

The latest versions of this and other Oracle Enterprise Manager documentation can be found at:

<http://www.oracle.com/technology/documentation/oem.html>

Oracle Enterprise Manager also provides extensive online help. Click **Help** on any Oracle Enterprise Manager page to display the online Help system.

Printed documentation is available for sale in the Oracle Store at

<http://oraclestore.oracle.com/>

To download free release notes, installation documentation, white papers, or other collateral, please visit the Oracle Technology Network (OTN). You must register online before using OTN; registration is free and can be done at

<http://otn.oracle.com/membership/>

If you already have a user name and password for OTN, then you can go directly to the documentation section of the OTN Web site at

<http://otn.oracle.com/documentation/>

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Introduction to Connector

The IBM Tivoli Enterprise Console (TEC) Connector (version 12.1.0.2.0) integrates Oracle Enterprise Manager with IBM TEC through web services, enabling you to forward Enterprise Manager events to TEC system. Using this connector you can create, update or close events on TEC system for any event generated in Enterprise Manager, which ensures an active synchronization between TEC and Enterprise Manager.

1.1 Event Templates

Event templates are XML transformation style sheets that map Enterprise Manager event attributes to TEC event attributes.

The TEC event connector contains predefined event templates for create and update event operations on the TEC system. These templates can be customized further to accommodate more requirements. Oracle recommends that you back up these factory-built templates before customizing them.

Refer to [Chapter 5, "Working With Event Templates"](#) for more details

1.2 Retry

The Retry section, available on the connector configuration page, allows users to specify whether failed operations need to be retried within a configurable expiration time.

Enabling the Retry option gives users the option to specify whether they want to resend an event request if the request fails the first time and the time period after which they want to give up the retry. Enterprise Manager retries every five minutes until the request is successful or the retry interval expires.

1.3 Versions Supported

This connector supports the following versions of Oracle Enterprise Manager and IBM TEC:

- Oracle Enterprise Manager Cloud Control 12c Release 1
- IBM Tivoli Enterprise Console versions 3.8 and 3.9

You can install the TEC Agent on the following platforms:

- Microsoft Windows (2000, 2003, XP)
- Oracle Solaris (SPARC OS version 5-10)

- IBM AIX (RS/6000 OS version 5.2+)

The base Enterprise Manager version number for the IBM Tivoli Enterprise Console Connector Release 12.1.0.2.0 is Enterprise Manager 12c Release 1 (12.1.0.1) and higher versions.

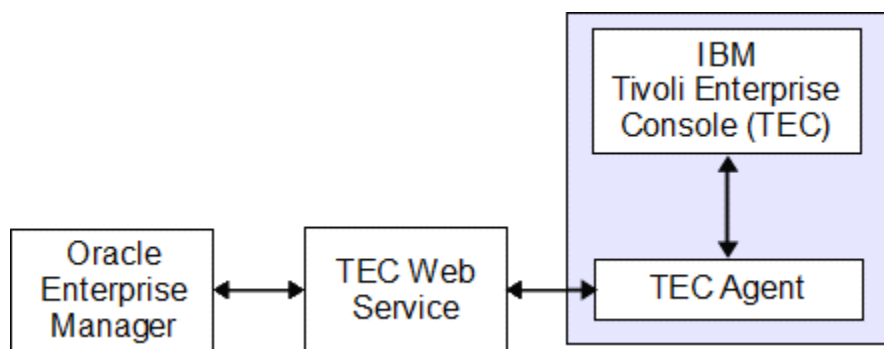
Installing the Connector

The Oracle Enterprise Manager Connector Framework requires a web service interface for forwarding event information to IBM TEC. Since TEC does not provide a web services interface, you must install a third-party TEC web service front-end, which is included in the Oracle Enterprise Manager TEC installation package.

You can install the web service on any Unix or Windows system that supports Oracle Java Development Kit (JDK) 1.6 and has connectivity with the TEC server. In addition to the TEC web service front-end, you must also install a back-end Oracle TEC Agent on the same physical system as the TEC server. The Oracle TEC Agent is preconfigured and is also included in the Oracle Enterprise Manager TEC installation package.

Figure 2-1 shows the communication between the various components of the TEC Connector.

Figure 2-1 Connector Communication Between Components



The following sections in this chapter discuss these topics:

- [Installation Platforms](#)
- [Prerequisites](#)
- [Installing the Connector in Enterprise Manager](#)
 - [Installing the Connector if Enterprise Manager is in "Offline" Mode](#)
- [Installing the IBM TEC Web Service](#)
- [Installing and Running the IBM TEC Agent](#)
- [Updates to TEC Rules](#)
- [Uninstalling the Connector](#)

2.1 Installation Platforms

You can install the TEC web service on the following platforms that support Oracle Java Development Kit (JDK) 1.6:

- Microsoft Windows
- Oracle Solaris
- HP-UX
- Linux

You can install the TEC Agent on the following platforms:

- Microsoft Windows (2000, 2003, 2008, XP)
- Oracle Solaris (SPARC OS version 5-10)
- IBM AIX (RS/6000 OS version 5.2+)

2.2 Prerequisites

In order to install the connector, the My Oracle Support Preferred Credentials must be set to enable the download of the connector through self-update. To set the credentials, perform the following steps:

1. From Enterprise Manager Cloud Control, click **Setup**.
2. Select **My Oracle Support** in the pane.
3. Select **Set Credentials...** then enter the username and password information and click **Apply**.
4. From Enterprise Manager Cloud Control, click **Setup**.
5. Select **Extensibility** in the pane.
6. Select **Self Update** and click **Check Updates** to schedule a job to collect the metadata for the connectors.

Refer to the "Setting up Self Update" chapter in the *Oracle Enterprise Manager Cloud Control Administrator's Guide* for more details.

The following list provides prerequisites to installing the connector:

- A utility for unzipping .zip files is available on the system hosting IBM TEC (Windows only).
- Oracle JDK 6.0 Update 11 or higher is installed on the system where the TEC Web Service will be installed.
- Use of this connector requires the creation of an event class named *OracleEnterpriseManager* at the IBM TEC server. Sample BAROC and rules files are provided with the installation that you can install manually or with the included installation script.

2.3 Installing the Connector in Enterprise Manager

The TEC connector is not included out-of-box so it must be downloaded from the Oracle Enterprise Manager store. All connectors in the Enterprise Manager store will be available on the Self Update page for downloading. To install (apply) the connector, you must have super administrator privileges. However, there is no user restriction for downloading the connector.

This section identifies the steps required to download and install (apply) the connector.

1. From the Enterprise Manager console, click **Setup**.
2. Select **Extensibility** in the pane.
3. Get a list of available connectors by selecting **Self Update**, then click **Management Connector**.

The TEC connector should be listed with a status of Available.

4. Click the TEC connector to select it, then click **Download**.

The Schedule Download window is displayed to determine when the download should be performed.

5. Click **Select** to download immediately.

Note: If you want to schedule the download for a later time, specify the date/time when the download should take place, then click **Select**. You must return to finish the remainder of this procedure after the scheduled download date/time.

6. If necessary, refresh the screen until the status of the connector changes to Downloaded.
7. Click the TEC connector to select it, then click **Apply**.
You will be prompted to confirm the operation and then a window displays indicating the request has been submitted.
8. **Refresh** the screen until the status of the connector changes from Apply Scheduled to Applied.

2.3.1 Installing the Connector if Enterprise Manager is in "Offline" Mode

Under certain circumstances, such as in high security environments, an active Internet connection between Enterprise Manager and the Enterprise Manager Update Store may not be available. In such situations, Enterprise Manager can be set to install the connector in an "offline" mode.

The installation process still requires that a computer exist at your site that has Internet access, as a connection to the Enterprise Manager Update Store is still required to obtain the necessary files. The files that you download to this computer can then be transferred to a computer behind your firewall.

To install the connector if Enterprise Manager is in "offline" mode:

1. From the system that you will ultimately deploy the connector, set Enterprise Manager Cloud Control to Offline Mode:
 - a. From the Setup menu, select **Provisioning and Patching**, then select **Offline Patching**.
 - b. In the Online and Offline Settings page, select **Offline**.
2. From the Setup menu, select **Extensibility**, then select **Self Update**.
3. On the Self Update page, click **Check Updates**. A message appears with the following URL to an Oracle site from where the updates catalog file can be downloaded:

```
https://updates.oracle.com/Orion/Download/download_patch/p9348486_112000_
Generic.zip
```

4. From an Internet-enabled computer, download the catalog file using the aforementioned URL.
5. Copy the downloaded catalog file to the OMS host or the Management Agent host where you plan to import the connector.
6. Import the catalog file to Enterprise Manager:

- If the catalog file is on the OMS host:

```
emcli import_update_catalog -file="file" -omslocal
```

Where:

- -file: is the direct path to the connector archive (*.zip).
- -omslocal: indicates that the path mentioned in the -file option is directly accessible to the Enterprise Manager server

- If the catalog file is on a different host:

```
emcli import_update_catalog -file="file" -host="hostname" [-credential_set_
name="setname"] | -credential_name="name" -credential_owner="owner"
```

[Example 2-1](#) shows a sample for importing the catalog archive.

7. On the Self Update page, in the table, click **Management Connectors**.
8. On the Connector Updates page, select the imported update that is available for download. Click **Download**.

A message appears with a URL to an Oracle site from where the update can be downloaded.

9. From a computer that is connected to the internet, download the update using the aforementioned URL.
10. Copy the downloaded file to the OMS host or the Management Agent host where you plan to deploy the connector.
11. To import the downloaded connector archive into Enterprise Manager, run the following command:

```
emcli import_update -file="<path to *.zip file>" -omslocal
```

Where:

- -file: is the direct path to the connector archive (*.zip).
- -omslocal: indicates that the path mentioned in the -file option is directly accessible to the Enterprise Manager server

Example 2-1 Sample for Importing Catalog Archive

```
emcli import_update_catalog -file="/u01/common/p9348486_112000_Generic.zip"
-omslocal
```

Imports the master catalog file p9348486_112000_Generic.zip. The file must exist on the OMS host. In a multiple OMS setup, the request can be processed by any OMS, so the file should be accessible from the OMS processing the request. This means that the file must be kept on a shared location that is accessible from all the OMS instances.

```
emcli import_update_catalog -file="/u01/common/p9348486_112000_Generic.zip"
-host="host1.example.com" -credential_set_name="HostCredsNormal"
```

Imports the master catalog file `p9348486_112000_Generic.zip` that is present on the host `host1.example.com`. The host must be a managed host target in Enterprise Manager, and the Management Agent on this host must be up and running. The preferred unprivileged credentials for host `host1.example.com` are used to retrieve the remote file.

2.4 Installing the IBM TEC Web Service

The TEC web service acts as a front-end for all data flowing into and out of TEC. Oracle Enterprise Manager posts calls to the web service whenever it needs to create or update an event.

You can install the TEC web service on any Unix or Windows system that runs Oracle JDK 1.6 and has connectivity to the TEC server and the Oracle Enterprise Manager server.

2.4.1 Installing and Running the IBM TEC Web Service on Unix

The following sections explain how to install and then subsequently run the Web Service.

2.4.1.1 Prerequisites

The following prerequisites must be met before proceeding to the next section:

- Oracle Java Development Kit (JDK) version 6 Update 11 or higher is installed.
- The `JAVA_HOME` environment variable is set to the JDK installation directory.

2.4.1.2 Installing the Web Service on Unix

To install the web service on a Unix platform, perform the following steps:

1. Create a directory where you want to install the web service.
2. Obtain a copy of the `TEC_webservices_adapter.jar` file from the Management Server host machine as specified in [Section 2.4.3, "Exporting the Web Service Installation File"](#).
3. Copy the `TEC_webservices_adapter.jar` file to the web service installation directory.
4. Open a terminal and change the working directory to the webservice installation directory.
5. Enter the following command to unzip and extract the .tar file:

```
$JAVA_HOME/bin/jar xvf TEC_webservices_adapter.jar
```

This creates the `adapters` directory that contains the installation files.

Note: If the system where the TEC web service is being installed does not have the JDK installed, you cannot extract the jar file contents. You need to copy the jar file to a system that has the JDK installed and transfer the files after they have been extracted.

6. Enter the following command to change the working directory:

```
cd adapters/endpoints/tec
```

7. Enter the following command to run the installation script:

```
sh ./install.sh
```
8. When the script prompts whether you want to use HTTPS:
 - If you specify Y, the web service is set up to use HTTPS port number 8443.
 - If you specify N, the web service is set up to use HTTP port number 8080.
9. When the script prompts for the user name of the web service, enter the user name that must be provided to access the TEC web service.

The user name (and the password in the next step) can be any value and is not associated with any specific OS or TEC account. Note this value and supply it when configuring the TEC connector in Enterprise Manager.
10. When the script prompts for the password of the web service, enter the password that must be provided to access the TEC web service.
11. When the script prompts for the host name of the IBM TEC server, enter the host name or IP address where the server is installed.
12. When the script prompts for the port number of the IBM TEC server, enter the port number of the TEC reception port if a port mapper is not defined for the server. If a port mapper is defined for the server, specify a port number of 0.

Note: The TEC reception port is defined by the `tec_rcv_agent_port` parameter in the `.tec_config` file in the `$BINDIR/TME/TEC` directory.

13. Copy the API jar files from the TEC installation disk to the `adapters/lib/adapters` directory. The files you need to copy are `log.jar` and `evd.jar`, which are located in the `EIFSDK/jars` directory of the TEC installation disk.
14. After the script displays the message "TEC Web Service Complete," press **Enter** to complete the installation.
15. If the web service was configured to run using the HTTPS protocol, you must set up SSL as specified in [Section 6.1, "Configuring Enterprise Manager to use SSL"](#).
16. Delete the `TEC_webservices_adapter.jar` file from the installation directory.

The web service framework is now installed and ready to start.

2.4.1.3 Running the Web Service on Unix

To run the IBM TEC Web Service framework commands listed with the following tasks, first change the working directory to the following location in the installation directory:

```
adapters/bin
```

- **Start** — `./service.sh start`
- **Shut Down** — `./service.sh stop`
- **Restart** — `./service.sh restart`
- **Check Status** — `./service.sh status`

2.4.1.4 Testing the Web Service on Unix

Perform the following steps to verify that the IBM TEC Web Service is functional.

1. Open a terminal and change the working directory to the adapters/bin directory in the installation directory.
2. Enter the following command to run the test script:


```
./testAdapter.sh
```
3. When the utility prompts for the web service password, enter the password you specified for the TEC web service in step 10 of [Section 2.4.1.2, "Installing the Web Service on Unix"](#).

If the test completes successfully, the last line the utility displays is "Test completed successfully."

2.4.1.5 Uninstalling the Web Service on Unix

To uninstall the web service on Unix:

1. Run the `service.sh status` command to determine whether the web service is running.
2. If the web service is running, run the `service.sh stop` command to stop the web service and verify it completes successfully.
3. Delete all files in the installation directory.

2.4.2 Installing and Running the IBM TEC Web Service on Windows

The following sections explain how to install and then subsequently run the Web Service.

2.4.2.1 Prerequisites

The following prerequisites must be met before proceeding to the next section:

- Oracle Java Development Kit (JDK) Version 6 Update 11 or higher is installed.
- The `JAVA_HOME` environment variable is set to the JDK installation directory.
- Zip utility, such as WinZip, is installed for unzipping a zip file.

2.4.2.2 Installing the Web Service on Windows

To install the web service on a Windows platform, perform the following steps:

1. Create a directory where you want to install the web service.
2. Obtain a copy of the web service installation file from the Management Server host machine as specified in [Section 2.4.3, "Exporting the Web Service Installation File"](#).
3. Copy the `TEC_webservices_adapter.jar` file to the web service installation directory.
4. Open a terminal and change the working directory to the webservice installation directory.
5. Enter the following command to unzip and extract the .jar file:

```
%JAVA_HOME%\bin\jar xvf TEC_webservices_adapter.jar
```

This creates the adapters directory that contains the installation files.

Note: If the system where the TEC web service is being installed does not have the JDK installed, you cannot extract the jar file contents. You need to copy the jar file to a system that has the JDK installed and transfer the files after they have been extracted.

6. Enter the following command to change the working directory:

```
cd adapters\endpoints\tec
```

7. Enter the following command to run the installation script:

```
.\install.bat
```

8. When the script prompts whether you want to use HTTPS:
 - If you specify Y, the web service is set up to use HTTPS port number 8443.
 - If you specify N, the web service is set up to use HTTP port number 8080.
9. When the script prompts for the user name of the web service, enter the user name that must be provided to access the TEC web service.

Note: The user name (and the password in the next step) can be any value and is not associated with any specific OS or TEC account. Note this value and supply it when configuring the TEC connector in Enterprise Manager.

10. When the script prompts for the password of the web service, enter the password that must be provided to access the web service.
11. When the script prompts for the host name of the IBM TEC server, enter the host name or IP address where the server is installed.
12. When the script prompts for the port number of the IBM TEC server, enter the port number of the TEC reception port. The default value for this port is 5529.

Note: The TEC reception port is defined by the `tec_recv_agent_port` parameter in the `.tec_config` file in the `$BINDIR/TME/TEC` directory.

13. Copy the API jar files from the TEC installation disk to the `adapters\lib\adapters` directory. The files you need to copy are `log.jar` and `evd.jar`, which are located in the `EIFSDK\jars` directory of the TEC installation disk.
14. After the script displays the message "TEC Web Service Complete," press **Enter** to complete the installation.
15. If the web service was configured to run using the HTTPS protocol, you must set up SSL as specified in [Section 6.1, "Configuring Enterprise Manager to use SSL"](#).
16. Delete the `TEC_webservices_adapter.jar` file from the installation directory.

The web service framework is now installed and ready to start.

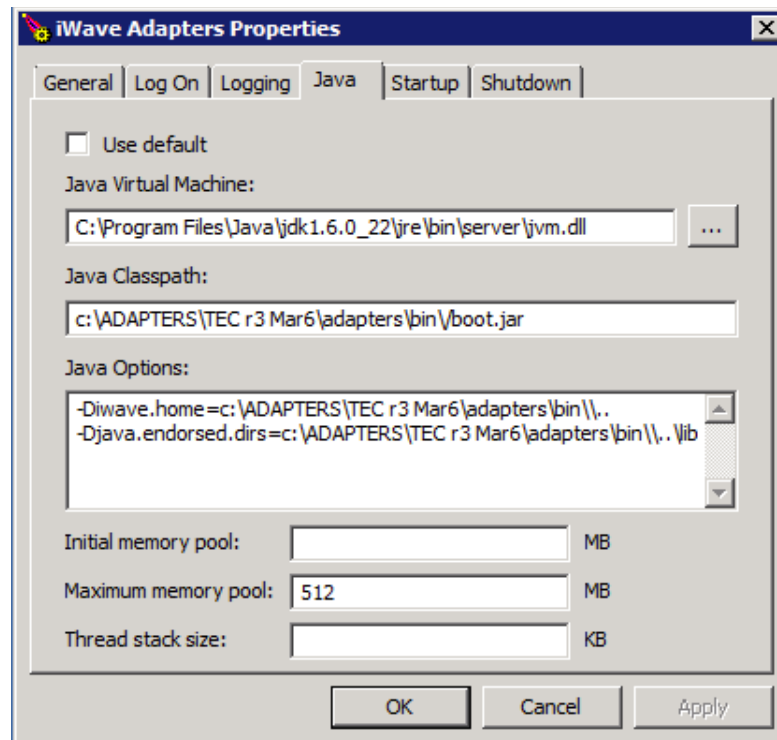
2.4.2.3 Running the Web Service as a Windows Service (Optional)


Optionally, if you want the web service to run as a Windows service, perform the following steps:

1. Change the working directory to the `adapters\bin` directory in the installation directory.
2. If the web service will be run using a 64-bit JDK, copy the `iWaveAdapters.exe` and `iWaveAdaptersw.exe` files from the `x64` directory to the current directory (`.`) overwriting the existing files.
3. Enter the following command to install the web service as a Windows service:


```
service.bat install
```
4. If the web service will be run using a 64-bit JDK, perform the following substeps to configure the service to use the 64-bit JDK:
 - a. In the `adapters\bin` directory, double click the `iWaveAdaptersw.exe` file. This will cause the `iWave Adapters Properties` window to be displayed.
 - b. Click the **Java** tab. The Java tab will be displayed that shows the JVM settings as shown in [Figure 2-2](#).

Figure 2-2 Java Tab on the *iWave Adapters Properties* Window



- c. Uncheck the **Use default** check box if it is checked.
- d. Click  to open the **Select Java Virtual Machine DLL** window.
- e. Navigate to the `jvm.dll` file in the 64-bit JDK installation directory and click **Open**.
- f. Click **OK**.

2.4.2.4 Running the Web Service on Windows

Standalone Service

To start the TEC web service framework when set up as a standalone application (not set up to run as a Windows service):

1. Change the working directory to the `adapters\bin` directory in the installation directory.
2. Run the following command:

```
startAdapters.bat
```

To shut down the TEC web service framework, close the window where you started the adapter.

Windows Service

To start the TEC web service framework when set up to run as a Windows service:

```
net start iWaveAdapters
```

To shut down the TEC web service framework:

```
net stop iWaveAdapters
```

2.4.2.5 Testing the Web Service on Windows

Perform the following steps to verify that the IBM TEC Web Service is functional.

1. Open a terminal and change the working directory to the `adapters/bin` directory in the installation directory.
2. Enter the following command to run the test script:

```
./testAdapter.bat
```
3. When the utility prompts for the web service password, enter the password you specified for the TEC web service in Step 10 of [Section 2.4.2.2, "Installing the Web Service on Windows"](#).

If the test completes successfully, the last line the utility displays is "Test completed successfully."

2.4.2.6 Uninstalling the Web Service on Windows

To uninstall the web service on Windows, determine if the web service is installed as a Windows service:

1. If the web service is installed as a Windows service, perform the following steps:
 - a. Determine if the web service is running.
 - b. If the web service is running, run the `service.bat stop` command to stop the web service and verify it completes successfully.
 - c. Run the `service.bat uninstall` command to remove it as a Windows service and verify it completes successfully.
2. If the web service is **not** installed as a Windows service, perform the following steps:
 - a. Determine if the web service is running.
 - b. If the web service is running, stop the web service by closing the Java window.

3. Delete all files in the installation directory.

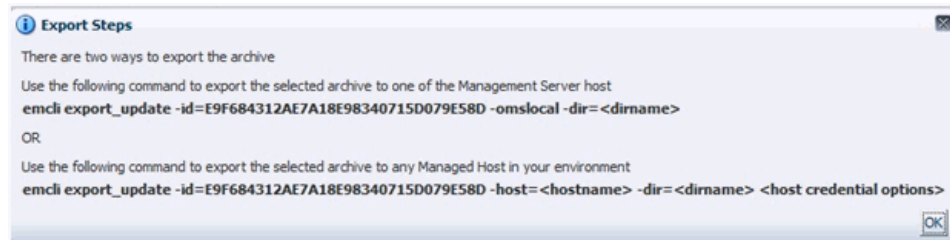
2.4.3 Exporting the Web Service Installation File

The TEC Web Service installation file is included in the Self Update archive that was installed in [Section 2.3, "Installing the Connector in Enterprise Manager"](#). To extract the installation file, perform the following steps.

1. Determine the command required to export the web service installation file. To do this, perform the following steps:
 - From the Enterprise Manager console, click **Setup**.
 - Select **Extensibility** in the pane.
 - Select **Self Update**, then click **Management Connector**.
 - Click the TEC connector, then select **Export** from the Actions list.

A popup window appears with the command required to export the file. See [Figure 2-3](#) below for an example of the popup window.

Figure 2-3 Export Command



2. Open a command window on the TEC server machine and navigate to a temporary directory where the file can be copied.
3. Log into emcli using the following command. You will be asked to provide the password information for the sysman account.


```
emcli login -username=sysman
```
4. Run the emcli export_update command from your system, changing `<dirname>` to the full path of the temporary directory.

A zip file will be created. The file name is comprised of the id value specified in the export_update command with a .zip extension. In the example command in [Figure 2-3](#), the zip file name would be E9F684312AE7A18E98340715D079E58D.zip

5. Extract the web service installation file from the zip file using the following command:

```
unzip *.zip archives/TEC_webservices_adapter.jar
```

2.4.3.1 Setting Up EM CLI On Your System

Install the Enterprise Manager EMCLI_Client on the same host on which the connector is installed. This will need to be able to communicate to your OMS. Follow these steps to set up EM CLI on your system:

1. Log in to the Enterprise Manager console.
2. From the **Setup** menu, select **Command Line Interface**.

3. Click the **Download the EM CLI kit to your workstation** link and download the .jar file in the server.
4. Follow the steps given in the page to install the EM CLI client on the server.

Note: Refer to EM CLI Guide for more detailed information.

2.5 Installing and Running the IBM TEC Agent

The following sections provide procedures for installing and running the TEC Agent.

2.5.1 Installing the Agent

The back-end TEC Agent pushes data from TEC into the TEC Web Service. The Agent is comprised of a script (invoked by TEC rules and a command line utility invoked by the script) to send a transaction to the TEC Web Service. The TEC Agent must be installed on the same physical system as the TEC server. The TEC Agent is preconfigured to interface with the TEC Web Service and requires minimal configuration.

To install the TEC Agent, perform the following steps:

1. Obtain a copy of the agent installation file from the Management Server host machine as specified in [Exporting the Agent Installation File](#).
2. Copy the installation file into the directory where you intend to install the TEC Agent.

Note: You need to do this on the IBM TEC system host.

[Table 2-1](#) identifies the installation file name for each supported platform.

Table 2-1 Platform Installation Files

Platform	Installation File
IBM AIX	TECAgentAIX.tar.gz
Oracle Solaris	TECAgentSolaris.tar.gz
Microsoft Windows	TECAgentWindows.zip

3. Open a terminal and change the working directory to the installation directory.
4. Unzip the installation file. This creates the TEC-agent directory that contains the installation files.
 - For Windows platforms, use a zip utility to unzip the `TECAgentWindows.zip` file.
 - For AIX platforms, issue the following command to unzip and untar the files:


```
gunzip -c TECAgentAIX.tar.gz | tar xvf -
```
 - For Solaris platforms, issue the following commands to unzip and untar the files:


```
gunzip -c TECAgentSolaris.tar.gz | tar xvf -
```
5. Set up the TEC environment:

- For Windows systems, enter the following commands to start the bash shell:


```
%SystemRoot%\system32\drivers\etc\Tivoli\setup_env.cmd
bash
```
 - For Unix systems, enter the following command to start the bash shell:


```
/etc/Tivoli/setup_env.sh
```
6. Change the working directory to the TEC-agent directory.
 7. Enter the following command to run the setup script to configure the TEC Agent:


```
./install.sh
```

The following prompts appear in this sequence:

- Enter the hostname or IP address where the TEC Webservice Adapter is installed. If the agent is being installed on the same machine as the TEC Web Service, accept the default of localhost.
- **Do you want to install the default Oracle Enterprise Manager classes and rules [Y]?**

Enter Y to install and activate the class definitions and rules for the OracleEnterpriseManager class. This class must be installed before events from Enterprise Manager can be inserted into TEC. Enter N to skip the installation of the OracleEnterpriseManager class. The classes must be manually installed if you choose not to install the class definitions. See [Handling Data Flowing from Enterprise Manager to TEC](#) for instructions about how to manually install the class definitions.

WARNING: If you elect to have the script install the classes and rules, it will restart the TEC server without prompting. If this is unacceptable, you will need install the files and restart the TEC server manually.

The following prompts appear in this sequence if you choose to install the OracleEnterpriseManager class.

- **Enter the name of the rule base to use:**

Enter the name of the rule base where the class should be installed. This can be an existing rule base or one that does not exist.
 - **Rule base could not be found. Do you want to create it [N]?**

This prompt only appears if the rule base specified in the previous response did not already exist. Specify Y to create a new rule base, or specify N to exit the script without installing the OracleEnterpriseManager class.
 - **Enter the rule base directory:**

This prompt only appears if the script cannot determine the directory where the rule base files are located. Enter the directory where the rule base files are located. The script terminates if the directory does not exist.
8. Delete the installation file from the installation directory.

2.5.2 Running and Stopping the Agent

You do not need to start or stop the Agent. A TEC rule invokes it whenever a transaction needs to be sent to the TEC Web Service adapter. The Agent terminates after the transaction has been successfully delivered to the TEC Web Service adapter.

2.5.3 Exporting the Agent Installation File

The agent installation file is included in the zip file that was extracted in [Section 2.4.3, "Exporting the Web Service Installation File"](#). To extract the installation file, perform the following steps.

1. Open a command window on the TEC server machine and navigate to the temporary directory where the zip file was created.
2. Extract the agent installation file from the zip file using one of the following commands depending on the platform where the agent will be deployed:

- For AIX:

```
unzip *.zip archives/TECAgentAIX.tar.gz
```

- For Solaris:

```
unzip *.zip archives/TECAgentSolaris.tar.gz
```

- For Windows:

```
unzip *.zip archives/TECAgentWindows.tar.gz
```

2.5.4 Uninstalling the TEC Agent

To uninstall the IBM TEC Agent:

1. If the TEC agent is being permanently deleted, the custom Oracle rules and BAROC files must be uninstalled as specified in [Removing TEC Rules/BAROC Files](#).
2. Delete all files in the installation directory.

Note: If the TEC agent is being replaced, the custom rules that call the TEC agent will fail until the replacement agent has been installed in the same location.

2.6 Updates to TEC Rules

TEC rules must initiate event information sent from TEC to the TEC Web Service. This requires changes to the TEC rule sets to invoke the `tec2uniagt` script, which sends event information to the TEC Web Service. The following sections describe the required changes to the TEC rule sets for data flowing in both directions.

2.6.1 Handling Data Flowing from Enterprise Manager to TEC

For the TEC connector to work out of the box, the Oracle Enterprise Manager default classes must be installed and loaded into the TEC Server. When installing the TEC Agent, you have the option to install the classes and rules.

If you choose to install the default classes, the install script compiles the classes and rules, and loads them into the TEC Server. It also shuts down and restarts the server to pick up the new classes.

If you choose not to install the classes, you must manually install the classes and rules. The default class files are located in the TEC-agent/Samples directory. The OracleEnterpriseManager.baroc file defines the five classes that are required to insert events into TEC. The OracleEnterpriseManager.rls file contains the rules required to send the event data back to the TEC Web Service after an event has been created, updated, or closed. To manually install the classes with the install script, perform the following steps.

1. Open a command terminal at the system where the TEC server is installed.
2. Change the working directory to the TEC-agent/Samples directory in the TEC Agent install directory.
3. Set up the TEC environment:
 - For Windows systems, enter the following commands to start the bash shell:

```
%SystemRoot%\system32\drivers\etc\Tivoli\setup_env.cmd  
bash
```
 - For Unix systems, enter the following command to start the bash shell:

```
/etc/Tivoli/setup_env.sh
```
4. Enter the following command to install the default classes:

```
./rule_load.sh
```

2.6.2 Removing TEC Rules/BAROC Files

1. Open a command terminal at the system where the TEC server is installed.
2. Change the working directory to the TEC-agent/Samples directory in the TEC Agent install directory.
3. Set up the TEC environment based on the platform:
 - For Windows systems, enter the following commands to start the bash shell:

```
%SystemRoot%\system32\drivers\etc\Tivoli\setup_env.cmd  
bash
```
 - For Unix systems, enter the following command to start the bash shell:

```
/etc/Tivoli/setup_env.sh
```
4. Enter the following command to uninstall the default classes:

```
./rule_unload.sh
```

2.7 Uninstalling the Connector

To uninstall the connector, you must first delete all defined instances of the connector, then you must delete the connector from the Self Update page.

1. From the Setup menu, select **Extensibility**, then **Management Connectors**.
2. Select an instance of the connector you want to delete, then click **Delete**.
3. On the Confirmation page, click **Yes**.
4. Repeat steps 2 and 3 until all instances of the connector have been deleted.
5. From the Setup menu, select **Extensibility**, then **Self Update**.

6. Click on the **Management Connector** link in the Type column. A list of updates appears for Management Connectors.
7. Click on the connector you want to delete, select **Actions**, then select **Delete**. The Delete Update window appears.
8. Click **Delete** to delete the connector. A pop-up confirmation window appears.
9. Click **OK** to confirm and delete the connector.

Configuring the Connector

This chapter provides procedures to configure the main Configure Management Connector page, then explains how to perform other tasks to complete the configuration process.

This chapter discusses the following topics:

- [Creating a Connector Instance](#)
- [Configuring the Connector](#)
- [Enabling/Disabling the Connector](#)
- [Providing General Settings](#)
- [Deleting the Connector](#)
- [Testing the IBM TEC Connector](#)

3.1 Creating a Connector Instance

Once TEC Connector is installed in Enterprise Manager, you need to create one or more instances of this connector type. A connector instance refers to the configured instance of the connector with specific details, such as connector name, web-service end-points, username/password of the TEC system. Multiple connector instances for the same connector type are supported, which provides the flexibility to configure multiple TEC systems with Enterprise Manager.

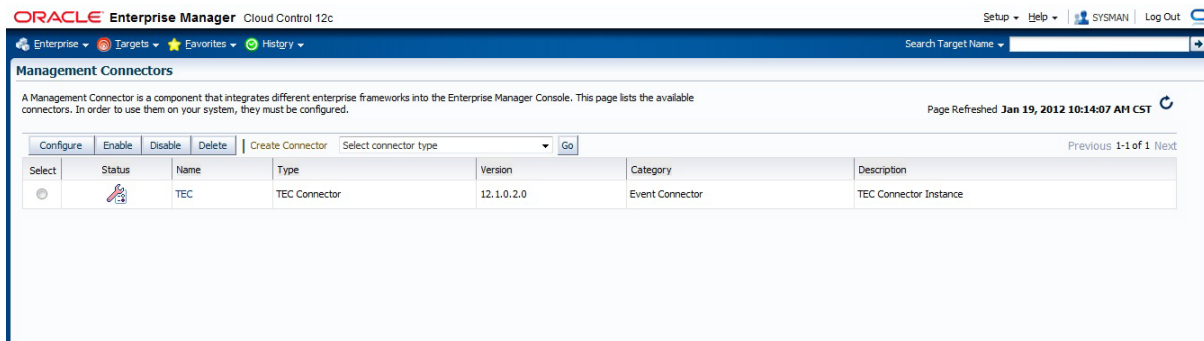
For example, you could have a production database and test database that Enterprise Manager monitors, and you can create two different connector instances pointing to two different TEC systems (one for production targets and one for test targets) with events from production targets sent to one TEC instance and events from test targets sent to the another TEC instance. You can associate each instance with separate event rules. Using this setup, you can forward Enterprise Manager events generated from these two databases to two different TEC systems.

Follow the steps below to create a connector instance:

1. From the Enterprise Manager console, click **Setup**.
2. Select **Extensibility** in the pane.
3. Select **Management Connectors** in the left pane.
4. Select a connector type of TEC from the Create Connector drop-down list, then click **Go**.
5. Enter the connector name and description on the next screen, then click **OK**.

- The connector instance shows up as unconfigured in the Connector Setup page. [Figure 3–1](#) shows an unconfigured TEC connector instance.

Figure 3–1 Unconfigured TEC Connector



3.2 Configuring the Connector

Follow these steps to configure the connector.

- As Super Administrator, from the Enterprise Manager console click **Setup**.
- Click **Extensibility**, then **Management Connectors**. The Management Connectors page appears that lists all created connector instances.

Note: The status column with a green tick mark indicates that the connector is already configured.

- Click the name of the TEC Connector.

The General tab of the Configure Management Connector page appears, as shown in [Figure 3–2](#).

- Provide the required settings. See [Section 3.4, "Providing General Settings"](#) for details.
- Click **OK**.

The Management Connectors page reappears. The row for the TEC Connector should have a check mark in the Configured column.

Note: If you chose HTTPS as the protocol to establish a connection between TEC and Enterprise Manager, make sure you have performed the steps specified in [Section 6.1, "Configuring Enterprise Manager to use SSL"](#).

Figure 3–2 Configure Management Connector Page

The screenshot shows the Oracle Enterprise Manager Cloud Control 12c interface. The main window is titled 'Management Connectors' and 'Configure Management Connector: TEC'. It has three tabs: 'General', 'Template', and 'Targets'. The 'General' tab is selected. Below the tabs, there is a message: 'In order to configure this connector, the pre-require steps must already have been completed on the external system.' Under 'Connection Settings', there is a note: 'Enter a set of administrator credentials and the webservice end points for relevant operations of the ticketing system. These are required for communications.' Below this, there is a table for 'Web Service End Points' with columns 'Operation' and 'Web Service End Point (URL)'. The table contains two rows: 'createEvent' with URL 'http://[hostname]:8080/services/tec/EventService' and 'updateEvent' with URL 'http://[hostname]:8080/services/tec/EventService'. Below the table are input fields for '* TEC Web Service Username' and '* TEC Web Service Password'. At the bottom, there is a 'Retry' section with a checkbox for 'Enable Retry' and an 'Expiration (hours)' field set to '0'. There are 'Cancel' and 'OK' buttons at the top right and bottom right of the form.

3.3 Enabling/Disabling the Connector

You can enable or disable a connector instance without needing to reconfigure or remove the connector from the system.

You can enable or disable a connector from the Management Connector page by selecting the connector and clicking either Enable or Disable. After a connector is disabled, a red cross icon appears under the Status column. By default, the connector instance is enabled as soon as it is configured.

Note: Only enabled connectors are available to forward events.

3.4 Providing General Settings

The following sections explain how to provide various configuration details.

3.4.1 Connection Settings

The TEC Connector communicates with TEC through the TEC web service installed in [Section 2.4, "Installing the IBM TEC Web Service"](#). All fields are mandatory.

Web Service End Points – URL to use when creating and updating events in TEC. The TEC web service uses the same URL for the createEvent and updateEvent operations. The default format for both operations is shown below:

```
http://[Hostname]:8080/services/tec/EventService
```

Modify the URL for both operations based on whether the TEC web service was set up using HTTP or HTTPS.

For HTTP:

- Replace *[Hostname]* in the URL with the hostname or IP address of the system where the TEC web service was installed.

For HTTPS:

- Change the protocol from http to https.
- Replace *[Hostname]* in the URL with the hostname or IP address of the system where the TEC web service was installed.
- Change the port number from 8080 to 8443.

Example:

If the TEC web service was installed on a system with a hostname of tecws, the following URLs would be configured for the different protocols.

For HTTP:

```
http://tecws:8080/services/tec/EventService
```

For HTTPS:

```
https://tecws:8443/services/tec/EventService
```

TEC Web Service Username - User name that was configured for accessing the TEC web service in Step 9 of the appropriate web service installation section.

([Section 2.4.1.2, "Installing the Web Service on Unix"](#) and [Section 2.4.2.2, "Installing the Web Service on Windows"](#)).

TEC Web Service Password - Password that was configured for accessing the TEC web service in Step 10 of the appropriate web service installation section

([Section 2.4.1.2, "Installing the Web Service on Unix"](#) and [Section 2.4.2.2, "Installing the Web Service on Windows"](#)).

3.4.2 Retry

You can enable and disable the Retry option and configure its interval value. By default, the Retry is disabled. See [Section 1.2, "Retry"](#) for details. This setting applies to all events that the TEC Connector processes. The retry period interval accepts the number of hours as any integer value. For example, 1 or 2.

3.5 Deleting the Connector

You can delete a connector from the Management Connector page by selecting the connector and clicking Delete. After a connector is deleted, all associated event rules are no longer configured to forward the event. Also, references to the event connector are removed from the event rules.

Additionally, if the connector deleted is the only connector instance of that connector type, the corresponding connector type is also deleted.

3.6 Testing the IBM TEC Connector

Perform the following steps to test the connector:

1. Log in to the Oracle Enterprise Manager console with an account that has Super Administrator permissions.
2. From the Enterprise Manager console, click **Setup**, then **Extensibility** and **Management Connectors** from the drop-down menus. The Management Connectors page is displayed.
3. Click the name of the TEC Connector.
The General tab of the Configure Management Connector page appears.
4. Select and copy the URL specified for the createEvent or updateEvent operation.
5. Open an internet browser on the system where the Oracle Enterprise Manager server is installed.

6. In the address window, enter the URL that was copied in Step 4 above. Add ?wsdl to the end of the URL. The URL should appear similar to the following example:

```
http://[Hostname]:8080/services/tec/EventService?wsdl
```

[Hostname] is the actual host name or IP address where the TEC web service is installed.

If the WSDL is loaded, this confirms that the connector is configured correctly for sending event information to TEC.

Forwarding Events to IBM TEC

Events generated or updated in Oracle Enterprise Manager are not forwarded to TEC unless you create rules to invoke the IBM TEC connector. A rule identifies the conditions that must be met before the connector is invoked.

The following section describes procedures that explain how to set up rules to create events and update events in TEC-based events in Enterprise Manager:

- [Setting Event Rules](#)
- [Viewing Events in the IBM TEC Console](#)

4.1 Setting Event Rules

The following procedure explains how to create a new rule to invoke the TEC connector.

1. From the Enterprise Manager console, click **Setup**, then **Incidents**, then **Incident Rules**.
2. Identify an existing rule set where the new rule can be added or create a new rule set as specified in the following sub steps:
 - a. Click **Create Rule Set**. The Create Rule Set page is displayed.
 - b. Enter a name and description, then click **Save**. The Incident Rules page is displayed again with the new rule set listed.
3. Click the rule set that you want to add the rule then click **Edit**.
4. Click the Rules tab then click **Create**. The Select Type of Rule to Create popup is displayed.

As you proceed below, the wizard interface explains various rules and their usage.

For detailed information, refer to the "Incident Management" chapter in the *Oracle Enterprise Manager Cloud Control Administrator's Guide*.

5. Select Incoming events and updates to events then click **Continue**. The Select Events page is displayed.
6. Specify the set of events that you want to forward to Tivoli TEC, then click **Next**. The Add Actions page is displayed as shown in [Figure 4-1](#).
7. Click **Add**. The Add Conditional Actions page is displayed as shown in [Figure 4-2](#).
8. Select the TEC Connector Instance in the Forward to Event Connectors section, then click **>**, then click **Continue**. The Add Actions page displays again with the new action listed.

9. Click **Next**. The Specify Name and Description page is displayed.
10. Enter a name and description for the rule, then click **Next**. The Review page is displayed.
11. Click **Continue** if everything looks correct. An informational popup is displayed that says "Rule has been successfully added to the current rule set. Newly added rules are not saved until the Save button is clicked."

Note: You can click Back and make corrections to the rule if necessary.

12. Click **Save** to save the changes to the rule set.

Figure 4–1 Add Actions

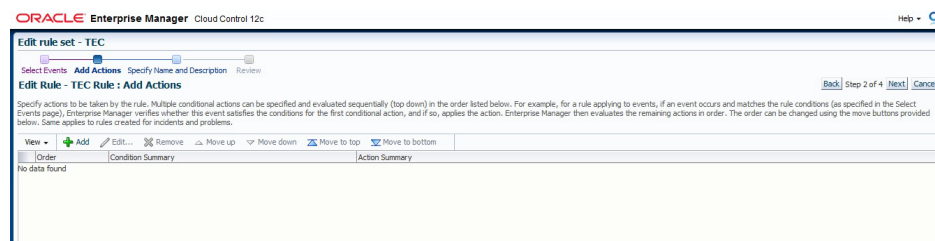
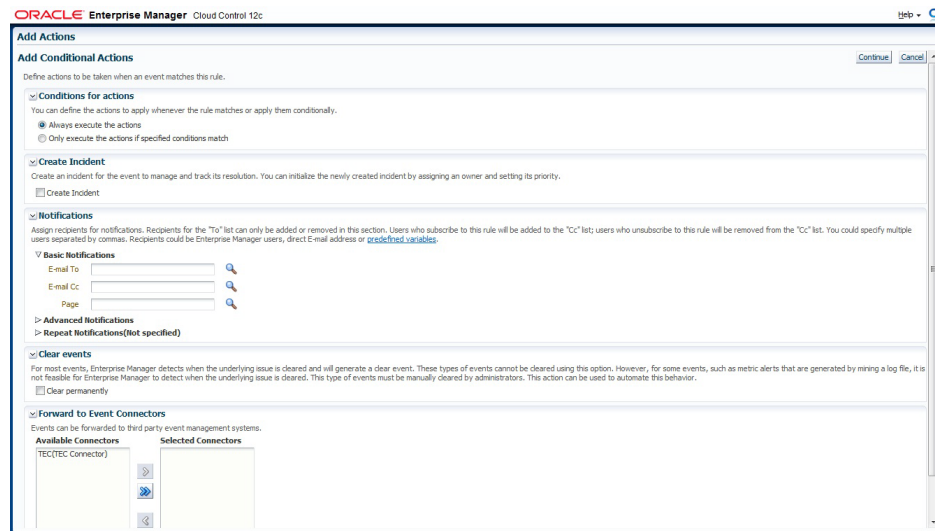


Figure 4–2 Add Conditional Actions



The following process occurs after the above created event rule is satisfied:

- A request is sent to the TEC Connector when a event is created per the criteria mentioned in the rule.
- The event is created or updated on the TEC system.
- In Enterprise Manager, the event is annotated with a comment on the Updates tab to indicate that an event in IBM TEC has been created or updated as seen in [Figure 4–3](#).

Figure 4-3 Incident Manager Event Updates

Memory Utilization is 74.311%, crossed warning (50) or critical (80) threshold.

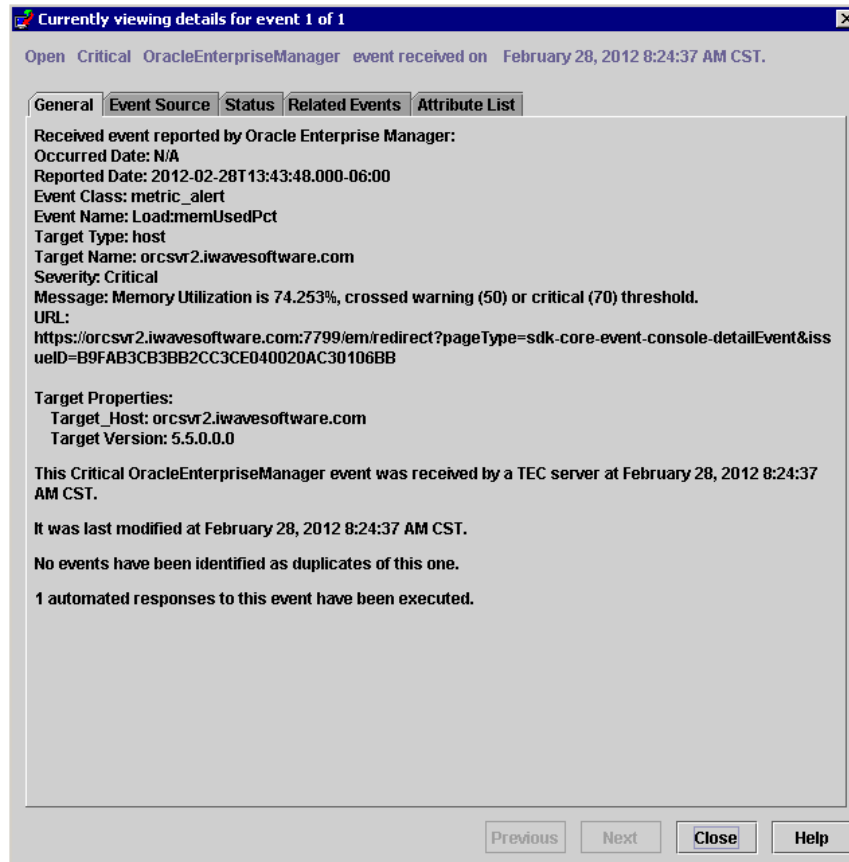
Time	Type	User	Message
Feb 28, 2012 1:46	System update	SYSMAN	External alert 1:1:1330439077 is updated successfully on external system through connector TEC.
Feb 28, 2012 1:46	Notification	-	The following notifications will be sent: 1 event connector(s)
Feb 28, 2012 1:46	System update	-	Memory Utilization is 74.311%, crossed warning (50) or critical (80) threshold.
Feb 28, 2012 1:43	System update	SYSMAN	Alert 1:1:1330439077 is created successfully on external system through connector TEC.
Feb 28, 2012 1:43	Notification	-	The following notifications will be sent: 1 event connector(s)
Feb 28, 2012 1:43	Rule update	-	Incident created by rule (Name = AA_Event_TEC Rule; Owner = SYSMAN).
Feb 28, 2012 1:43	System update	-	Memory Utilization is 74.253%, crossed warning (50) or critical (70) threshold.

4.2 Viewing Events in the IBM TEC Console

After the event has been sent to IBM TEC, you can view it in the IBM TEC console, as shown in Figure 4-4. Full details of the event are sent to IBM TEC including:

- Event class and name.
- Target type and name.
- Message.
- Severity.
- URL to the Enterprise Manager event details page.

Figure 4-4 Event Details in the IBM TEC Console



To view the event in Enterprise Manager, copy the URL listed in the event and paste in the address bar of a browser. You will be asked to log in to Oracle Enterprise Manager. After logging in, the Oracle Enterprise Manager event information is displayed.

You can change the event information sent to IBM TEC, or you can change the mappings between the Enterprise Manager event and IBM TEC event by modifying the event templates.

See [Chapter 5, "Working With Event Templates,"](#) for details.

Working With Event Templates

This chapter provides details on the default event templates shipped along with the TEC Connector. The event templates specify the mappings between an Enterprise Manager event attributes and TEC web service attributes.

- [Familiarization with Event Templates](#)
- [Customizing Event Templates](#)

5.1 Familiarization with Event Templates

This section describes the default mappings between the Enterprise Manager event data fields and the IBM TEC event data fields.

This section discusses the following topics:

- [Default Templates](#)
- [Severity Mapping](#)
- [Class Name Mapping](#)

5.1.1 Default Templates

The event templates XML Style Sheet (XSL) files contain the mappings between the two systems. These files are located in the Self Update archive that was installed in [Section 2.3, "Installing the Connector in Enterprise Manager"](#). To extract the installation file, perform the steps in [Section 5.2.3.1, "Exporting the Template Files"](#).

[Table 5–1](#) lists the XSL files that perform the mappings and provides a summary of each.

Table 5–1 XSL Files that Perform Mappings

File	Description
createEvent_request.xsl	Transforms the Oracle Enterprise Manager event data to the IBM TEC event format for the createEvent operation.
updateEvent_request.xsl	Transforms the Oracle Enterprise Manager event data to the IBM TEC event format for the updateEvent operation.

5.1.1.1 Create Event Template

The Oracle Enterprise Manager Connector Framework invokes the createEvent operation whenever an event is generated in Oracle Enterprise Manager and there is a rule configured to invoke the TEC connector. createEvent_request.xsl is invoked during the process to transform the data from Oracle Enterprise Manager format to

TEC event format. [Table 5–2](#) lists the create-event template mappings between the IBM TEC event and the Oracle Enterprise Manager event.

Table 5–2 Create Event Template Mappings

TEC Slot Name	Required	Value
msg	Yes	Set to the formatted contents of the event as specified in the section below entitled "Formatted Enterprise Manager Event Contents".
severity	Yes	Set the severity based on the event severity. See the section entitled "Severity Mapping" below for details.
status	Yes	Hardcoded to "OPEN".
Class Name	Yes	Set the class name based on the target type. See the section entitled "Class Name Mapping" below for details.
source	Yes	Hardcoded to "OracleEnterpriseManager"
origin	No	Set to the Target Type Label field in the event.
hostname	No	Set to the Object Name field in the event.
fqhostname	No	Set to the Object Name field in the event.
repeat count	No	Hardcoded to 0.
date	No	Set to the ReportedDate field in the event.
action flag	No	Hardcoded to "CREATE".
extid	Yes	Set to the SequenceID field in the event.
sub source	Yes	Hardcoded to "OracleEnterpriseManager".
sub origin	No	Set to the Target Name field in the event.

5.1.1.2 Update Event Template

The Oracle Enterprise Manager Connector Framework invokes the `updateEvent` operation whenever an event is generated in Oracle Enterprise Manager and there is a rule configured to invoke the TEC connector.

`updateEvent_request.xml` is invoked during the process to transform the data from Oracle Enterprise Manager format to TEC event format. [Table 5–3](#) lists the update-event template mappings between the IBM TEC event and the Oracle Enterprise Manager event.

Table 5–3 Update Event Template Mappings

TEC Slot Name	Required	Value
Identifier	Yes	Set to the External Event ID field in the event.
msg	Yes	Set to the formatted contents of the event as specified in the section below entitled "Formatted Enterprise Manager Event Contents".
severity	Yes	Set the severity based on the event severity. See the section entitled "Severity Mapping" below for details.
status	Yes	Hardcoded to "OPEN".

Table 5–3 (Cont.) Update Event Template Mappings

TEC Slot Name	Required	Value
Class Name	Yes	Set the class name based on the target type. See the section entitled "Class Name Mapping" below for details.
source	Yes	Hardcoded to "OracleEnterpriseManager"
origin	No	Set to the Target Type Label field in the event.
hostname	No	Set to the Object Name field in the event.
fqhostname	No	Set to the Object Name field in the event.
repeat count	No	Hardcoded to 0.
date	No	Set to the ReportedDate field in the event.
action flag	No	Set to "CLOSE" if the event Severity field is Clear. Otherwise, hardcoded to "UPDATE".
extid	Yes	Set to the SequenceID field in the event.
sub source	Yes	Hardcoded to "OracleEnterpriseManager".
sub origin	No	Set to the Target Name field in the event.

5.1.1.3 Formatted Enterprise Manager Event Contents

Listed below is the format used by the templates for the Description fields. Text delimited by angle brackets (< and >) designates an Enterprise Manager Event field name that will be replaced by the actual field contents. Lines marked with double asterisks indicate they will only be present if the designated event field contains data. The Notes section below contains information about some of the fields.

```
Received event reported by Oracle Enterprise Manager:
Occurred Date: <OccurredDate>
ReportedDate: <ReportedDate>
Event Class: <EventClass>
Event Name: <EventName>
Target Type: <SourceInfo/TargetInfo/TargetType>
Target Name: <SourceInfo/TargetInfo/TargetName>
Severity: <Severity>
Message: <Message>
URL: <EventURL>
```

```
Target Properties:**
  <TargetProperty/Name>: <TargetProperty/Value>**
```

```
Event Context:**
  <EventContextAttributes/StringAttribute/Name>: <
EventContextAttributes/StringAttribute /Value>**
```

Notes

- The Target Properties section will only be present if the event contains target property values. Listed below are some sample target property name/value pairs:
 Line of business: Finance
 Owner: Finance-DB Team
- The Event Context section will only be present if the event contains event context attribute values. There can be StringAttribute or NumberAttribute values that contain a name/value pair.

- URL is set to the URL of the event details page in Enterprise Manager. Copy the URL to a browser to directly view the event in Enterprise Manager.

5.1.2 Severity Mapping

The TEC event severity is set based on the Enterprise Manager event severity value. The following table shows the values used when creating the event in TEC.

When the Enterprise Manager event severity is ...	Set the TEC event severity to ...
Fatal	Critical
Critical	Critical
Warning	Warning
Minor Warning	Warning
Informational	Harmless

5.1.3 Class Name Mapping

The TEC event class name is set based on the Enterprise Manager event target type value. The following table shows the values used when creating the event in TEC.

When the Enterprise Manager event target type is ...	Set the TEC event class name to ...
Database Instance	Database
Cluster Database	Database
Database Listener	Listener
Host	Host
Oracle Application Server	Application Server
All Other Values	Oracle Enterprise Manager

5.2 Customizing Event Templates

Although the default mappings are sufficient for most implementations, you can change them as needed. The following sections discuss:

- [XML Format of Oracle Enterprise Manager Events](#)
- [Managing Templates in Oracle Enterprise Manager 12c](#)
- [Changing a Mapping](#)

It is assumed that you already have a good understanding of XSL.

For reference information on the default mappings, see [Appendix A, "Customizing IBM TEC."](#)

5.2.1 XML Format of Oracle Enterprise Manager Events

[Example 5–1](#) shows the format that the Oracle Enterprise Manager Connector Framework provides when an event is created or updated in Oracle Enterprise Manager.

Example 5–1 XML Format of Events

```

<EMEvent xmlns="http://xmlns.oracle.com/sysman/connector">
  <ExternalEventID/>
  <SystemAttributes>
    <EventClass/>
    <OccurredDate/>
    <ReportedDate/>
    <EventName/>
    <Severity/>
    <SeverityCode/>
    <SourceInfo>
      <TargetInfo>
        <TargetName/>
        <TargetTypeLabel/>
        <TargetProperty>
          <Name/>
          <Value/>
        </TargetProperty>
      </TargetInfo>
    </SourceInfo>
    <Message/>
    <EventURL/>
  </SystemAttributes>
  <EventContextAttributes>
    <NumberAttribute>
      <Name/>
      <Value/>
    </NumberAttribute>
    <StringAttribute>
      <Name/>
      <Value/>
    </StringAttribute>
  </EventContextAttributes>
</EMEvent>

```

Table 5–1 provides a description of the fields shown in Example 5–1.

Table 5–4 Field Descriptions for XML Format

Field	Description
ExternalEventId	Unique identifier of the event in TEC. This will only be set for updates
EventClass	Identifies the type of event
OccurredDate	Date/time the event occurred
ReportedDate	Date/time the event was reported by OMS
EventName	Descriptive name of the event
Severity	Severity of the event: Fatal, Critical, Warning, Minor_Warning, Informational, or Clear
SeverityCode	Severity code for the event: FATAL, CRITICAL, WARNING, MINOR_WARNING, INFORMATIONAL, or CLEAR
TargetName	Target name that is a unique instance of the target type

Table 5–4 (Cont.) Field Descriptions for XML Format

Field	Description
TargetTypeLabel	Display name of the target type for which the event was generated
TargetProperty	Additional target properties that do not have a specific field in the event model (name:value pair)
Message	Description of the event
EventURL	Link to the web page for the event
EventContextAttributes	Additional event properties that do not have a specific field in the event model (name:value pair)

5.2.2 Managing Templates in Oracle Enterprise Manager 12c

Oracle Enterprise Manager 12c (Release 12.1.0.2 and later) includes the functionality to allow you to manage templates within Cloud Control. Templates, which are included as part of the connector installation, are automatically registered and are shown within Enterprise Manager.

If you need to use new a template that is not included as part of the connector installation, then you will need to register it using the `emctl` command. See [Changing a Mapping](#) for more information. Once you have registered the template, you will be able to manage it through Enterprise Manager.

Using Enterprise Manager, you can edit a template, view the XML code, delete a template, and restore a deleted template.

To begin:

1. Log in to Enterprise Manager Cloud Control.
2. From the Setup menu, select **Extensibility**, then **Management Connectors**.
3. On the Management Connectors page, select the **IBM TEC Connector**. Click **Configure**.
4. On the Configure Management Connector page, click the **Template** tab.

Note: This feature is available on Oracle Enterprise Manager Release 12.1.0.2.0 or later only. To verify your installed release version:

1. Log in to Enterprise Manager.
 2. From the Help menu, select **About Cloud Control**.
 3. The pop-up window displays the installed version of Oracle Enterprise Manager.
-

5.2.2.1 Edit a Template with Enterprise Manager

To edit an existing template:

1. Log in to Enterprise Manager Cloud Control.
2. From the Setup menu, select **Extensibility**, then **Management Connectors**.
3. On the Management Connectors page, select the **IBM TEC Connector**. Click **Configure**.
4. On the Configure Management Connector page, click the **Template** tab.

5. Select a template and click **Edit**.
6. After you edit the Description or Template Contents fields, click **Save**. On the confirmation page, click **Yes** to complete the template save.

5.2.2.2 View Template Code in Enterprise Manager

To view template code:

1. Log in to Enterprise Manager Cloud Control.
2. From the Setup menu, select **Extensibility**, then **Management Connectors**.
3. On the Management Connectors page, select the **IBM TEC Connector**. Click **Configure**.
4. On the Configure Management Connector page, click the **Template** tab.
5. Select a template and click **View**.

The event templates are in XSLT format. A basic knowledge of XSLT is required to understand the code.

5.2.2.3 Delete a Template with Enterprise Manager

To delete a template:

1. Log in to Enterprise Manager Cloud Control.
2. From the Setup menu, select **Extensibility**, then **Management Connectors**.
3. On the Management Connectors page, select the **IBM TEC Connector**. Click **Configure**.
4. On the Configure Management Connector page, click the **Template** tab.
5. Select a template and click **Delete**.
6. Click **Yes** to confirm the delete operation.

5.2.2.4 Restore a Deleted Template with Enterprise Manager

To restore a deleted template:

1. Log in to Enterprise Manager Cloud Control.
2. From the Setup menu, select **Extensibility**, then **Management Connectors**.
3. On the Management Connectors page, select the **IBM TEC Connector**. Click **Configure**.
4. On the Configure Management Connector page, click the **Template** tab.
5. Select a template and click **Restore**.
6. Click **Yes** in the confirmation page that appears in order to restore.

Note: You can restore out-of-box templates that you have may edited or customized to their default values. You cannot restore new templates that you have created (using the `emctl register_template` command) described in [Registering Templates](#).

5.2.3 Changing a Mapping

This section explains how to customize the mapping between Enterprise Manager and the IBM TEC web service. The procedure provides the steps required for changing a mapping.

1. Export the default template XSLT files from Enterprise Manager to use as a baseline. Follow the instructions in [Exporting the Template Files](#) to obtain copies of the default template files.
2. Copy the XSL file you want to change to a new file to hold the custom template.
3. Make the desired mapping changes to the template file. See [Modifying Templates](#) for guidance on mapping changes.
4. Register the new template with Enterprise Manager as specified in [Registering Templates](#).

The files are now ready for integration. You do not need to stop and start the OMS. The changes will automatically be picked up.

See [Template Customization Example](#) for an example of how to customize templates.

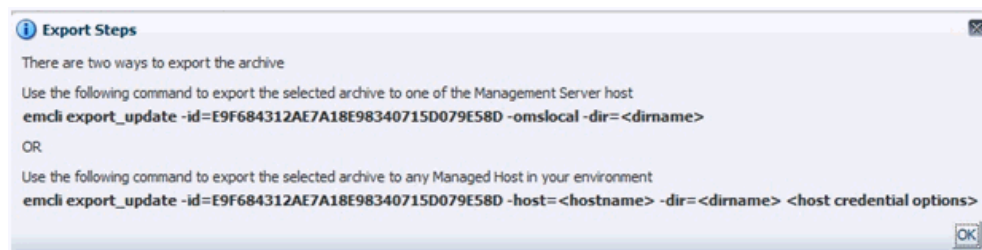
5.2.3.1 Exporting the Template Files

The connector installation jar file is included in the Self Update archive that was installed in [Installing the Connector in Enterprise Manager](#). To extract the installation file, perform the following steps.

1. Determine the command required to export the adapter installation file. To do this, perform the following steps:
 - From the Enterprise Manager console, click **Setup**.
 - Select **Extensibility** in the pane.
 - Select **Self Update**, then click **Management Connector**.
 - Click the TEC connector, then select **Export** from the Actions list.

A popup window appears with the command required to export the file. See [Figure 5–1](#) below for an example of the popup window.

Figure 5–1 Export Steps



2. Open a command window on the Management Server host machine and navigate to a temporary directory where the file can be copied.
3. Log into emcli using the following command. You will be asked to provide the password information for the sysman account.

```
emcli login -username=sysman
```

4. Run the `emcli export_update` command from your system, changing `<dirname>` to the full path of the temporary directory.

A zip file will be created. The file name will be comprised of the `id` value specified in the `export_update` command with a `.zip` extension. In the example command in [Figure 5–1](#), the zip file name would be `E9F684312AE7A18E98340715D079E58D.zip`

5. Extract the connector installation jar file from the zip file using the following command.

```
unzip *.zip archives/*connector.jar
```

6. Extract the templates from the connector jar file using the following command:

```
$JAVA_HOME/bin/jar xf archives/*.jar createEvent_request.xml
updateEvent_request.xml
```

Note: If the system where the connector file is located does not have the JDK installed, you cannot extract the jar file contents. You must copy the jar file to a system that has the JDK installed and transfer the template files after they have been extracted.

5.2.3.2 Modifying Templates

A template is an XSLT file that transforms an input XML format to an output XML format. To make the mapping changes, you need to understand the input XML format being transformed and the output XML being generated by the template. The input document is the XML document that contains the Enterprise Manager event information. The output document is the request being sent to the TEC web service. The output XML document must conform to the data format specified in the TEC EventService WSDL.

[Appendix C](#) contains details on the format of the event data generated by Enterprise Manager. [Appendix D](#) contains details on the XML format required by the TEC EventService web service. [Section A.1.1, "Mappings Between XML Format and Event Field Names"](#) provides the mapping between the TEC EventService web service fields and the slot names in TEC. Listed below are the steps you should follow to modify the template file.

1. Review [Section A.1.1, "Mappings Between XML Format and Event Field Names"](#) and [Appendix D](#) to identify the names of the fields in the TEC web service that you are planning to modify. For example if you wanted to populate the source slot in TEC, look the field up in [Section A.1.1](#) and you would see that the TEC web service expects the data in the `/create/event/source/name` XML path.
2. If you are planning on using data from the event, review [Appendix C](#) to identify the field(s) you want to use in the mapping. [Appendix B](#) has sample transactions that could be very helpful in identifying what data is present in the XML document from Enterprise Manager.
3. Open the custom template file in a text editor or a utility that can be used to build XSLT files.
4. Make the necessary changes to the custom template file and save.
5. Unless the change is very simple, you should test the changes that you have made using the sample data from [Appendix B](#). This will require a utility that performs XSLT translations.

5.2.3.3 Registering Templates

You must reregister your customized templates before they are recognized in Enterprise Manager.

For each customized template, run the following `emctl register_template connector` command as a user with execute privilege on `emctl` and the ability to read the template:

```
$ORACLE_HOME/bin/emctl register_template connector
-t <template.xml> -repos_pwd <reposPassword>
-cname <connectorName> -iname <internalName>
-tname <templateName> -ttype 2 [-d <description>]
```

Where:

<template.xml> is the full pathname of the template file

<reposPassword> is the Enterprise Manager root (SYSMAN) password

<connectorName> is the name of the connector instance installed in step 5 of section 3.1 "Creating a Connector Instance".

<internalName> is the internal name to use for the template

<templateName> is the name to display for the template

<description> is the description of the template

For example: This command updates the `createEvent` template for the connector instance with the name of "TEC":

```
emctl register_template connector
-t /home/oracle/customized_templates/createEvent_request.xml
-repos_pwd sysmanpass
-cname "TEC"
-iname "createEvent"
-tname "Create Event Request"
-ttype 2
-d "Demo template"
```

Note: The `createEvent_request.xml` is the name of the default create template. You can choose a different name by copying the `createEvent_request.xml` file contents to a file with a name of your choosing.

5.2.3.4 Template Customization Example

By default, the origin slot in the IBM TEC event is set to the Oracle Enterprise Manager target type, and the sub_origin slot is set to the target name. The following example shows how to change the value where the target type and name information is placed in TEC. In this example, the `target_type` and `target_name` slots were added to the class definition to contain this information.

The changes made to the default mapping are as follows:

- The origin slot is modified to use a hard-coded value of Oracle Enterprise Manager.
 - The sub_origin slot is not set to any value.
 - The new target_type slot is set to the Oracle Enterprise Manager target type.
 - The new target_name slot is set to the Oracle Enterprise Manager target name.
1. Navigate to the Management Connector Updates page and export the TEC Connector. Copy the first `emcli` command listed in the Export Steps window for later use.

```
emcli export_update -id=DD4E9161C5E7129F9641447FB4F0497B -omslocal
-dir=<dirname>
```

2. Open a command window on the OMS server machine and change the working directory to the temporary directory.

```
cd /home/oracle/customized_templates
```

3. Log into emcli.

```
emcli login -username=sysman
```

4. Run the emcli command from Step 1 to export the zip file to the temporary directory.

```
emcli export_update -id=DD4E9161C5E7129F9641447FB4F0497B -omslocal
-dir=/home/oracle/customized_templates
```

5. Extract the connector jar file from the zip file.

```
unzip *.zip archives/*connector.jar
```

6. Extract the template files from the jar file. This command will extract the createEvent and updateEvent template files.

```
$JAVA_HOME/bin/jar xf archives/*.jar createEvent_request.xml
updateEvent_request.xml
```

7. Make a copy of the createEvent_request.xml file and name it custom_createEvent_request.xml

8. Make a copy of the updateEvent_request.xml file and name it custom_updateEvent_request.xml.

9. Open the custom_createEvent_request.xml file in your text editor.

10. Change the appropriate sections to reflect the new mapping.

Before Changes

The code below shows the impacted sections in the file before the changes.

```
<source>
  <!-- TEC slot = source -->
  <name>OracleEnterpriseManager</name>
  <!-- TEC slot = origin -->
  <computerName><xsl:value-of
select="a:SystemAttributes/a:SourceInfo/a:TargetInfo/a:TargetTypeLabel"/></comp
uterName>
</source>
...
<extended-fields>
  <!-- TEC fields that are not mapped to the common object model -->
  <string-field name="action_flag">CREATE</string-field>
  <string-field name="ext_id"> <xsl:value-of
select="a:SystemAttributes/a:SequenceID"/></string-field>
  <string-field name="sub_source">OracleEnterpriseManager</string-field>
  <string-field name="sub_origin"><xsl:value-of
select="a:SystemAttributes/a:SourceInfo/a:TargetInfo/a:TargetName"/></string-fi
eld>
</extended-fields>
```

After Changes

The code below shows the Extended Fields section in the file after the changes. The changes are shown in bold.

```
<source>
  <!-- TEC slot = source -->
  <name>OracleEnterpriseManager</name>
  <!-- TEC slot = origin -->
  <computerName>Oracle Enterprise Manager</computerName>
```

```
</source>
...
<extended-fields>
  <!-- TEC fields that are not mapped to the common object model -->
  <string-field name="action_flag">CREATE</string-field>
  <string-field name="ext_id"><xsl:value-of
select="a:SystemAttributes/a:SequenceID"/></string-field>
  <string-field name="sub_source">OracleEnterpriseManager</string-field>
  <string-field name="target_type"><xsl:value-of
select="a:SystemAttributes/a:SourceInfo/a:TargetInfo/a:TargetType"
/></string-field>
  <string-field name="target_name"><xsl:value-of
select="a:SystemAttributes/a:SourceInfo/a:TargetInfo/a:TargetName"
/></string-field>
</extended-fields>
```

11. Save your changes after making the updates.
12. Open the custom_updateEvent_request.xml file and make the same changes. In this case, you cannot just cut and paste the Extended Fields section because there are differences between the create and update translations. You must edit them separately.
13. Save your changes after making the updates.
14. To set up for testing, create the create.xml and update.xml files and open them in a text editor.
15. Copy the contents of the XML document in the “Create Sample” section of [Appendix B](#) into the create.xml file and save.
16. Copy the contents of the XML document in the “Update Sample” section of [Appendix B](#) into the update.xml file and save.
17. Test the new templates using a utility that performs XSLT translations using each of the create.xml and update.xml files as the input XML document.
18. Examine the output XML document and verify the results are correct.

Note: You can also use an XML client to send the XML output document to the TEC web service to verify that it is a format accepted by the web service.

19. If the XML document has problems, make any necessary corrections and repeat Steps 17 and 18.
20. At the OMS server system, run the following command to reregister your customized createEvent template.

```
emctl register_template connector
-t /home/oracle/customized_templates/custom_createEvent_request.xml
-repos_pwd sysmanpass
-cname "TEC R2"
-iname "createEvent"
-tname "Create Event Request"
-ttype 2
-d " This is the customized request xml file for the createEvent method"
```

21. At the OMS server system, run the following command to reregister your customized updateEvent template.


```
emctl register_template connector
-t /home/oracle/customized_templates/custom_updateEvent_request.xml
-repos_pwd sysmanpass
-cname "TEC R2"
-iname "updateEvent"
-tname "Update Event Request"
-ttype 2
-d " This is the customized request xml file for the updateEvent method"
```

Enabling SSL for HTTPS

This chapter contains information used in configuring the TEC connector to use the HTTPS protocol.

6.1 Configuring Enterprise Manager to use SSL

If the TEC web service was configured to run using the HTTPS protocol, you must perform the following steps to set up SSL:

1. Install a SSL certificate in the TEC web service keystore. You must either install a self-signed certificate or install a certificate obtained from a Certificate Authority (CA).
 - To install a self-signed certificate, perform the steps specified in [Section 6.2, "Installing a Self-Signed Certificate"](#).
 - To install a certificate from a CA, perform the steps specified in [Section 6.3, "Installing a Certificate from a Certificate Authority"](#).
2. Import the SSL certificate from the TEC web service keystore into the Enterprise Manager keystore as specified in [Section 6.4, "Importing the Web Service Certificate into Enterprise Manager"](#).

6.2 Installing a Self-Signed Certificate

Perform the following steps to generate and install a self-signed SSL certificate for the TEC adapter web service:

1. Open a command prompt window and change the working directory to the `adapters/conf` directory in the TEC web service installation directory.
2. Execute the following command to delete the default SSL entry from the TEC web service keystore.

Unix

```
$JAVA_HOME/bin/keytool -delete -alias iwave -keypass iwavepw -storepass iwavepw -keystore keystore.jks
```

Windows

```
"%JAVA_HOME%\bin\keytool" -delete -alias iwave -keypass iwavepw -storepass iwavepw -keystore keystore.jks
```

3. Enter the following command to generate a new certificate and place it in the TEC web service keystore. You will need to replace `<hostname>` with the host name or IP address of the system where the TEC web service is installed.

Note: The host name in the certificate must match the host name or IP address used by the web service. If they do not match, a failure will occur when Enterprise Manager tries to invoke the web service

Unix

```
$JAVA_HOME/bin/keytool -genkey -alias iwave -keyalg RSA -keysize 1024  
-dname "CN=<hostname>, OU=Development, O=iWave Software, L=Frisco,  
ST=TX, C=US" -keypass iwavepw -storepass iwavepw -keystore keystore.jks
```

Windows

```
"%JAVA_HOME%\bin\keytool" -genkey -alias iwave -keyalg RSA -keysize  
1024 -dname "CN=<hostname>, OU=Development, O=iWave Software, L=Frisco,  
ST=TX, C=US" -keypass iwavepw -storepass iwavepw -keystore keystore.jks
```

6.3 Installing a Certificate from a Certificate Authority

Perform the following steps to request and install a signed SSL certificate for the TEC web service:

1. Request a certificate for the TEC web service from a Certificate Authority, such as VeriSign.

Note: In the certificate request, make sure to specify the host name or IP address of the system where the TEC web service is installed. The host name in the certificate must match the host name or IP address used by the web service. If they do not match, a failure will occur when Enterprise Manager tries to invoke the web service.

2. After you obtain the certificate from the Certificate Authority, perform the following steps to install the certificate:
 - Open a command prompt window and change the working directory to the adapters/conf directory in the TEC web service installation directory.
 - Enter the following command to install the certificate, where <certificateFile> is the full path name of the file provided by the Certificate Authority:

Unix

```
$JAVA_HOME/bin/keytool -importcert -alias iwave -file  
<certificateFile> -keypass iwavepw -storepass iwavepw -keystore  
keystore.jks
```

Windows

```
"%JAVA_HOME%\bin\keytool" -importcert -alias iwave -file  
<certificateFile> -keypass iwavepw -storepass iwavepw -keystore  
keystore.jks
```

6.4 Importing the Web Service Certificate into Enterprise Manager

Perform the following steps to import the TEC web service SSL certificate into the Enterprise Manager keystore.

1. Open a command prompt window and change the working directory to the adapters/conf directory in the TEC web service installation directory.
2. Issue the following command to extract the SSL certificate from the TEC web service keystore and place in the TECws.cer certificate file.

Unix:

```
$JAVA_HOME/bin/keytool -exportcert -rfc -alias iwave -file TECws.cer  
-keystore keystore.jks -storepass iwavepw
```

Windows:

```
"%JAVA_HOME%\bin\keytool" -exportcert -rfc -alias iwave -file TECws.cer  
-keystore keystore.jks -storepass iwavepw
```

3. Transfer the certificate file TECws.cer to the system where Enterprise Manager is installed.

4. Append the contents of the TECws.cer file to:

```
$INSTANCE_HOME/sysman/config/b64LocalCertificate.txt
```

5. Ensure that only the following is appended to the b64LocalCertificate.txt file (that is, do not include blank lines or comments or any other special characters):

```
-----BEGIN CERTIFICATE-----  
<<<Certificate in Base64 format>>>  
-----END CERTIFICATE-----
```

6. Restart OMS by running the following commands:

```
emctl stop oms  
emctl start oms
```

Note: Do not run the emctl secure oms/agent command after adding the external certificate to the *b64LocalCertificate.txt* file. If you run the emctl secure command later, then repeat steps 4 through 6 to make sure the external certificate exists in the *b64certificate.txt* file.

Troubleshooting the Connector

This chapter provides information to assist in troubleshooting integration issues with IBM TEC. The chapter focuses on troubleshooting issues in the web service front-end and the back-end Agent.

This chapter discusses the following topics:

- [Diagnosing the Problem](#)
- [Troubleshooting Web Service Startup Errors](#)
- [JVM Errors](#)
- [Using the Correct URL for TEC Web Service Operations](#)
- [Troubleshooting Web Service Operations Errors](#)
- [Troubleshooting Errors from Oracle Enterprise Manager](#)

Before you start the troubleshooting steps, you must insure that you have done the following:

1. Install the TEC Connector as specified in [Section 2.3, "Installing the Connector in Enterprise Manager"](#).
2. Install, start, and test the TEC Web service as specified in [Section 2.4, "Installing the IBM TEC Web Service"](#).
3. Install and start the Oracle TEC Agent as specified in [Section 2.5, "Installing and Running the IBM TEC Agent"](#).
4. Create a connector instance as specified in [Section 3.1, "Creating a Connector Instance"](#).
5. Configure the connector instance as specified in [Section 3.2, "Configuring the Connector"](#).
6. Set up one or more rules to forward events to the connector instance.

If all the actions above have been completed and the connector is not working, perform the steps in [Section 7.1, "Diagnosing the Problem"](#).

7.1 Diagnosing the Problem

To diagnose why the connector is not working, follow these steps:

1. Verify that the TEC Web Service has been successfully started and the WSDL for the TEC Web Service can be accessed from the machine where it is installed. Performing the following steps to do this:

- a. Perform the steps in [Section 7.4, "Using the Correct URL for TEC Web Service Operations"](#) to determine the URL used by the TEC Web Service.
- b. Open a browser and paste the URL from the previous step in the address window. Append ?WSDL to the end of the URL and attempt to load the URL.
- c. The WSDL should be loaded if the web service is operational.

Note: A WSDL is an XML file that describes the web service.

- d. If the WSDL cannot be loaded, this indicates the web service had startup issues. See [Section 7.2, "Troubleshooting Web Service Startup Errors"](#) to diagnose the problem.
2. Verify that the WSDL for the TEC Web Service can be accessed from the machine where the Enterprise Manager server is installed.
 - a. Open a browser at the Enterprise Manager server and copy the URL from Step 1-b above to the address window. The hostname for the URL will be localhost. Change localhost to the actual hostname or IP address of the machine where the TEC Web Service is installed. If you specify a hostname, you must make sure that the hostname is recognized at the Enterprise Manager server machine. This can be done using the ping command.

For example, if the Web Service is installed on the server with a hostname of TECServer01 and the URL listed in framework.log is:

`http://localhost:8080/services/tec/EventService`

The URL used at the Enterprise Manager server machine would be:

`http://TECServer01: 8080/services/tec/EventService`

- b. Attempt to load the WSDL by appending ?WSDL at the end of the URL. If the WSDL cannot be loaded, either the hostname is not recognized at the Enterprise Manager machine or there is a connectivity issue between the two machines. If you specified a hostname, try using the IP address instead of the hostname in the URL. If it still will not load, you have a connectivity problem. You will need to consult with your IT department to resolve this issue.
3. Verify that the TEC Connector specifies the correct URL for the createEvent and updateEvent operations.
 - a. Log in to the Oracle Enterprise Manager console with an account that has Super Administrator permissions.
 - b. From the Enterprise Manager console, click **Setup**.
 - c. Select **Extensibility** in the pane.
 - d. Select **Management Connectors** in the left pane.
 - e. The Management Connectors page appears, which shows the installed connectors.
 - f. Click the Configure icon associated with the TEC Connector. This invokes edit mode, enabling you to configure the connector.
 - g. Verify that the URL identified in step 2-b is specified for both operations (createEvent and updateEvent). If any of the operations are incorrect, change to the correct URL.

Note: Do not append the WSDL to the end of the URL that is specified here.

- h. Click **OK**.
- 4. If there were no errors found in the previous steps, this rules out connectivity issues between the connector and the TEC Web Service. The problem must lie in the TEC Web Service or the Oracle TEC Agent. See [Section 7.5, "Troubleshooting Web Service Operations Errors"](#) for information on diagnosing errors.

7.2 Troubleshooting Web Service Startup Errors

To identify the cause of a startup failure, navigate to the adapters/log directory in the TEC Web Service install directory and open the framework.log file in a text editor. Search for Exception to find any errors in the file. If the file does not exist, it indicates that there is a problem locating or executing the JVM. See [Section 7.3, "JVM Errors"](#) for information about resolving JVM issues.

Listed below are some possible Exceptions, an explanation of the root cause, and a description of the solution.

java.net.BindException: Address already in use: bind

This error indicates that the web service could not start because of a port conflict. There are two possible causes for this error.

1. Another application is using a port that the Web service is configured to use. If the web service is configured to use SSL, the port number is 8443. If it is not configured to use SSL, the port number is 8080.

There are two possible solutions to this. You can change the other application to use a different port or you can change the TEC Web Service to use a different port. To change the TEC Web Service to use a different port, see [Section A.2, "Changing Default Port Numbers"](#).

2. There is an instance of the Web service already running. If this is the case then there is no change required. You should only run one instance of the Web service at a time.

org.springframework.beans.factory.BeanInitializationException: Could not load properties; nested exception is java.io.FileNotFoundException: ... framework.properties (Permission denied)

This error indicates that the web service could not start because the permissions on the framework.properties file in the conf directory were not set correctly.

To solve the problem, change the permissions to give the account or group under which the TEC Web Service runs read and execute permissions.

For any other startup errors, consult with Oracle Support.

7.3 JVM Errors

The TEC Web Service requires version 1.6 of the JVM. If there are multiple versions of the JVM installed on the machine, it is possible that an older version of the JVM is being executed whenever the web service starts.

On UNIX systems, the *JAVA_HOME* environment variable must be set to the directory where Java 1.6 is installed in the shell where the web service is started. To properly start the web service on a UNIX platform, perform the following:

1. Set the *JAVA_HOME* environment variable to the Java 1.6 install directory.
2. Navigate to the *adapters/bin* subdirectory in the Web service install directory.
3. Execute the `./service.sh start` command.

On Windows systems, perform the following to insure that Java 1.6 is used when starting the web service.

1. Navigate to the *adapters/bin* subdirectory in the Web service install directory.
2. Run the *iWaveAdaptersw.exe* executable.
3. Click the Java tab.
4. Make sure that the Use Default check box is not checked.
5. In the Java Virtual Machine box, specify the path to the *jvm.dll* file in the Java 1.6 install directory.
6. Click **OK**.

7.4 Using the Correct URL for TEC Web Service Operations

Perform the following steps to identify and configure the connector to use the correct URL for TEC Web Service operations.

1. Open a command terminal on the system where the TEC web service is installed.
2. Change the working directory to the *adapters/log* directory in the TEC web service installation directory.
3. Open the *framework.log* file in a text editor.
4. Go to the bottom of the file and search backwards for the string "Setting the server's publish address to be." Continue searching backwards until the URL that contains *EventService* is found. The URL listed here is the URL that should be specified for the *createEvent* and *updateEvent* operations.
5. Log in to the Oracle Enterprise Manager console with an account that has Super Administrator permissions.
6. From the Enterprise Manager console, click **Setup**.
7. Select **Extensibility** in the pane.
8. Select **Management Connectors** in the left pane.
9. Click the name of the TEC Connector.
The General tab of the Configure Management Connector page appears.
10. Verify that the URL identified in step 4 is specified for the *createEvent* and *updateEvent* operations.
11. If any of the operations are incorrect, change to the correct URL, then click **OK**.

7.5 Troubleshooting Web Service Operations Errors

Perform the following diagnostic steps if events are not being generated or updated as expected in TEC.

1. Verify that the event that was triggered is referenced in a rule that forwards events to the TEC connector.
2. Determine the error that Oracle Enterprise Manager has reported.
 - a. To do this you need to examine the log file for errors. Perform the following steps to locate errors in the log file:
 - 1.) Open the emoms_pbs.trc file in a text editor. The file is located in the log directory at the following location:
 <EM_INSTANCE_BASE>/em/<OMS_NAME>/sysman/log/

Where, <EM_INSTANCE_BASE> is the OMS Instance Base directory. By default, the OMS Instance Base directory is gc_inst, which is present under the parent directory of the Oracle Middleware Home.

For example, if the Oracle Middleware Home is /u01/app/Oracle/Middleware, then the instance base directory is /u01/app/Oracle/Middleware/gc_inst, and the log and trace files are available in /u01/app/Oracle/Middleware/gc_inst/em/EMGC_OMS1/sysman/log/ directory path.
 - 2.) Go to the bottom of the file and search backwards for "Caused by". Lines that start with "Caused by" contain error information. The error information comes after the text in the line that reads "oracle.sysman.emSDK.webservices.outbound.WSInvokeException: caught WebServiceException:".
3. Diagnose the problem based on the error information. See [Section 7.6, "Troubleshooting Errors from Oracle Enterprise Manager"](#) for information on troubleshooting common error events.

7.6 Troubleshooting Errors from Oracle Enterprise Manager

This section provides cause and solution information on troubleshooting common error messages. Find the error message in [Table 7-1](#) that matches your error message, then refer to the corresponding section(s) indicated under Possible Cause for instructions to diagnose and correct the problem.

Table 7-1 Enterprise Manager Error Messages

Error Message	Possible Cause
javax.xml.soap.SOAPException: javax.xml.soap.SOAPException: Bad response: 403 Forbidden from url ...	Invalid Web Service Credentials
javax.xml.soap.SOAPException: javax.xml.soap.SOAPException: Message send failed: sun.security.validator.ValidatorException: PKIX path building failed: sun.security.provider.certpath.SunCertPathBuilderExceptio n: unable to find valid certification path to requested target	SSL Not Configured in Enterprise Manager
javax.xml.soap.SOAPException: javax.xml.soap.SOAPException: Message send failed: Connection refused	TEC Web Service Down
javax.xml.soap.SOAPException: javax.xml.soap.SOAPException: Message send failed: No route to host	Invalid IP Address

Table 7-1 (Cont.) Enterprise Manager Error Messages

Error Message	Possible Cause
javax.xml.soap.SOAPException: javax.xml.soap.SOAPException: Bad response: 404 Not Found from url ...	Invalid Port Number or Invalid URL Path
javax.xml.soap.SOAPException: javax.xml.soap.SOAPException: Message send failed: Connection timed out	Firewall Blocking Access
javax.xml.soap.SOAPException: javax.xml.soap.SOAPException: Message send failed: hostname;	Unknown Host
javax.xml.transform.TransformerConfigurationException: Could not compile stylesheet	Invalid XML Format
Attempt to insert the event into TEC failed	TEC Server Not Operational
Timeout occurred waiting for synchronous response from TEC after inserting an event	TEC Server Timeout

Invalid Web Service Credentials

Cause

The user name or password for accessing the TEC web service is incorrect.

Solution

1. Log in to the Oracle Enterprise Manager console with an account that has Super Administrator privileges.
2. From the Enterprise Manager console, click **Setup**.
3. Select **Extensibility** in the pane.
4. Select **Management Connectors** from the menu. This displays the Management Connectors page.
5. Click the name of the TEC Connector.
This invokes edit mode, enabling you to configure the connector.
6. Correct the TEC Web Service Username and TEC Web Service Password fields, then click **OK**.

SSL Not Configured in Enterprise Manager

Cause

The SSL handshake between the Oracle Enterprise Manager Connector Framework and the TEC web service failed. This failure occurs because Oracle Enterprise Manager is not configured correctly with the SSL certificate for the TEC web service. The SSL certificate the TEC web service uses must be imported into the certificate store. The certificate is either missing from the certificate store or does not match the SSL certificate provided by the TEC web service.

Solution

Import the SSL certificate from the TEC web service into the certificate store. See [Section 6.1, "Configuring Enterprise Manager to use SSL"](#) for details on setting up Oracle Enterprise Manager with the TEC SSL certificate.

TEC Web Service Down

Cause

The TEC web service is down.

Solution

Perform the following steps to check the status of the web service and start it if necessary.

If the TEC web service is installed on a Unix system:

1. Open a command terminal on the system where the TEC web service is installed.
2. Change the working directory to the adapters/bin directory in the TEC web service installation directory.
3. Enter the following command:

```
./service.sh status
```

4. If the command indicates that the service is not running, enter the following command:

```
./service.sh start
```

If the TEC web service is installed on a Windows system:

1. Open a command terminal on the system where the TEC web service is installed.
2. Change the working directory to the adapters/log directory in the TEC web service installation directory.
3. Open the framework.log file in a text editor.
4. Go to the bottom of the file and search backwards for the string iWave Adapter Framework. If the last occurrence found is iWave Adapter Framework Started, this indicates that the web service is started.
5. If the web service is not started, start the web service as specified in [Section 2.4.1.3, "Running the Web Service on Unix"](#) or [Section 2.4.2.4, "Running the Web Service on Windows"](#).

Invalid IP Address

Cause

The IP address specified in the URL is invalid or the network is down.

Solution

Verify that the hostname/IP address configured for the connector is correct:

1. Log in to the Oracle Enterprise Manager console with an account that has Super Administrator privileges.
2. From the Enterprise Manager console, click **Setup**.
3. Select **Extensibility** in the pane.
4. Select **Management Connectors** from the menu. This displays the Management Connectors page.
5. Click the name of the TEC Connector.

This invokes edit mode, enabling you to configure the connector.

6. Verify that the hostname/IP address specified in the URL for the createEvent and updateEvent operations are correct.
7. If the hostname/IP address is incorrect, provide the correct value, then click **OK**.

If the URLs specify a host name, make sure that the host name resolves to the correct IP address. To determine the IP address of the host name, issue the ping <hostname> command, where <hostname> is the actual host name. This lists the IP address that was resolved for the host name. If this is incorrect, the system administrator needs to investigate why it is incorrect.

If the hostname/IP address appears to be correct, try to ping the system where the TEC web service is installed using the hostname/IP address. If the ping fails, the system administrator needs to investigate why there is no connectivity.

Invalid Port Number

Cause

The port number specified in the URL is invalid.

Solution

Verify that the port number configured for the connector is correct:

1. Log in to the Oracle Enterprise Manager console with an account that has Super Administrator privileges.
2. From the Enterprise Manager console, click **Setup**.
3. Select **Extensibility** in the pane.
4. Select **Management Connectors** from the menu. This displays the Management Connectors page.
5. Click the name of the TEC Connector.
This invokes edit mode, enabling you to configure the connector.
6. Verify that the port number specified in the URL for the createEvent and updateEvent operations are correct.
7. If the port number is incorrect, provide the correct value, then click **OK**.

Invalid URL Path

Cause

The web service received the request and rejected it because an invalid path was specified in the URL.

Solution

Perform the following steps to test the URL the connector is using.

1. Log in to the Oracle Enterprise Manager console with an account that has Super Administrator privileges.
2. From the Enterprise Manager console, click **Setup**.
3. Select **Extensibility** in the pane.
4. Select **Management Connectors** from the menu. This displays the Management Connectors page.
5. Click the name of the TEC Connector.
This invokes edit mode, enabling you to configure the connector.

6. Select and copy the URL specified for the createEvent operation.
7. Open an internet browser on the system where the Oracle Enterprise Manager server is installed.
8. In the address window, enter the URL that was copied in step 6 above. Add ?wsdl to the end of the URL. The URL should appear similar to the following example:

```
http://[Hostname]:8080/services/tec/EventService?wsdl
```

[Hostname] is the actual host name or IP address where the TEC web service is installed.

If the WSDL is loaded, this confirms that the URL is correct. If it fails to load, there is a problem with the URL. Perform the steps specified in [Section 7.4, "Using the Correct URL for TEC Web Service Operations"](#) to configure the connector to use the correct URL.

Firewall Blocking Access

Cause

A firewall is blocking access to the system where the TEC Web Service is installed.

Solution

Contact your IT department to give Enterprise Manager access to the port used by the TEC Web Service. Perform the steps specified in [Section 7.4, "Using the Correct URL for TEC Web Service Operations"](#) to determine the URL used by the TEC Web Service. The port number specified in the URL is the port number the IT department should open in the firewall.

Unknown Host

Cause

The system does not recognize the host name specified in the URL.

Solution

You can use the following options to address this issue:

- Coordinate with the system administrator to change the system configuration to recognize the host name.
- Specify the IP address in the URL instead of the host name. To do this, perform the following steps:
 1. Determine the IP address of the system where the TEC web service is installed.
 2. Log in to the Oracle Enterprise Manager console with an account that has Super Administrator privileges.
 3. From the Enterprise Manager console, click **Setup**.
 4. Select **Extensibility** in the pane.
 5. Select **Management Connectors** from the menu. This displays the Management Connectors page.
 6. Click the name of the TEC Connector.

This invokes edit mode, enabling you to configure the connector.

7. Change the host name to the IP address in the URL specified for the createEvent and updateEvent operations.
8. Click OK.

Invalid XML Format

Cause

The connector framework could not process the request because the XSL file was formatted incorrectly. This problem should not occur unless the connector templates have been customized.

Solution

Examine any changes made to the XSL template files for mistakes that could have caused the problem. If you can't find the problem manually, load the XSL in a utility that performs XML validation.

TEC Server Not Operational

Cause

The web service could not insert the event into TEC because it could not connect to the TEC server. This problem could be caused for one of the following reasons:

- The TEC server is down.
- The TEC server hostname/IP address or port number is not configured correctly for the TEC web service.
- A network outage is preventing the TEC web service from connecting to the TEC server.

Solution

Perform the following steps to determine and correct the root cause of the problem:

1. Open a command terminal on the system where the TEC web service is installed.
2. Change the working directory to the adapters/conf directory in the TEC web service installation directory.
3. Edit the framework.properties file with a text editor.
4. Search for the tec.server1.config.t_ServerLocation parameter. This parameter specifies the hostname/IP address to use when connecting to the TEC API server.
5. Verify that the host name or IP address is correct. If the hostname/IP address appears to be correct, try to ping the system where the TEC web service is installed using the hostname/IP address. If the ping fails, the system administrator needs to investigate why there is no connectivity.
6. Search for the tec.server1.config.t_Port parameter. This parameter specifies the port number to use when connecting to the TEC API server.
7. Verify that the port number is correct. If the TEC server is running on a Unix machine with a port mapper, the port number should be set to 0. If the TEC server is running on a Windows system or Unix system without a port mapper, the port number must be set to the TEC reception port.

Note: The TEC reception port is defined by the `tec_recv_agent_port` parameter in the `.tec_config` file in the `$BINDIR/TME/TEC` directory.

If the hostname/IP address is valid and reachable, and the port number is correct, the TEC server must be down.

8. To check the status of the TEC server, open a command terminal on the system where the TEC server is installed.
9. Set up the TEC environment.
 - For Windows systems, enter the following commands to start the bash shell:


```
%SystemRoot%\system32\drivers\etc\Tivoli\setup_env.cmd
bash
```
 - For Unix systems, enter the following command to set the TEC environment variables:


```
/etc/Tivoli/setup_env/sh
```
10. Enter the following command to display the status of the TEC server:


```
wstatesvr
```
11. If the TEC server is down, contact your TEC system administrator to start the server.

TEC Server Timeout

Cause

The web service successfully sent the event to the TEC server, but did not receive a response in the time-out period. This problem could be caused for one of the following reasons:

- The TEC server ignored the request because it contained invalid data.
- The TEC rule for the class is incorrectly configured.

Solution

Perform the following steps to determine and correct the root cause of the problem.

1. Open a command terminal on the system where the TEC server is installed.
2. Set up the TEC environment.
 - For Windows systems, enter the following commands to start the bash shell:


```
%SystemRoot%\system32\drivers\etc\Tivoli\setup_env.cmd
bash
```
 - For Unix systems, enter the following command to set the TEC environment variables:


```
/etc/Tivoli/setup_env.sh
```
3. Enter the following command to display the most recent entries in the TEC server log:


```
wtdumprrl -o DESC | more
```

4. Locate the entry for the event that timed out, and verify that the log indicates that it was processed. If an error appears, it explains what is incorrect with the data. You will need to modify the mapping to fix the problem. See [Section 5.2.3, "Changing a Mapping"](#) for additional information.

If the log indicates that TEC successfully processed the data, you need to verify that the TEC rule base invoked the tec2uniagt script located in the TEC Agent installation directory. Consult with your TEC administrator for information on setting up and viewing the rule logs.

Customizing IBM TEC

This appendix describes the SCOM mappings and various other configuration defaults.

A.1 XML Format of IBM TEC Events

[Example A-1](#) represents the format that the IBM TEC web service expects for creating new events in IBM TEC. The format for update requests is the same, except the root node would be "update" instead of "create."

Example A-1 Sample Format for IBM TEC Web Service

```
<iwaveaf:create xmlns:iwaveaf="http://iwavesoftware.com/services/
adapter-framework">
  <event>
    <description></description>
    <status></status>
    <severity></severity>
    <repeatCount></repeatCount>
    <createDate></createDate>
    <eventClass>
      <name>OracleEnterpriseManager</name>
    </eventClass>
    <group>
      <name>PrimaryServer</name>
    </group>
    <object>
      <computerName></computerName>
      <displayName></displayName>
    </object>
    <source>
      <computerName></computerName>
      <name>OracleEnterpriseManager</name>
    </source>
    <extended-fields>
      <string-field name="ext_id"></string-field>
      <string-field name="sub_source">OracleEnterpriseManager</string-field>
    </extended-fields>
  </event>
</iwaveaf:create>
```

A.1.1 Mappings Between XML Format and Event Field Names

[Table A-1](#) identifies the mappings between the IBM TEC base event slot names and the XML format that the IBM TEC web services uses. The XML document presented to

the IBM TEC web service must have the corresponding fields set. This must be handled in the appropriate translation file identified in [Table A-1](#).

Table A-1 Event Attributes and XML Path Mappings

IBM TEC Slot Names	XML Path
Class Name	/create/event/eventClass/name
msg	/create/event/description
status	/create/event/status
severity	/create/event/severity
repeat_count	/create/event/repeatCount
date	/create/event/createDate
fqhostname	/create/event/object/computerName
hostname	/create/event/object/displayName
source	/create/event/source/name
origin	/create/event/source/computerName
All other slot names	See Extended Fields below.

A.1.2 Extended Fields

Extended fields pass information for slots that are not mapped. An extended field is defined as a `<string-field/>` element that is a child of the extended-fields node. The name of the slot is specified in the name attribute, and the value of the slot is specified in the element value.

A.2 Changing Default Port Numbers

In most cases, you can use the default port numbers that the IBM TEC web service uses. However, if there are any conflicts with existing applications, you need to change the port numbers.

8080 is the default port number for HTTP communication, and 8443 is the default port for HTTPS communication. To change the port number, perform the steps in the appropriate subsection.

A.2.1 Changing the Web Service Port (8080)

The TEC web service uses port 8080 as the default port for communication when the web service is configured at installation to use HTTP (no SSL). To change the port number to a different value, perform the following steps at the system where the TEC web services are installed. Replace `<TEC_INSTALL>` with the directory where the TEC web services are installed.

1. Open a command prompt window and change the working directory to:

```
<TECWS_INSTALL>/adapters/conf
```
2. Make a back-up copy of the `framework.properties` file, then open the file with a text editor.
3. Replace all references to the old port number with the new port number, then save the file.

4. Restart the web service as instructed in [Section 2.4.1.3, "Running the Web Service on Unix"](#) and [Section 2.4.2.4, "Running the Web Service on Windows"](#).

Perform the following steps to change the URL the TEC connector is using:

1. From the Enterprise Manager console, click **Setup**.
2. Select **Extensibility** in the pane.
3. Select **Management Connectors** in the left pane.
4. Click the name of the TEC Connector.

The General tab of the Configure Management Connector page appears.

5. Change the URLs listed in the Web Service End Points section to use the new port number.
6. Click **OK** to save your changes.

A.2.2 Changing the Web Service Port (8443)

Contact Oracle support for assistance in switching the default SSL port 8443 to a different port.

B

Enterprise Manager Event Samples

This appendix contains samples that show the XML format of events from Enterprise Manager that conform to the schemas defined in [Appendix C, "Enterprise Manager Event Format"](#). These samples can be used to help identify the fields to map when customizing the event templates. They can also be used to test your customizations once they have been built.

B.1 Create Sample

Listed below is a sample of the XML format generated by Enterprise Manager for TEC create operations.

```
<EMEvent xmlns="http://xmlns.oracle.com/sysman/connector">
  <ConnectorGUID>00C89B1A8CAB4C6B8D4377369524A2F4</ConnectorGUID>
  <NotificationRuleOwner>SYSMAN</NotificationRuleOwner>
  <NotificationRuleName>TEC Rule</NotificationRuleName>
  <Property>
    <Name>Notification_Method_Name</Name>
    <Value>TEC</Value>
  </Property>
  <Property>
    <Name>AuthenticationType</Name>
    <Value>HTTPBasicAuthentication</Value>
  </Property>
  <Property>
    <Name>IsNewTargetType</Name>
    <Value>yes</Value>
  </Property>
  <SystemAttributes>
    <EventClass>metric_alert</EventClass>
    <EventID>B6A5393A929432A0E040020A7801445B</EventID>
    <SequenceID>B6A5393A929532A0E040020A7801445B</SequenceID>
    <ReportedDate>2012-01-19T17:32:16.000-06:00</ReportedDate>
    <DisplayTZ>America/Chicago</DisplayTZ>
    <EventName>Load:memUsedPct</EventName>
    <Severity>Critical</Severity>
    <SeverityCode>CRITICAL</SeverityCode>
    <SourceInfo>
      <SourceObjInfo>
        <ObjID>D93A2E4E1622013D74D9534ECB090944</ObjID>
        <ObjName>orcsvr1.iwavesoftware.com</ObjName>
        <ObjOwner>SYSMAN</ObjOwner>
        <SourceObjType>TARGET</SourceObjType>
        <SourceObjSubType>host</SourceObjSubType>
      </SourceObjInfo>
    </SourceInfo>
  </SystemAttributes>
  <TargetInfo>
```

```

        <TargetGUID>D93A2E4E1622013D74D9534ECB090944</TargetGUID>
        <TargetName>orcsvr1.iwavesoftware.com</TargetName>
        <TargetType>host</TargetType>
        <TargetTypeLabel>Host</TargetTypeLabel>

<TargetURL>https://orcsvr1.iwavesoftware.com:7801/em/redirect?pageType=TARGET_
HOMEPAGE&amp;targetName=orcsvr1.iwavesoftware.com&amp;targetType=host</TargetURL>
    <TargetProperty>
        <Name>Target_Host</Name>
        <Value>orcsvr1.iwavesoftware.com</Value>
    </TargetProperty>
    <TargetProperty>
        <Name>Target Version</Name>
        <Value>5.5.0.0.0</Value>
    </TargetProperty>
    <TargetProperty>
        <Name>Line of Business</Name>
        <Value>Software</Value>
    </TargetProperty>
    <TargetProperty>
        <Name>Location</Name>
        <Value>Frisco, TX</Value>
    </TargetProperty>
    <TargetProperty>
        <Name>Comment</Name>
        <Value>Testing target properties</Value>
    </TargetProperty>
</TargetInfo>
</SourceInfo>
<Message>Memory Utilization is 82.362%, crossed warning (50) or critical
(70) threshold.</Message>

<EventURL>https://orcsvr1.iwavesoftware.com:7801/em/redirect?pageType=sdk-core-eve
nt-console-detailEvent&amp;issueID=B6A5393A929532A0E040020A7801445B</EventURL>
    <AutoClose>true</AutoClose>
    <EventCategory>Capacity</EventCategory>
</SystemAttributes>
<EventClassSpecificAttributes>
    <StringAttribute>
        <Name>is_thresholdable</Name>
        <Value>1</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>coll_name</Name>
        <Value>LoadLinux</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>is_metric_extension</Name>
        <Value>0</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>metric_column_resbundle</Name>
        <Value>oracle.sysman.eml.rsc.gen.hostMsg</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>metric_description_resbundle</Name>
        <Value>oracle.sysman.eml.rsc.gen.hostMsg</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>unit_resbundle</Name>

```



```
        <Value>oracle.sysman.eml.rsc.gen.hostMsg</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>cycle_guid</Name>
        <Value>B6A5393A929132A0E040020A7801445B</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>is_remote</Name>
        <Value>0</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>metric_type</Name>
        <Value>0</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>metric_guid</Name>
        <Value>86821B5F0CE858D6E4A7F7390E88B73C</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>num_keys</Name>
        <Value>0</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>key_value</Name>
        <Value> </Value>
    </StringAttribute>
    <StringAttribute>
        <Name>metric_description_nlsid</Name>
    </StringAttribute>
    <StringAttribute>
        <Name>value</Name>
        <Value>82.362</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>is_long_running</Name>
        <Value>0</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>metric_group</Name>
        <Value>Load</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>is_udm</Name>
        <Value>0</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>metric_description</Name>
    </StringAttribute>
    <StringAttribute>
        <Name>metric_column_nlsid</Name>
        <Value>host_load_memUsedPct</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>metric_column</Name>
        <Value>memUsedPct</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>unit_nlsid</Name>
        <Value>em__sys__standard_percent</Value>
    </StringAttribute>
```

```

    <StringAttribute>
      <Name>unit</Name>
      <Value>%</Value>
    </StringAttribute>
    <StringAttribute>
      <Name>metric_group_nlsid</Name>
      <Value>host_load</Value>
    </StringAttribute>
    <StringAttribute>
      <Name>metric_group_resbundle</Name>
      <Value>oracle.sysman.eml.rsc.gen.hostMsg</Value>
    </StringAttribute>
    <StringAttribute>
      <Name>severity_guid</Name>
      <Value>B6A5393A929132A0E040020A7801445B</Value>
    </StringAttribute>
  </EventClassSpecificAttributes>
</EMEvent>

```

B.2 Update Sample

Listed below is a sample of the XML format generated by Enterprise Manager for TEC update operations.

```

<EMEvent xmlns="http://xmlns.oracle.com/sysman/connector">
  <ConnectorGUID>00C89B1A8CAB4C6B8D4377369524A2F4</ConnectorGUID>
  <ExternalEventID>1:1:1326996954</ExternalEventID>
  <NotificationRuleOwner>SYSMAN</NotificationRuleOwner>
  <NotificationRuleName>TEC Rule</NotificationRuleName>
  <Property>
    <Name>Notification_Method_Name</Name>
    <Value>TEC</Value>
  </Property>
  <Property>
    <Name>AuthenticationType</Name>
    <Value>HTTPBasicAuthentication</Value>
  </Property>
  <Property>
    <Name>IsNewTargetType</Name>
    <Value>yes</Value>
  </Property>
  <SystemAttributes>
    <EventClass>metric_alert</EventClass>
    <EventID>B69EDA076CE88256E040020A780165F6</EventID>
    <SequenceID>B6A5393A929532A0E040020A7801445B</SequenceID>
    <ReportedDate>2012-01-19T17:33:03.000-06:00</ReportedDate>
    <DisplayTZ>America/Chicago</DisplayTZ>
    <EventName>Load:memUsedPct</EventName>
    <Severity>Warning</Severity>
    <SeverityCode>WARNING</SeverityCode>
    <SourceInfo>
      <SourceObjInfo>
        <ObjID>D93A2E4E1622013D74D9534ECB090944</ObjID>
        <ObjName>orcsvr1.iwavesoftware.com</ObjName>
        <ObjOwner>SYSMAN</ObjOwner>
        <SourceObjType>TARGET</SourceObjType>
        <SourceObjSubType>host</SourceObjSubType>
      </SourceObjInfo>
      <TargetInfo>
        <TargetGUID>D93A2E4E1622013D74D9534ECB090944</TargetGUID>

```

```

<TargetName>orcsvr1.iwavesoftware.com</TargetName>
<TargetType>host</TargetType>
<TargetTypeLabel>Host</TargetTypeLabel>

<TargetURL>https://orcsvr1.iwavesoftware.com:7801/em/redirect?pageType=TARGET_
HOMEPAGE&amp;targetName=orcsvr1.iwavesoftware.com&amp;targetType=host</TargetURL>
  <TargetProperty>
    <Name>Target_Host</Name>
    <Value>orcsvr1.iwavesoftware.com</Value>
  </TargetProperty>
  <TargetProperty>
    <Name>Target Version</Name>
    <Value>5.5.0.0</Value>
  </TargetProperty>
  <TargetProperty>
    <Name>Line of Business</Name>
    <Value>Software</Value>
  </TargetProperty>
  <TargetProperty>
    <Name>Location</Name>
    <Value>Frisco, TX</Value>
  </TargetProperty>
  <TargetProperty>
    <Name>Comment</Name>
    <Value>Testing target properties</Value>
  </TargetProperty>
</TargetInfo>
</SourceInfo>
<Message>Memory Utilization is 82.406%, crossed warning (50) or critical
(99) threshold.</Message>

<EventURL>https://orcsvr1.iwavesoftware.com:7801/em/redirect?pageType=sdk-core-eve
nt-console-detailEvent&amp;issueID=B6A5393A929532A0E040020A7801445B</EventURL>
  <AutoClose>true</AutoClose>
  <EventCategory>Capacity</EventCategory>
</SystemAttributes>
<EventClassSpecificAttributes>
  <StringAttribute>
    <Name>is_thresholdable</Name>
    <Value>1</Value>
  </StringAttribute>
  <StringAttribute>
    <Name>coll_name</Name>
    <Value>LoadLinux</Value>
  </StringAttribute>
  <StringAttribute>
    <Name>is_metric_extension</Name>
    <Value>0</Value>
  </StringAttribute>
  <StringAttribute>
    <Name>metric_column_resbundle</Name>
    <Value>oracle.sysman.eml.rsc.gen.hostMsg</Value>
  </StringAttribute>
  <StringAttribute>
    <Name>metric_description_resbundle</Name>
    <Value>oracle.sysman.eml.rsc.gen.hostMsg</Value>
  </StringAttribute>
  <StringAttribute>
    <Name>unit_resbundle</Name>
    <Value>oracle.sysman.eml.rsc.gen.hostMsg</Value>
  </StringAttribute>

```

```
</StringAttribute>
<StringAttribute>
  <Name>cycle_guid</Name>
  <Value>B6A5393A929132A0E040020A7801445B</Value>
</StringAttribute>
<StringAttribute>
  <Name>is_remote</Name>
  <Value>0</Value>
</StringAttribute>
<StringAttribute>
  <Name>metric_type</Name>
  <Value>0</Value>
</StringAttribute>
<StringAttribute>
  <Name>metric_guid</Name>
  <Value>86821B5F0CE858D6E4A7F7390E88B73C</Value>
</StringAttribute>
<StringAttribute>
  <Name>num_keys</Name>
  <Value>0</Value>
</StringAttribute>
<StringAttribute>
  <Name>key_value</Name>
  <Value> </Value>
</StringAttribute>
<StringAttribute>
  <Name>metric_description_nlsid</Name>
</StringAttribute>
<StringAttribute>
  <Name>value</Name>
  <Value>82.406</Value>
</StringAttribute>
<StringAttribute>
  <Name>is_long_running</Name>
  <Value>0</Value>
</StringAttribute>
<StringAttribute>
  <Name>metric_group</Name>
  <Value>Load</Value>
</StringAttribute>
<StringAttribute>
  <Name>is_udm</Name>
  <Value>0</Value>
</StringAttribute>
<StringAttribute>
  <Name>metric_description</Name>
</StringAttribute>
<StringAttribute>
  <Name>metric_column_nlsid</Name>
  <Value>host_load_memUsedPct</Value>
</StringAttribute>
<StringAttribute>
  <Name>metric_column</Name>
  <Value>memUsedPct</Value>
</StringAttribute>
<StringAttribute>
  <Name>unit_nlsid</Name>
  <Value>em__sys__standard_percent</Value>
</StringAttribute>
<StringAttribute>
```

```

        <Name>unit</Name>
        <Value>%</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>metric_group_nlsid</Name>
        <Value>host_load</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>metric_group_resbundle</Name>
        <Value>oracle.sysman.eml.rsc.gen.hostMsg</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>severity_guid</Name>
        <Value>B69EDA076CE58256E040020A780165F6</Value>
    </StringAttribute>
</EventClassSpecificAttributes>
</EMEvent>

```

B.3 Clear Sample

Listed below is a sample of the XML format generated by Enterprise Manager for TEC clear operations.

```

<EMEvent xmlns="http://xmlns.oracle.com/sysman/connector">
  <ConnectorGUID>00C89B1A8CAB4C6B8D4377369524A2F4</ConnectorGUID>
  <ExternalEventID>1:1:1326996954</ExternalEventID>
  <NotificationRuleOwner>SYSMAN</NotificationRuleOwner>
  <NotificationRuleName>TEC Rule</NotificationRuleName>
  <Property>
    <Name>Notification_Method_Name</Name>
    <Value>TEC</Value>
  </Property>
  <Property>
    <Name>AuthenticationType</Name>
    <Value>HTTPBasicAuthentication</Value>
  </Property>
  <Property>
    <Name>IsNewTargetType</Name>
    <Value>yes</Value>
  </Property>
  <SystemAttributes>
    <EventClass>metric_alert</EventClass>
    <EventID>B69EC6D3F960A48EE040020A78016095</EventID>
    <SequenceID>B6A5393A929532A0E040020A7801445B</SequenceID>
    <ReportedDate>2012-01-19T17:33:27.000-06:00</ReportedDate>
    <DisplayTZ>America/Chicago</DisplayTZ>
    <EventName>Load:memUsedPct</EventName>
    <Severity>Clear</Severity>
    <SeverityCode>CLEAR</SeverityCode>
    <SourceInfo>
      <SourceObjInfo>
        <ObjID>D93A2E4E1622013D74D9534ECB090944</ObjID>
        <ObjName>orcsvr1.iwavesoftware.com</ObjName>
        <ObjOwner>SYSMAN</ObjOwner>
        <SourceObjType>TARGET</SourceObjType>
        <SourceObjSubType>host</SourceObjSubType>
      </SourceObjInfo>
      <TargetInfo>
        <TargetGUID>D93A2E4E1622013D74D9534ECB090944</TargetGUID>
        <TargetName>orcsvr1.iwavesoftware.com</TargetName>
      </TargetInfo>
    </SourceInfo>
  </SystemAttributes>
</EMEvent>

```

```

        <TargetType>host</TargetType>
        <TargetTypeLabel>Host</TargetTypeLabel>

<TargetURL>https://orcsvr1.iwavesoftware.com:7801/em/redirect?pageType=TARGET_
HOMEPAGE&targetName=orcsvr1.iwavesoftware.com&targetType=host</TargetURL>
    <TargetProperty>
        <Name>Target_Host</Name>
        <Value>orcsvr1.iwavesoftware.com</Value>
    </TargetProperty>
    <TargetProperty>
        <Name>Target Version</Name>
        <Value>5.5.0.0.0</Value>
    </TargetProperty>
    <TargetProperty>
        <Name>Line of Business</Name>
        <Value>Software</Value>
    </TargetProperty>
    <TargetProperty>
        <Name>Location</Name>
        <Value>Frisco, TX</Value>
    </TargetProperty>
    <TargetProperty>
        <Name>Comment</Name>
        <Value>Testing target properties</Value>
    </TargetProperty>
</TargetInfo>
</SourceInfo>
<Message>Memory Utilization is 82.526%, fallen below warning (98) and
critical (99)
        thresholds.</Message>

<EventURL>https://orcsvr1.iwavesoftware.com:7801/em/redirect?pageType=sdk-core-eve
nt-console-detailEvent&issueID=B6A5393A929532A0E040020A7801445B</EventURL>
    <AutoClose>>true</AutoClose>
    <EventCategory>Capacity</EventCategory>
</SystemAttributes>
<EventClassSpecificAttributes>
    <StringAttribute>
        <Name>is_thresholdable</Name>
        <Value>1</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>coll_name</Name>
        <Value>LoadLinux</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>is_metric_extension</Name>
        <Value>0</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>metric_column_resbundle</Name>
        <Value>oracle.sysman.eml.rsc.gen.hostMsg</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>metric_description_resbundle</Name>
        <Value>oracle.sysman.eml.rsc.gen.hostMsg</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>unit_resbundle</Name>
        <Value>oracle.sysman.eml.rsc.gen.hostMsg</Value>

```

```
</StringAttribute>
<StringAttribute>
  <Name>cycle_guid</Name>
  <Value>B6A5393A929132A0E040020A7801445B</Value>
</StringAttribute>
<StringAttribute>
  <Name>is_remote</Name>
  <Value>0</Value>
</StringAttribute>
<StringAttribute>
  <Name>metric_type</Name>
  <Value>0</Value>
</StringAttribute>
<StringAttribute>
  <Name>metric_guid</Name>
  <Value>86821B5F0CE858D6E4A7F7390E88B73C</Value>
</StringAttribute>
<StringAttribute>
  <Name>num_keys</Name>
  <Value>0</Value>
</StringAttribute>
<StringAttribute>
  <Name>key_value</Name>
  <Value> </Value>
</StringAttribute>
<StringAttribute>
  <Name>metric_description_nlsid</Name>
</StringAttribute>
<StringAttribute>
  <Name>value</Name>
  <Value>82.526</Value>
</StringAttribute>
<StringAttribute>
  <Name>is_long_running</Name>
  <Value>0</Value>
</StringAttribute>
<StringAttribute>
  <Name>metric_group</Name>
  <Value>Load</Value>
</StringAttribute>
<StringAttribute>
  <Name>is_udm</Name>
  <Value>0</Value>
</StringAttribute>
<StringAttribute>
  <Name>metric_description</Name>
</StringAttribute>
<StringAttribute>
  <Name>metric_column_nlsid</Name>
  <Value>host_load_memUsedPct</Value>
</StringAttribute>
<StringAttribute>
  <Name>metric_column</Name>
  <Value>memUsedPct</Value>
</StringAttribute>
<StringAttribute>
  <Name>unit_nlsid</Name>
  <Value>em__sys__standard_percent</Value>
</StringAttribute>
<StringAttribute>
```

```
        <Name>unit</Name>
        <Value>%</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>metric_group_nlsid</Name>
        <Value>host_load</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>metric_group_resbundle</Name>
        <Value>oracle.sysman.eml.rsc.gen.hostMsg</Value>
    </StringAttribute>
    <StringAttribute>
        <Name>severity_guid</Name>
        <Value>B69EC6D3F95EA48EE040020A78016095</Value>
    </StringAttribute>
</EventClassSpecificAttributes>
</EMEvent>
```

Enterprise Manager Event Format

Templates translate the XML format of Enterprise Manager events to the XML format required for the endpoint application's web service. To customize your templates, you need to understand the format of both ends so that you know how to map the data. This appendix provides detailed information on the format of the XML document that contains event information from Enterprise Manager.

A schema file defines the structure of an XML document. The EMEvent.xsd schema file defines the main structure of the event data. This file also imports structure information from other schema files. The following sections provide information from the schema files that define the EMEvent XML format.

C.1 EMEvent.xsd

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
            xmlns="http://xmlns.oracle.com/sysman/connector"
            targetNamespace="http://xmlns.oracle.com/sysman/connector"
            elementFormDefault="qualified"
xmlns:jaxb="http://java.sun.com/xml/ns/jaxb"
  jaxb:version="2.0"
  xmlns:xjc="http://java.sun.com/xml/ns/jaxb/xjc"
  jaxb:extensionBindingPrefixes="xjc">

  <xsd:annotation>
    <xsd:appinfo>
      <jaxb:globalBindings>
        <xjc:simple />
      </jaxb:globalBindings>
    </xsd:appinfo>
  </xsd:annotation>
  <xsd:include schemaLocation="connectorCommon.xsd"/>
  <xsd:element name="EMEvent" type="EMEventType" />
  <xsd:complexType name="EMEventType">
    <xsd:sequence>
      <xsd:element name="ConnectorGUID" type="xsd:string"/>
      <xsd:element name="ExternalEventID" type="xsd:string"
        minOccurs="0"/>
      <xsd:element name="NotificationRuleOwner" type="xsd:string"/>
      <xsd:element name="NotificationRuleName" type="xsd:string"/>
      <xsd:element name="ConnectorVariable" type="VariableType"
        minOccurs="0" maxOccurs="50"/>
      <xsd:element name="Property" type="PropertyType" minOccurs="0"
        maxOccurs="50"/>
      <xsd:element name="SystemAttributes"
```

```

        type="EventSystemAttributesType"/>
<xsd:element name="EventClassSpecificAttributes">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:choice minOccurs="0" maxOccurs="200">
        <xsd:element name="StringAttribute" type="StringValueType"/>
        <xsd:element name="NumberAttribute" type="StringValueType"/>
        <xsd:element name="RawAttribute" type="StringValueType"/>
        <xsd:element name="DateAttribute" type="DateValueType"/>
      </xsd:choice>
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>
<xsd:element name="EventContextAttributes">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:choice minOccurs="0" maxOccurs="200">
        <xsd:element name="StringAttribute" type="StringValueType"/>
        <xsd:element name="NumberAttribute" type="StringValueType"/>
      </xsd:choice>
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>
</xsd:sequence>
</xsd:complexType>
<xsd:complexType name="EventSystemAttributesType">
  <xsd:sequence>
    <xsd:element name="EventClass" type="xsd:string"/>
    <xsd:element name="EventID" type="xsd:string"/>
    <xsd:element name="SequenceID" type="xsd:string"/>
    <xsd:element name="OccurredDate" type="xsd:dateTime" minOccurs="0"/>
    <xsd:element name="ReportedDate" type="xsd:dateTime"/>
    <xsd:element name="DisplayTZ" type="xsd:string"/>
    <xsd:element name="EventName" type="xsd:string"/>
    <xsd:element name="Severity" type="xsd:string"/>
    <xsd:element name="SeverityCode" type="xsd:string"/>
    <xsd:element name="SourceInfo" type="SourceInfoType"/>
    <xsd:element name="Message" type="xsd:string" minOccurs="0"/>
    <xsd:element name="ActionMessage" type="xsd:string" minOccurs="0"/>
    <xsd:element name="EventURL" type="xsd:string"/>
    <xsd:element name="AutoClose" type="xsd:boolean"/>
    <xsd:element name="EventCategory" type="xsd:string" minOccurs="0"
      maxOccurs="50"/>
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="StringValueType">
  <xsd:sequence>
    <xsd:element name="Name" type="xsd:string"/>
    <xsd:element name="Value" type="xsd:string"/>
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="DateValueType">
  <xsd:sequence>
    <xsd:element name="Name" type="xsd:string"/>
    <xsd:element name="Value" type="xsd:dateTime"/>
  </xsd:sequence>
</xsd:complexType>
</xsd:schema>

```

C.2 connectorCommon.xsd

```

<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns="http://xmlns.oracle.com/sysman/connector"
  targetNamespace="http://xmlns.oracle.com/sysman/connector"
  elementFormDefault="qualified">
  <xsd:include schemaLocation="externalEvent.xsd"/>
  <xsd:complexType name="SourceInfoType">
    <xsd:annotation>
      <xsd:documentation>
        This section defines a complex type for Source Information.
      </xsd:documentation>
    </xsd:annotation>
    <xsd:sequence>
      <xsd:element name="SourceObjInfo" type="SourceObjInfoType" minOccurs="0">
        <xsd:annotation>
          <xsd:documentation>
            This element defines the data structure for the source object, the
            EM
            subsystem or component, that raises an EM event or an incident.
          </xsd:documentation>
        </xsd:annotation>
      </xsd:element>
      <xsd:element name="TargetInfo" type="TargetInfoType" minOccurs="0">
        <xsd:annotation>
          <xsd:documentation>
            The element defines the data structure for an EM target as related
            to the connector framework.
          </xsd:documentation>
        </xsd:annotation>
      </xsd:element>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="SourceObjInfoType">
    <xsd:annotation>
      <xsd:documentation>
        This section defines a complex type for Source Object Information.
      </xsd:documentation>
    </xsd:annotation>
    <xsd:sequence>
      <xsd:element name="ObjID" type="xsd:string">
        <xsd:annotation>
          <xsd:documentation>
            The unique ID to identify the source object.
          </xsd:documentation>
        </xsd:annotation>
      </xsd:element>
      <xsd:element name="ObjName" type="xsd:string">
        <xsd:annotation>
          <xsd:documentation>
            The name of the source object.
          </xsd:documentation>
        </xsd:annotation>
      </xsd:element>
      <xsd:element name="ObjOwner" type="xsd:string" minOccurs="0">
        <xsd:annotation>
          <xsd:documentation>
            The owner of the source object.
          </xsd:documentation>
        </xsd:annotation>
      </xsd:element>
    </xsd:sequence>
  </xsd:complexType>

```



```

</xsd:element>
<xsd:element name="TargetProperty" type="PropertyType" minOccurs="0"
    maxOccurs="50">
    <xsd:annotation>
        <xsd:documentation>
            An optional list of properties for the target.
        </xsd:documentation>
    </xsd:annotation>
</xsd:element>
</xsd:sequence>
</xsd:complexType>
<xsd:complexType name="PropertyType">
    <xsd:annotation>
        <xsd:documentation>
            This section defines a complex type for a property attribute.
        </xsd:documentation>
    </xsd:annotation>
    <xsd:sequence>
        <xsd:element name="Name" type="xsd:string">
            <xsd:annotation>
                <xsd:documentation>
                    A string name defining a property attribute.
                </xsd:documentation>
            </xsd:annotation>
        </xsd:element>
        <xsd:element name="Value" type="xsd:string" nillable="true">
            <xsd:annotation>
                <xsd:documentation>
                    A non-null string value.
                </xsd:documentation>
            </xsd:annotation>
        </xsd:element>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="VariableType">
    <xsd:annotation>
        <xsd:documentation>
            This section defines a complex type for a general variable.
        </xsd:documentation>
    </xsd:annotation>
    <xsd:sequence>
        <xsd:element name="VariableName" type="StringStrictT32">
            <xsd:annotation>
                <xsd:documentation>
                    Name of the variable. It has to be a string containing 1 or upto
                    32 upper case or lower case letters or numbers.
                </xsd:documentation>
            </xsd:annotation>
        </xsd:element>
        <xsd:element name="VariableValue" type="StringT2048">
            <xsd:annotation>
                <xsd:documentation>
                    Value of the variable. It has to be a string containing 1 or upto
                    2048 characters.
                </xsd:documentation>
            </xsd:annotation>
        </xsd:element>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="GetAlertsResponse">

```

```

    <xsd:annotation>
      <xsd:documentation>
        This section defines a complex type for responses to a getAlerts
request.
      </xsd:documentation>
    </xsd:annotation>
  <xsd:sequence>
    <xsd:element name="Alert" minOccurs="0" maxOccurs="200">
      <xsd:annotation>
        <xsd:documentation>
          The individual alerts contained in the response. A response may
have
          upto 200 alerts.
        </xsd:documentation>
      </xsd:annotation>
      <xsd:complexType>
        <xsd:sequence>
          <xsd:element ref="ExternalEvent">
            <xsd:annotation>
              <xsd:documentation>
                Details of the external event in the alert, as defined in
                ExternalEvent.xsd.
              </xsd:documentation>
            </xsd:annotation>
          </xsd:element>
          <xsd:element name="InstanceVariable" type="VariableType"
            minOccurs="0" maxOccurs="50">
            <xsd:annotation>
              <xsd:documentation>
                A list of instance variables for the alert.
              </xsd:documentation>
            </xsd:annotation>
          </xsd:element>
        </xsd:sequence>
      </xsd:complexType>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="ConnectorVariablesType">
  <xsd:annotation>
    <xsd:documentation>
      This section defines a complex type for connector variables. An element
      of type ConnectorVariablesType may have up to 50 connector variables, as
      defined next.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:sequence>
    <xsd:element name="ConnectorVariable" type="VariableType" minOccurs="0"
      maxOccurs="50">
      <xsd:annotation>
        <xsd:documentation>
          A connector variالبة as a name/value pair.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
<xsd:simpleType name="StringT64">
  <xsd:annotation>
    <xsd:documentation>

```

```

        This section defines a simple type for a String with maximum length of
        64 bytes.
    </xsd:documentation>
</xsd:annotation>
<xsd:restriction base="xsd:string">
    <xsd:minLength value="1"/>
    <xsd:maxLength value="64"/>
</xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="StringT128">
    <xsd:annotation>
        <xsd:documentation>
            This section defines a simple type for a String with maximum length of
            128 bytes.
        </xsd:documentation>
    </xsd:annotation>
<xsd:restriction base="xsd:string">
    <xsd:minLength value="1"/>
    <xsd:maxLength value="128"/>
</xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="StringT256">
    <xsd:annotation>
        <xsd:documentation>
            This section defines a simple type for a String with maximum length of
            256 bytes.
        </xsd:documentation>
    </xsd:annotation>
<xsd:restriction base="xsd:string">
    <xsd:minLength value="1"/>
    <xsd:maxLength value="256"/>
</xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="StringT512">
    <xsd:annotation>
        <xsd:documentation>
            This section defines a simple type for a String with maximum length of
            512 bytes.
        </xsd:documentation>
    </xsd:annotation>
<xsd:restriction base="xsd:string">
    <xsd:minLength value="1"/>
    <xsd:maxLength value="512"/>
</xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="StringT2048">
    <xsd:annotation>
        <xsd:documentation>
            This section defines a simple type for a String with maximum length of
            2048 bytes.
        </xsd:documentation>
    </xsd:annotation>
<xsd:restriction base="xsd:string">
    <xsd:minLength value="1"/>
    <xsd:maxLength value="2048"/>
</xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="StringStrictT16">
    <xsd:annotation>
        <xsd:documentation>

```

```

        This section defines a simple type for a String with maximum length of
        16 bytes. The String can only contain lower or upper case letters,
numbers,
        and the underscore characters.
    </xsd:documentation>
</xsd:annotation>
<xsd:restriction base="xsd:string">
    <xsd:minLength value="1"/>
    <xsd:maxLength value="16"/>
    <xsd:pattern value="([a-zA-Z0-9_])*"/>
</xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="StringStrictT32">
    <xsd:annotation>
        <xsd:documentation>
            This section defines a simple type for a String with maximum length of
            32 bytes. The String can only contain lower or upper case letters,
numbers,
            and the underscore characters.
        </xsd:documentation>
    </xsd:annotation>
<xsd:restriction base="xsd:string">
    <xsd:minLength value="1"/>
    <xsd:maxLength value="32"/>
    <xsd:pattern value="([a-zA-Z0-9_])*"/>
</xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="StringStrictT64">
    <xsd:annotation>
        <xsd:documentation>
            This section defines a simple type for a String with maximum length of
            64 bytes. The String can only contain lower or upper case letters,
numbers,
            and the underscore characters.
        </xsd:documentation>
    </xsd:annotation>
<xsd:restriction base="xsd:string">
    <xsd:minLength value="1"/>
    <xsd:maxLength value="64"/>
    <xsd:pattern value="([a-zA-Z0-9_])*"/>
</xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="StringStrictT128">
    <xsd:annotation>
        <xsd:documentation>
            This section defines a simple type for a String with maximum length of
            128 bytes. The String can only contain lower or upper case letters,
numbers,
            and the underscore characters.
        </xsd:documentation>
    </xsd:annotation>
<xsd:restriction base="xsd:string">
    <xsd:minLength value="1"/>
    <xsd:maxLength value="128"/>
    <xsd:pattern value="([a-zA-Z0-9_])*"/>
</xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="StringStrictT256">
    <xsd:annotation>
        <xsd:documentation>

```



```

        This section defines a simple type for a String with maximum length of
        256 bytes. The String can only contain lower or upper case letters,
numbers,
        and the underscore characters.
    </xsd:documentation>
</xsd:annotation>
<xsd:restriction base="xsd:string">
    <xsd:minLength value="1"/>
    <xsd:maxLength value="256"/>
    <xsd:pattern value="([a-zA-Z0-9_])*"/>
</xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="VersionT">
    <xsd:annotation>
        <xsd:documentation>
            This section defines a simple type for a String with maximum length of
            20 bytes. The String can only contain numbers and the period characters.
        </xsd:documentation>
    </xsd:annotation>
    <xsd:restriction base="xsd:string">
        <xsd:minLength value="1"/>
        <xsd:maxLength value="20"/>
        <xsd:pattern value="([0-9.])*"/>
    </xsd:restriction>
</xsd:simpleType>
</xsd:schema>

```

C.3 externalEvent.xsd

```

<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    xmlns="http://xmlns.oracle.com/sysman/connector"
    targetNamespace="http://xmlns.oracle.com/sysman/connector"
    elementFormDefault="qualified">
    <xsd:element name="ExternalEvent">
        <xsd:annotation>
            <xsd:documentation>
                This section defines the attribute requirement of an external event
                for the connector framework to process it.
            </xsd:documentation>
        </xsd:annotation>
        <xsd:complexType>
            <xsd:sequence>
                <xsd:element name="SystemAttributes"
                    type="ExternalEventSystemAttributesType">
                    <xsd:annotation>
                        <xsd:documentation>
                            Attributes to capture general information about the external event
                            system. These attributes are system-specific, with all events from
                            the same external system sharing the same system attributes.
                        </xsd:documentation>
                    </xsd:annotation>
                </xsd:element>
                <xsd:element name="EventClassAttributes"
                    type="ExternalEventClassAttributesType">
                    <xsd:annotation>
                        <xsd:documentation>
                            Attributes to capture specific information required for the event
                            as defined in the event class.
                        </xsd:documentation>
                    </xsd:annotation>
                </xsd:element>
            </xsd:sequence>
        </xsd:complexType>
    </xsd:element>

```

```
        </xsd:annotation>
      </xsd:element>
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>
<xsd:complexType name="ExternalEventSystemAttributesType">
  <xsd:annotation>
    <xsd:documentation>
      This section defines a complex type for system attributes required for
      all external events.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:sequence>
    <xsd:element name="eventName" type="xsd:string" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation>
          Name of the event.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="category" type="xsd:string" minOccurs="0" maxOccurs="50">
      <xsd:annotation>
        <xsd:documentation>
          The event category to which the event belongs.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="targetName" type="xsd:string">
      <xsd:annotation>
        <xsd:documentation>
          Name of the target on which event was generated. It refers
          to an entity in external systems similar to an EM target.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="targetType" type="xsd:string">
      <xsd:annotation>
        <xsd:documentation>
          The type of the target. Target types defined for event connectors
          are used. See connectorDeploy.xsd.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="occurrenceDate" type="xsd:dateTime">
      <xsd:annotation>
        <xsd:documentation>
          Date when the event occurred.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="detectedDate" type="xsd:dateTime">
      <xsd:annotation>
        <xsd:documentation>
          Date when the event was last detected.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="autoClose" type="xsd:boolean">
      <xsd:annotation>
        <xsd:documentation>
```

```

        A flag indicating if an event is auto closed by the system, or it
        has to be manually closed by users.
    </xsd:documentation>
</xsd:annotation>
</xsd:element>
<xsd:element name="message" type="xsd:string">
    <xsd:annotation>
        <xsd:documentation>
            A description of the event.
        </xsd:documentation>
    </xsd:annotation>
</xsd:element>
<xsd:element name="severity" type="xsd:string">
    <xsd:annotation>
        <xsd:documentation>
            Severity level of the event.
        </xsd:documentation>
    </xsd:annotation>
</xsd:element>
</xsd:sequence>
</xsd:complexType>
<xsd:complexType name="ExternalEventClassAttributesType">
    <xsd:annotation>
        <xsd:documentation>
            This section defines a complex type for class specific attributes
required
            for all external events in the class.
        </xsd:documentation>
    </xsd:annotation>
    <xsd:sequence>
        <xsd:element name="external_event_id" type="xsd:string">
            <xsd:annotation>
                <xsd:documentation>
                    ID used in external system to identify the event.
                </xsd:documentation>
            </xsd:annotation>
        </xsd:element>
        <xsd:element name="external_rule_id" type="xsd:string" minOccurs="0">
            <xsd:annotation>
                <xsd:documentation>
                    Optional rule ID that delivered the event in the external system.
                </xsd:documentation>
            </xsd:annotation>
        </xsd:element>
        <xsd:element name="external_host" type="xsd:string" minOccurs="0">
            <xsd:annotation>
                <xsd:documentation>
                    Optional host information from external system where event was
generated.
                </xsd:documentation>
            </xsd:annotation>
        </xsd:element>
        <xsd:element name="external_source" type="xsd:string" minOccurs="0">
            <xsd:annotation>
                <xsd:documentation>
                    Optional source information from the external system.
                </xsd:documentation>
            </xsd:annotation>
        </xsd:element>
        <xsd:element name="external_severity" type="xsd:string">

```

```
<xsd:annotation>
  <xsd:documentation>
    Severity level of the event on external system.
  </xsd:documentation>
</xsd:annotation>
</xsd:element>
<xsd:element name="external_status" type="xsd:string" minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      Status of the event on extenal system.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="custom_field1" type="xsd:string" minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      An optional field.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="custom_field2" type="xsd:string" minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      An optional field.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="custom_field3" type="xsd:string" minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      An optional field.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="custom_field4" type="xsd:string" minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      An optional field.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
<xsd:element name="custom_field5" type="xsd:string" minOccurs="0">
  <xsd:annotation>
    <xsd:documentation>
      An optional field.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
</xsd:sequence>
</xsd:complexType>
</xsd:schema>
```

TEC Web Service WSDL Format

Templates translate the XML format of Enterprise Manager events to the XML format required for the endpoint application's web service. To customize your templates, you need to understand the format of both ends so that you know how to map the data. This appendix provides detailed information on the format of the XML document that is required by the TEC web service.

A WSDL file defines the interface that must be used to call a web service. The WSDL defines the structure of the XML document that it accepts and how the web service is to be called. The contents of the WSDL file are listed in the section entitled "EventService WSDL".

D.1 EventService WSDL

```
<wsdl:definitions name="EventService"
  targetNamespace="http://iwavesoftware.com/services/adapter-framework"
  xmlns:ns1="http://schemas.xmlsoap.org/soap/http"
  xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
  xmlns:tns="http://iwavesoftware.com/services/adapter-framework"
  xmlns:wSDL="http://schemas.xmlsoap.org/wsdl/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <wsdl:types>
    <xs:schema attributeFormDefault="unqualified"
      elementFormDefault="unqualified"
      targetNamespace="http://iwavesoftware.com/services/adapter-framework"
      xmlns:tns="http://iwavesoftware.com/services/adapter-framework"
      xmlns:xs="http://www.w3.org/2001/XMLSchema">
      <xs:element name="Class" type="tns:eventClass"/>
      <xs:element name="ITObject" type="tns:itObject"/>
      <xs:element name="Object" type="tns:eventObject"/>
      <xs:element name="acknowledge" type="tns:acknowledge"/>
      <xs:element name="acknowledgeResponse"
        type="tns:acknowledgeResponse"/>
      <xs:element name="assignment" type="tns:assignment"/>
      <xs:element name="categorization" type="tns:categorization"/>
      <xs:element name="change" type="tns:change"/>
      <xs:element name="ci" type="tns:ci"/>
      <xs:element name="ciRef" type="tns:ciRef"/>
      <xs:element name="ciRelationship" type="tns:ciRelationship"/>
      <xs:element name="classification" type="tns:classification"/>
      <xs:element name="clear" type="tns:clear"/>
      <xs:element name="clearResponse" type="tns:clearResponse"/>
      <xs:element name="client-object" type="tns:clientDefinedObject"/>
      <xs:element name="complex-field" type="tns:complexField"/>
      <xs:element name="compliance" type="tns:compliance"/>
    </xs:schema>
  </wsdl:types>
</wsdl:definitions>
```

```

<xs:element name="contact" type="tns:contact"/>
<xs:element name="container" type="tns:container"/>
<xs:element name="create" type="tns:create"/>
<xs:element name="createResponse" type="tns:createResponse"/>
<xs:element name="data" type="tns:data"/>
<xs:element name="date-field" type="tns:dateField"/>
<xs:element name="diary-list-field" type="tns:diaryListField"/>
<xs:element name="diary-value" type="tns:diaryValue"/>
<xs:element name="escalation" type="tns:escalation"/>
<xs:element name="event" type="tns:event"/>
<xs:element name="find" type="tns:find"/>
<xs:element name="findResponse" type="tns:findResponse"/>
<xs:element name="get" type="tns:get"/>
<xs:element name="getResponse" type="tns:getResponse"/>
<xs:element name="group" type="tns:group"/>
<xs:element name="incident" type="tns:incident"/>
<xs:element name="knowledge" type="tns:knowledge"/>
<xs:element name="log" type="tns:log"/>
<xs:element name="metric" type="tns:metric"/>
<xs:element name="number-field" type="tns:numberField"/>
<xs:element name="objectReference" type="tns:objectReference"/>
<xs:element name="problem" type="tns:problem"/>
<xs:element name="product" type="tns:product"/>
<xs:element name="resolution" type="tns:resolution"/>
<xs:element name="source" type="tns:source"/>
<xs:element name="string-field" type="tns:stringField"/>
<xs:element name="update" type="tns:update"/>
<xs:element name="updateResponse" type="tns:updateResponse"/>
<xs:element name="vendor" type="tns:vendor"/>
<xs:complexType name="clear">
  <xs:sequence>
    <xs:element minOccurs="0" name="destination"
type="xs:string"/>
    <xs:element minOccurs="0" name="event" type="tns:event"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="event">
  <xs:complexContent>
    <xs:extension base="tns:itObject">
      <xs:sequence>
        <xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"
          name="createDate" type="xs:dateTime"/>
        <xs:element minOccurs="0" name="description"
type="xs:string"/>
        <xs:element minOccurs="0" name="escalation"
type="tns:escalation"/>
        <xs:element minOccurs="0" name="eventClass"
type="tns:eventClass"/>
        <xs:element minOccurs="0"
name="externalEventIdentifier"
          type="xs:string"/>
        <xs:element minOccurs="0"
name="externalIncidentIdentifier"
          type="xs:string"/>
        <xs:element minOccurs="0" name="group"
type="tns:group"/>
        <xs:element minOccurs="0" name="impact"
type="xs:string"/>
        <xs:element minOccurs="0" name="knowledgeRoot">

```

```

        <xs:complexType>
          <xs:sequence>
            <xs:element maxOccurs="unbounded"
              minOccurs="0"
              type="tns:knowledge" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    <xs:element default="1970-01-01T00:00:00.0-00:00"
      minOccurs="0"
      type="xs:string" />
    <xs:element default="1970-01-01T00:00:00.0-00:00"
      minOccurs="0"
      type="xs:dateTime" />
    <xs:element default="1970-01-01T00:00:00.0-00:00"
      minOccurs="0"
      name="lastRepeatDate" type="xs:dateTime" />
    <xs:element minOccurs="0" name="logs">
      <xs:complexType>
        <xs:sequence>
          <xs:element maxOccurs="unbounded"
            minOccurs="0" name="log"
            type="tns:log" />
        </xs:sequence>
      </xs:complexType>
    </xs:element>
    <xs:element default="1970-01-01T00:00:00.0-00:00"
      minOccurs="0"
      type="xs:dateTime" />
    <xs:element minOccurs="0" name="metric">
      <xs:element name="monitorEvent" type="xs:boolean" />
      <xs:element minOccurs="0" name="object"
        type="tns:eventObject" />
      <xs:element minOccurs="0" name="owner"
        type="xs:string" />
      <xs:element minOccurs="0" name="priority"
        type="xs:string" />
      <xs:element default="-2147483648" minOccurs="0"
        name="repeatCount"
        type="xs:int" />
      <xs:element minOccurs="0" name="resolvedBy"
        type="xs:string" />
      <xs:element default="1970-01-01T00:00:00.0-00:00"
        minOccurs="0"
        name="resolvedDate" type="xs:dateTime" />
      <xs:element minOccurs="0" name="severity"
        type="xs:string" />
      <xs:element minOccurs="0" name="source"
        type="tns:source" />
      <xs:element minOccurs="0" name="status"
        type="xs:string" />
      <xs:element default="1970-01-01T00:00:00.0-00:00"
        minOccurs="0"
        name="statusLastModified" type="xs:dateTime" />
    </xs:element>
  </xs:sequence>
</xs:complexType>

```

```

                                <xs:element minOccurs="0" name="summary"
type="xs:string" />
                                <xs:element minOccurs="0" name="type"
type="xs:string" />
                                <xs:element minOccurs="0" name="urgency"
type="xs:string" />
                                </xs:sequence>
                                </xs:extension>
                                </xs:complexContent>
                                </xs:complexType>
                                <xs:complexType name="itObject">
                                <xs:sequence>
                                <xs:element minOccurs="0" name="extended-fields">
                                <xs:complexType>
                                <xs:sequence>
                                <xs:choice maxOccurs="unbounded" minOccurs="0">
                                <xs:element name="string-field"
type="tns:stringField" />
                                <xs:element name="date-field"
type="tns:dateField" />
                                <xs:element name="number-field"
type="tns:numberField" />
                                <xs:element name="diary-list-field"
type="tns:diaryListField" />
                                <xs:element name="complex-field"
type="tns:complexField" />
                                </xs:choice>
                                </xs:sequence>
                                </xs:complexType>
                                </xs:element>
                                <xs:element minOccurs="0" name="identifier" type="xs:string" />
                                </xs:sequence>
                                </xs:complexType>
                                <xs:complexType name="escalation">
                                <xs:sequence>
                                <xs:element name="escalated" type="xs:boolean" />
                                <xs:element minOccurs="0" name="escalatedBy"
type="xs:string" />
                                <xs:element minOccurs="0" name="server" type="xs:string" />
                                </xs:sequence>
                                </xs:complexType>
                                <xs:complexType name="eventClass">
                                <xs:sequence>
                                <xs:element minOccurs="0" name="container"
type="tns:container" />
                                <xs:element minOccurs="0" name="description"
type="xs:string" />
                                <xs:element minOccurs="0" name="displayName"
type="xs:string" />
                                <xs:element minOccurs="0" name="identifier" type="xs:string" />
                                <xs:element minOccurs="0" name="name" type="xs:string" />
                                </xs:sequence>
                                </xs:complexType>
                                <xs:complexType name="container">
                                <xs:sequence>
                                <xs:element minOccurs="0" name="description"
type="xs:string" />
                                <xs:element minOccurs="0" name="displayName"
type="xs:string" />
                                <xs:element minOccurs="0" name="identifier" type="xs:string" />

```



```

        <xs:element minOccurs="0" name="name" type="xs:string"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="group">
    <xs:sequence>
        <xs:element minOccurs="0" name="identifier" type="xs:string"/>
        <xs:element minOccurs="0" name="name" type="xs:string"/>
        <xs:element minOccurs="0" name="version" type="xs:string"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="knowledge">
    <xs:sequence>
        <xs:element minOccurs="0" name="content" type="xs:string"/>
        <xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"
                name="dateCreated" type="xs:dateTime"/>
        <xs:element minOccurs="0" name="description"
type="xs:string"/>
        <xs:element minOccurs="0" name="displayName"
type="xs:string"/>
        <xs:element minOccurs="0" name="identifier" type="xs:string"/>
        <xs:element minOccurs="0" name="languageCode"
type="xs:string"/>
        <xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"
                name="lastModified" type="xs:dateTime"/>
        <xs:element minOccurs="0" name="name" type="xs:string"/>
        <xs:element minOccurs="0" name="status" type="xs:string"/>
        <xs:element minOccurs="0" name="summary" type="xs:string"/>
        <xs:element minOccurs="0" name="type" type="xs:string"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="log">
    <xs:sequence>
        <xs:element minOccurs="0" name="extended-fields">
            <xs:complexType>
                <xs:sequence>
                    <xs:choice maxOccurs="unbounded" minOccurs="0">
                        <xs:element name="string-field"
type="tns:stringField"/>
                        <xs:element name="date-field"
type="tns:dateField"/>
                        <xs:element name="number-field"
type="tns:numberField"/>
                        <xs:element name="diary-list-field"
type="tns:diaryListField"/>
                        <xs:element name="complex-field"
type="tns:complexTypeField"/>
                    </xs:choice>
                </xs:sequence>
            </xs:complexType>
        </xs:element>
        <xs:element minOccurs="0" name="description"
type="xs:string"/>
        <xs:element minOccurs="0" name="identifier" type="xs:string"/>
        <xs:element minOccurs="0" name="source" type="xs:string"/>
        <xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"
                name="submitDate" type="xs:dateTime"/>
        <xs:element minOccurs="0" name="submitter" type="xs:string"/>

```

```

        <xs:element minOccurs="0" name="summary" type="xs:string"/>
        <xs:element minOccurs="0" name="type" type="xs:string"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="stringField">
    <xs:simpleContent>
        <xs:extension base="xs:string">
            <xs:attribute name="name" type="xs:string"
use="required"/>
        </xs:extension>
    </xs:simpleContent>
</xs:complexType>
<xs:complexType name="dateField">
    <xs:simpleContent>
        <xs:extension base="xs:dateTime">
            <xs:attribute name="name" type="xs:string"
use="required"/>
        </xs:extension>
    </xs:simpleContent>
</xs:complexType>
<xs:complexType name="numberField">
    <xs:simpleContent>
        <xs:extension base="xs:decimal">
            <xs:attribute name="name" type="xs:string"
use="required"/>
        </xs:extension>
    </xs:simpleContent>
</xs:complexType>
<xs:complexType name="diaryListField">
    <xs:sequence>
        <xs:element maxOccurs="unbounded" minOccurs="0"
name="diary-value"
            type="tns:diaryValue"/>
    </xs:sequence>
    <xs:attribute name="name" type="xs:string" use="required"/>
</xs:complexType>
<xs:complexType name="diaryValue">
    <xs:simpleContent>
        <xs:extension base="xs:string">
            <xs:attribute name="author" type="xs:string"/>
            <xs:attribute name="timestamp" type="xs:dateTime"/>
        </xs:extension>
    </xs:simpleContent>
</xs:complexType>
<xs:complexType name="complexField">
    <xs:sequence>
        <xs:choice maxOccurs="unbounded" minOccurs="0">
            <xs:element name="string-field" type="tns:stringField"/>
            <xs:element name="date-field" type="tns:dateField"/>
            <xs:element name="number-field" type="tns:numberField"/>
            <xs:element name="diary-list-field"
type="tns:diaryListField"/>
            <xs:element name="complex-field" type="tns:complexField"/>
        </xs:choice>
    </xs:sequence>
    <xs:attribute name="name" type="xs:string" use="required"/>
</xs:complexType>
<xs:complexType name="metric">
    <xs:sequence>
        <xs:element minOccurs="0" name="category" type="xs:string"/>

```

```

        <xs:element minOccurs="0" name="keyValues">
            <xs:complexType>
                <xs:sequence>
                    <xs:element maxOccurs="unbounded" minOccurs="0"
name="string"
                                type="xs:string" />
                </xs:sequence>
            </xs:complexType>
        </xs:element>
        <xs:element minOccurs="0" name="subCategory"
type="xs:string" />
    </xs:sequence>
</xs:complexType>
<xs:complexType name="eventObject">
    <xs:sequence>
        <xs:element minOccurs="0" name="computerName"
type="xs:string" />
        <xs:element minOccurs="0" name="displayName"
type="xs:string" />
        <xs:element minOccurs="0" name="identifier" type="xs:string" />
        <xs:element minOccurs="0" name="inMaintenanceMode"
type="xs:boolean" />
        <xs:element minOccurs="0" name="name" type="xs:string" />
        <xs:element minOccurs="0" name="state" type="xs:string" />
    </xs:sequence>
</xs:complexType>
<xs:complexType name="source">
    <xs:sequence>
        <xs:element minOccurs="0" name="computerName"
type="xs:string" />
        <xs:element minOccurs="0" name="container"
type="tns:container" />
        <xs:element minOccurs="0" name="description"
type="xs:string" />
        <xs:element minOccurs="0" name="displayName"
type="xs:string" />
        <xs:element minOccurs="0" name="domain" type="xs:string" />
        <xs:element minOccurs="0" name="identifier" type="xs:string" />
        <xs:element minOccurs="0" name="name" type="xs:string" />
        <xs:element minOccurs="0" name="type" type="xs:string" />
    </xs:sequence>
</xs:complexType>
<xs:complexType name="clearResponse">
    <xs:sequence />
</xs:complexType>
<xs:complexType name="update">
    <xs:sequence>
        <xs:element minOccurs="0" name="destination"
type="xs:string" />
        <xs:element minOccurs="0" name="event" type="tns:event" />
    </xs:sequence>
</xs:complexType>
<xs:complexType name="updateResponse">
    <xs:sequence>
        <xs:element minOccurs="0" name="return" type="tns:event" />
    </xs:sequence>
</xs:complexType>
<xs:complexType name="acknowledge">
    <xs:sequence>
        <xs:element minOccurs="0" name="destination"

```

```

type="xs:string" />
    <xs:element minOccurs="0" name="event" type="tns:event" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="acknowledgeResponse">
  <xs:sequence>
    <xs:element minOccurs="0" name="return" type="tns:event" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="get">
  <xs:sequence>
    <xs:element minOccurs="0" name="destination"
type="xs:string" />
    <xs:element minOccurs="0" name="identifier" type="xs:string" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="getResponse">
  <xs:sequence>
    <xs:element minOccurs="0" name="return" type="tns:event" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="find">
  <xs:sequence>
    <xs:element minOccurs="0" name="destination"
type="xs:string" />
    <xs:element minOccurs="0" name="query" type="xs:string" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="findResponse">
  <xs:sequence>
    <xs:element maxOccurs="unbounded" minOccurs="0" name="return"
type="tns:event" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="create">
  <xs:sequence>
    <xs:element minOccurs="0" name="destination"
type="xs:string" />
    <xs:element minOccurs="0" name="event" type="tns:event" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="createResponse">
  <xs:sequence>
    <xs:element minOccurs="0" name="return" type="tns:event" />
  </xs:sequence>
</xs:complexType>
<xs:complexType mixed="true" name="clientDefinedObject">
  <xs:sequence>
    <xs:any maxOccurs="unbounded" minOccurs="0"
namespace="##other"
    processContents="skip" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="incident">
  <xs:complexContent>
    <xs:extension base="tns:itObject">
      <xs:sequence>
        <xs:element minOccurs="0" name="assignee"
type="tns:assignment" />
        <xs:element minOccurs="0" name="cis">

```

```

        <xs:complexType>
          <xs:sequence>
            <xs:element maxOccurs="unbounded"
minOccurs="0" name="ci"
              type="tns:ciRef" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
      <xs:element minOccurs="0" name="classification"
type="tns:classification" />
      <xs:element minOccurs="0" name="customer"
type="tns:contact" />
      <xs:element minOccurs="0" name="description"
type="xs:string" />
      <xs:element minOccurs="0" name="direct"
type="tns:contact" />
      <xs:element minOccurs="0" name="impact"
type="xs:string" />
      <xs:element minOccurs="0" name="log-data">
        <xs:complexType>
          <xs:sequence>
            <xs:element maxOccurs="unbounded"
minOccurs="0" name="log"
              type="tns:log" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
      <xs:element minOccurs="0" name="logs">
        <xs:complexType>
          <xs:sequence>
            <xs:element maxOccurs="unbounded"
minOccurs="0" name="log"
              type="tns:objectReference" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
      <xs:element minOccurs="0" name="owner"
type="tns:assignment" />
      <xs:element minOccurs="0" name="priority"
type="xs:string" />
      <xs:element minOccurs="0" name="relationships">
        <xs:complexType>
          <xs:sequence>
            <xs:element maxOccurs="unbounded"
minOccurs="0"
              name="relationship"
type="tns:objectReference" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
      <xs:element minOccurs="0" name="resolution"
type="tns:resolution" />
      <xs:element minOccurs="0" name="severity"
type="xs:string" />
      <xs:element minOccurs="0" name="status"
type="xs:string" />
      <xs:element minOccurs="0" name="summary"
type="xs:string" />
      <xs:element minOccurs="0" name="urgency"
type="xs:string" />

```

```

                                <xs:element minOccurs="0" name="vendor"
type="tns:vendor"/>
                                <xs:element minOccurs="0" name="weight"
type="xs:string"/>
                                </xs:sequence>
                                </xs:extension>
                                </xs:complexContent>
                                </xs:complexType>
                                <xs:complexType name="assignment">
                                <xs:sequence>
                                <xs:element minOccurs="0" name="company" type="xs:string"/>
                                <xs:element minOccurs="0" name="organization"
type="xs:string"/>
                                <xs:element minOccurs="0" name="owner" type="xs:string"/>
                                <xs:element minOccurs="0" name="primaryGroup"
type="xs:string"/>
                                <xs:element minOccurs="0" name="secondaryGroup"
type="xs:string"/>
                                </xs:sequence>
                                </xs:complexType>
                                <xs:complexType name="ciRef">
                                <xs:sequence>
                                <xs:element minOccurs="0" name="extended-fields">
                                <xs:complexType>
                                <xs:sequence>
                                <xs:choice maxOccurs="unbounded" minOccurs="0">
                                <xs:element name="string-field"
type="tns:stringField"/>
                                <xs:element name="date-field"
type="tns:dateField"/>
                                <xs:element name="number-field"
type="tns:numberField"/>
                                <xs:element name="diary-list-field"
type="tns:diaryListField"/>
                                <xs:element name="complex-field"
type="tns:complexType"/>
                                </xs:choice>
                                </xs:sequence>
                                </xs:complexType>
                                </xs:element>
                                <xs:element minOccurs="0" name="description"
type="xs:string"/>
                                <xs:element minOccurs="0" name="identifier" type="xs:string"/>
                                <xs:element minOccurs="0" name="name" type="xs:string"/>
                                <xs:element minOccurs="0" name="status" type="xs:string"/>
                                <xs:element minOccurs="0" name="type" type="xs:string"/>
                                </xs:sequence>
                                </xs:complexType>
                                <xs:complexType name="classification">
                                <xs:sequence>
                                <xs:element minOccurs="0" name="company" type="xs:string"/>
                                <xs:element minOccurs="0" name="operational"
type="tns:categorization"/>
                                <xs:element minOccurs="0" name="product" type="tns:product"/>
                                <xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"
                                name="reportedDate" type="xs:dateTime"/>
                                <xs:element minOccurs="0" name="reportedSource"
type="xs:string"/>
                                <xs:element minOccurs="0" name="serviceType"

```

```

type="xs:string" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="categorization">
  <xs:sequence>
    <xs:element minOccurs="0" name="tier1" type="xs:string" />
    <xs:element minOccurs="0" name="tier2" type="xs:string" />
    <xs:element minOccurs="0" name="tier3" type="xs:string" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="product">
  <xs:complexContent>
    <xs:extension base="tns:categorization">
      <xs:sequence>
        <xs:element minOccurs="0" name="manufacturer"
type="xs:string" />
        <xs:element minOccurs="0" name="modelVersion"
type="xs:string" />
        <xs:element minOccurs="0" name="name"
type="xs:string" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="contact">
  <xs:sequence>
    <xs:element minOccurs="0" name="company" type="xs:string" />
    <xs:element minOccurs="0" name="department" type="xs:string" />
    <xs:element minOccurs="0" name="emailAddress"
type="xs:string" />
    <xs:element minOccurs="0" name="firstName" type="xs:string" />
    <xs:element minOccurs="0" name="lastName" type="xs:string" />
    <xs:element minOccurs="0" name="middleName" type="xs:string" />
    <xs:element minOccurs="0" name="organization"
type="xs:string" />
    <xs:element minOccurs="0" name="phoneNumber"
type="xs:string" />
    <xs:element minOccurs="0" name="site" type="xs:string" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="objectReference">
  <xs:sequence>
    <xs:element minOccurs="0" name="identifier" type="xs:string" />
    <xs:element minOccurs="0" name="name" type="xs:string" />
    <xs:element minOccurs="0" name="role" type="xs:string" />
    <xs:element minOccurs="0" name="type" type="xs:string" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="resolution">
  <xs:complexContent>
    <xs:extension base="tns:categorization">
      <xs:sequence>
        <xs:element minOccurs="0" name="cause"
type="xs:string" />
        <xs:element minOccurs="0" name="closureSource"
type="xs:string" />
        <xs:element minOccurs="0" name="detail"
type="xs:string" />
        <xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"

```

```

        name="forecastResolutionDate" type="xs:dateTime"/>
<xs:element minOccurs="0" name="method"
type="xs:string" />
<xs:element minOccurs="0" name="product"
type="tns:product" />
<xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"
        name="requiredDate" type="xs:dateTime"/>
<xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"
        name="resolutionDate" type="xs:dateTime"/>
<xs:element minOccurs="0" name="satisfactionRating"
type="xs:string" />
    </xs:sequence>
</xs:extension>
</xs:complexContent>
</xs:complexType>
<xs:complexType name="vendor">
    <xs:sequence>
        <xs:element minOccurs="0" name="assignmentStatus"
type="xs:string" />
        <xs:element minOccurs="0" name="contact" type="tns:contact" />
        <xs:element minOccurs="0" name="identifier" type="xs:string" />
        <xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"
            name="reportedToVendorDate" type="xs:dateTime"/>
        <xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"
            name="resolvedDate" type="xs:dateTime"/>
        <xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"
            name="respondedToVendorDate" type="xs:dateTime"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="ci">
    <xs:complexContent>
        <xs:extension base="tns:itObject">
            <xs:sequence>
                <xs:element minOccurs="0" name="assignee"
type="xs:string" />
                <xs:element minOccurs="0" name="category"
type="xs:string" />
                <xs:element minOccurs="0" name="className"
type="xs:string" />
                <xs:element minOccurs="0" name="classNamespace"
type="xs:string" />
                <xs:element minOccurs="0" name="compliance"
type="tns:compliance" />
                <xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"
                    name="createDate" type="xs:dateTime"/>
                <xs:element minOccurs="0" name="datasetId"
type="xs:string" />
                <xs:element minOccurs="0" name="description"
type="xs:string" />
                <xs:element minOccurs="0" name="hostName"
type="xs:string" />
                <xs:element minOccurs="0" name="item"
type="xs:string" />
                <xs:element default="1970-01-01T00:00:00.0-00:00"

```



```

        </xs:complexType>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="change">
    <xs:complexContent>
      <xs:extension base="tns:itObject">
        <xs:sequence>
          <xs:element default="1970-01-01T00:00:00.0-00:00"
            name="actualEnd" type="xs:dateTime"/>
          <xs:element default="1970-01-01T00:00:00.0-00:00"
            name="actualStart" type="xs:dateTime"/>
          <xs:element minOccurs="0" name="businessJustification"
            type="xs:string"/>
          <xs:element minOccurs="0" name="categorization"
            type="tns:categorization"/>
          <xs:element minOccurs="0" name="company"
            type="xs:string"/>
          <xs:element minOccurs="0" name="createDate"
            type="xs:dateTime"/>
          <xs:element minOccurs="0" name="description"
            type="xs:string"/>
          <xs:element minOccurs="0" name="impact"
            type="xs:string"/>
          <xs:element default="1970-01-01T00:00:00.0-00:00"
            name="lastModified" type="xs:dateTime"/>
          <xs:element minOccurs="0" name="lastModifiedBy"
            type="xs:string"/>
          <xs:element minOccurs="0" name="logs">
            <xs:complexType>
              <xs:sequence>
                <xs:element maxOccurs="unbounded"
                  type="tns:objectReference"/>
              </xs:sequence>
            </xs:complexType>
          </xs:element>
          <xs:element minOccurs="0" name="priority"
            type="xs:string"/>
          <xs:element minOccurs="0" name="product"
            type="tns:product"/>
          <xs:element minOccurs="0" name="reason"
            type="xs:string"/>
          <xs:element minOccurs="0" name="relationships">
            <xs:complexType>
              <xs:sequence>
                <xs:element maxOccurs="unbounded"
                  name="relationship"
                  type="tns:objectReference"/>
              </xs:sequence>
            </xs:complexType>
          </xs:element>
          <xs:element minOccurs="0" name="requester"
            type="tns:contact"/>
          <xs:element minOccurs="0" name="riskLevel"
            type="xs:string"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>

```

```

minOccurs="0"
                                <xs:element default="1970-01-01T00:00:00.0-00:00"
                                name="scheduledEnd" type="xs:dateTime"/>
                                <xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"
                                name="scheduledStart" type="xs:dateTime"/>
                                <xs:element minOccurs="0" name="status"
type="xs:string"/>
                                <xs:element minOccurs="0" name="summary"
type="xs:string"/>
                                <xs:element minOccurs="0" name="timing"
type="xs:string"/>
                                <xs:element minOccurs="0" name="type"
type="xs:string"/>
                                <xs:element minOccurs="0" name="urgency"
type="xs:string"/>
                                </xs:sequence>
                                </xs:extension>
                                </xs:complexContent>
                                </xs:complexType>
                                <xs:complexType name="problem">
                                <xs:complexContent>
                                <xs:extension base="tns:itObject">
                                <xs:sequence>
                                <xs:element minOccurs="0" name="categorization"
                                type="tns:categorization"/>
                                <xs:element minOccurs="0" name="company"
type="xs:string"/>
                                <xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"
                                name="createDate" type="xs:dateTime"/>
                                <xs:element minOccurs="0" name="description"
type="xs:string"/>
                                <xs:element minOccurs="0"
name="externalProblemIdentifier"
                                type="xs:string"/>
                                <xs:element minOccurs="0" name="impact"
type="xs:string"/>
                                <xs:element minOccurs="0" name="investigationDriver"
type="xs:string"/>
                                <xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"
                                name="lastModified" type="xs:dateTime"/>
                                <xs:element minOccurs="0" name="lastModifiedBy"
type="xs:string"/>
                                <xs:element minOccurs="0" name="logs">
                                <xs:complexType>
                                <xs:sequence>
                                <xs:element minOccurs="0" name="log"
minOccurs="0"
                                type="tns:objectReference"/>
                                </xs:sequence>
                                </xs:complexType>
                                </xs:element>
                                <xs:element minOccurs="0" name="priority"
type="xs:string"/>
                                <xs:element minOccurs="0" name="product"
type="tns:product"/>
                                <xs:element minOccurs="0" name="relationships">
                                <xs:complexType>

```

```

                                <xs:sequence>
                                    <xs:element maxOccurs="unbounded"
minOccurs="0"
                                                name="relationship"
type="tns:objectReference" />
                                </xs:sequence>
                            </xs:complexType>
                        </xs:element>
                    <xs:element minOccurs="0" name="requester"
type="tns:contact" />
                    <xs:element minOccurs="0" name="rootCause"
type="xs:string" />
                    <xs:element minOccurs="0" name="severity"
type="xs:string" />
                    <xs:element minOccurs="0" name="status"
type="xs:string" />
                    <xs:element minOccurs="0" name="summary"
type="xs:string" />
                    <xs:element default="1970-01-01T00:00:00.0-00:00"
minOccurs="0"
                                name="targetResolution" type="xs:dateTime" />
                    <xs:element minOccurs="0" name="urgency"
type="xs:string" />
                    <xs:element minOccurs="0" name="weight"
type="xs:string" />
                    <xs:element minOccurs="0" name="workaround"
type="xs:string" />
                                </xs:sequence>
                            </xs:extension>
                        </xs:complexContent>
                    </xs:complexType>
                <xs:complexType name="data">
                    <xs:sequence>
                        <xs:choice maxOccurs="unbounded" minOccurs="0">
                            <xs:element name="string-field" type="tns:stringField" />
                            <xs:element name="date-field" type="tns:dateField" />
                            <xs:element name="number-field" type="tns:numberField" />
                            <xs:element name="diary-list-field"
type="tns:diaryListField" />
                            <xs:element name="complex-field" type="tns:complexField" />
                        </xs:choice>
                    </xs:sequence>
                </xs:complexType>
                <xs:element name="UnsupportedOperationException"
type="tns:UnsupportedOperationException" />
                <xs:complexType name="UnsupportedOperationException">
                    <xs:sequence />
                </xs:complexType>
                <xs:element name="OperationsException"
type="tns:OperationsException" />
                <xs:complexType name="OperationsException">
                    <xs:sequence />
                </xs:complexType>
                <xs:element name="ObjectNotFoundException"
type="tns:ObjectNotFoundException" />
                <xs:complexType name="ObjectNotFoundException">
                    <xs:sequence />
                </xs:complexType>
                <xs:element name="NonRecoverableOperationsException"
type="tns:NonRecoverableOperationsException" />

```

```

        <xs:complexType name="NonRecoverableOperationsException">
            <xs:sequence/>
        </xs:complexType>
    </xs:schema>
</wsdl:types>
<wsdl:message name="getResponse">
    <wsdl:part element="tns:getResponse" name="parameters"> </wsdl:part>
</wsdl:message>
<wsdl:message name="create">
    <wsdl:part element="tns:create" name="parameters"> </wsdl:part>
</wsdl:message>
<wsdl:message name="clearResponse">
    <wsdl:part element="tns:clearResponse" name="parameters"> </wsdl:part>
</wsdl:message>
<wsdl:message name="NonRecoverableOperationsException">
    <wsdl:part element="tns:NonRecoverableOperationsException"
        name="NonRecoverableOperationsException"> </wsdl:part>
</wsdl:message>
<wsdl:message name="acknowledgeResponse">
    <wsdl:part element="tns:acknowledgeResponse" name="parameters">
</wsdl:part>
</wsdl:message>
<wsdl:message name="update">
    <wsdl:part element="tns:update" name="parameters"> </wsdl:part>
</wsdl:message>
<wsdl:message name="ObjectNotFoundException">
    <wsdl:part element="tns:ObjectNotFoundException"
name="ObjectNotFoundException"
    > </wsdl:part>
</wsdl:message>
<wsdl:message name="acknowledge">
    <wsdl:part element="tns:acknowledge" name="parameters"> </wsdl:part>
</wsdl:message>
<wsdl:message name="get">
    <wsdl:part element="tns:get" name="parameters"> </wsdl:part>
</wsdl:message>
<wsdl:message name="createResponse">
    <wsdl:part element="tns:createResponse" name="parameters"> </wsdl:part>
</wsdl:message>
<wsdl:message name="findResponse">
    <wsdl:part element="tns:findResponse" name="parameters"> </wsdl:part>
</wsdl:message>
<wsdl:message name="OperationsException">
    <wsdl:part element="tns:OperationsException" name="OperationsException">
</wsdl:part>
</wsdl:message>
<wsdl:message name="find">
    <wsdl:part element="tns:find" name="parameters"> </wsdl:part>
</wsdl:message>
<wsdl:message name="clear">
    <wsdl:part element="tns:clear" name="parameters"> </wsdl:part>
</wsdl:message>
<wsdl:message name="UnsupportedOperationException">
    <wsdl:part element="tns:UnsupportedOperationException"
name="UnsupportedOperationException"
    > </wsdl:part>
</wsdl:message>
<wsdl:message name="updateResponse">
    <wsdl:part element="tns:updateResponse" name="parameters"> </wsdl:part>
</wsdl:message>

```

```

<wsdl:portType name="IEventServiceDestination">
  <wsdl:operation name="clear">
    <wsdl:input message="tns:clear" name="clear"> </wsdl:input>
    <wsdl:output message="tns:clearResponse" name="clearResponse">
</wsdl:output>
    <wsdl:fault message="tns:ObjectNotFoundException"
name="ObjectNotFoundException"> </wsdl:fault>
    <wsdl:fault message="tns:UnsupportedOperationException"
name="UnsupportedOperationException"> </wsdl:fault>
    <wsdl:fault message="tns:OperationsException"
name="OperationsException"> </wsdl:fault>
    <wsdl:fault message="tns:NonRecoverableOperationsException"
name="NonRecoverableOperationsException"> </wsdl:fault>
  </wsdl:operation>
  <wsdl:operation name="update">
    <wsdl:input message="tns:update" name="update"> </wsdl:input>
    <wsdl:output message="tns:updateResponse" name="updateResponse">
</wsdl:output>
    <wsdl:fault message="tns:ObjectNotFoundException"
name="ObjectNotFoundException"> </wsdl:fault>
    <wsdl:fault message="tns:OperationsException"
name="OperationsException"> </wsdl:fault>
    <wsdl:fault message="tns:NonRecoverableOperationsException"
name="NonRecoverableOperationsException"> </wsdl:fault>
  </wsdl:operation>
  <wsdl:operation name="acknowledge">
    <wsdl:input message="tns:acknowledge" name="acknowledge">
</wsdl:input>
    <wsdl:output message="tns:acknowledgeResponse"
name="acknowledgeResponse"> </wsdl:output>
    <wsdl:fault message="tns:ObjectNotFoundException"
name="ObjectNotFoundException"> </wsdl:fault>
    <wsdl:fault message="tns:UnsupportedOperationException"
name="UnsupportedOperationException"> </wsdl:fault>
    <wsdl:fault message="tns:OperationsException"
name="OperationsException"> </wsdl:fault>
    <wsdl:fault message="tns:NonRecoverableOperationsException"
name="NonRecoverableOperationsException"> </wsdl:fault>
  </wsdl:operation>
  <wsdl:operation name="get">
    <wsdl:input message="tns:get" name="get"> </wsdl:input>
    <wsdl:output message="tns:getResponse" name="getResponse">
</wsdl:output>
    <wsdl:fault message="tns:ObjectNotFoundException"
name="ObjectNotFoundException"> </wsdl:fault>
    <wsdl:fault message="tns:UnsupportedOperationException"
name="UnsupportedOperationException"> </wsdl:fault>
    <wsdl:fault message="tns:OperationsException"
name="OperationsException"> </wsdl:fault>
    <wsdl:fault message="tns:NonRecoverableOperationsException"
name="NonRecoverableOperationsException"> </wsdl:fault>
  </wsdl:operation>
  <wsdl:operation name="find">
    <wsdl:input message="tns:find" name="find"> </wsdl:input>
    <wsdl:output message="tns:findResponse" name="findResponse">
</wsdl:output>
    <wsdl:fault message="tns:UnsupportedOperationException"
name="UnsupportedOperationException"> </wsdl:fault>
    <wsdl:fault message="tns:OperationsException"
name="OperationsException"> </wsdl:fault>

```

```

        <wsdl:fault message="tns:NonRecoverableOperationsException"
            name="NonRecoverableOperationsException"> </wsdl:fault>
    </wsdl:operation>
    <wsdl:operation name="create">
        <wsdl:input message="tns:create" name="create"> </wsdl:input>
        <wsdl:output message="tns:createResponse" name="createResponse">
    </wsdl:output>
        <wsdl:fault message="tns:OperationsException"
            name="OperationsException"> </wsdl:fault>
        <wsdl:fault message="tns:NonRecoverableOperationsException"
            name="NonRecoverableOperationsException"> </wsdl:fault>
    </wsdl:operation>
</wsdl:portType>
    <wsdl:binding name="EventServiceSoapBinding"
        type="tns:IEventServiceDestination">
        <soap:binding style="document"
            transport="http://schemas.xmlsoap.org/soap/http"/>
        <wsdl:operation name="clear">
            <soap:operation soapAction="" style="document"/>
            <wsdl:input name="clear">
                <soap:body use="literal"/>
            </wsdl:input>
            <wsdl:output name="clearResponse">
                <soap:body use="literal"/>
            </wsdl:output>
            <wsdl:fault name="ObjectNotFoundException">
                <soap:fault name="ObjectNotFoundException" use="literal"/>
            </wsdl:fault>
            <wsdl:fault name="UnsupportedOperationException">
                <soap:fault name="UnsupportedOperationException" use="literal"/>
            </wsdl:fault>
            <wsdl:fault name="OperationsException">
                <soap:fault name="OperationsException" use="literal"/>
            </wsdl:fault>
            <wsdl:fault name="NonRecoverableOperationsException">
                <soap:fault name="NonRecoverableOperationsException"
            use="literal"/>
            </wsdl:fault>
        </wsdl:operation>
        <wsdl:operation name="update">
            <soap:operation soapAction="" style="document"/>
            <wsdl:input name="update">
                <soap:body use="literal"/>
            </wsdl:input>
            <wsdl:output name="updateResponse">
                <soap:body use="literal"/>
            </wsdl:output>
            <wsdl:fault name="ObjectNotFoundException">
                <soap:fault name="ObjectNotFoundException" use="literal"/>
            </wsdl:fault>
            <wsdl:fault name="OperationsException">
                <soap:fault name="OperationsException" use="literal"/>
            </wsdl:fault>
            <wsdl:fault name="NonRecoverableOperationsException">
                <soap:fault name="NonRecoverableOperationsException"
            use="literal"/>
            </wsdl:fault>
        </wsdl:operation>
        <wsdl:operation name="acknowledge">
            <soap:operation soapAction="" style="document"/>

```

```

        <wsdl:input name="acknowledge">
            <soap:body use="literal"/>
        </wsdl:input>
        <wsdl:output name="acknowledgeResponse">
            <soap:body use="literal"/>
        </wsdl:output>
        <wsdl:fault name="ObjectNotFoundException">
            <soap:fault name="ObjectNotFoundException" use="literal"/>
        </wsdl:fault>
        <wsdl:fault name="UnsupportedOperationException">
            <soap:fault name="UnsupportedOperationException" use="literal"/>
        </wsdl:fault>
        <wsdl:fault name="OperationsException">
            <soap:fault name="OperationsException" use="literal"/>
        </wsdl:fault>
        <wsdl:fault name="NonRecoverableOperationsException">
            <soap:fault name="NonRecoverableOperationsException"
use="literal"/>
        </wsdl:fault>
    </wsdl:operation>
    <wsdl:operation name="get">
        <soap:operation soapAction="" style="document"/>
        <wsdl:input name="get">
            <soap:body use="literal"/>
        </wsdl:input>
        <wsdl:output name="getResponse">
            <soap:body use="literal"/>
        </wsdl:output>
        <wsdl:fault name="ObjectNotFoundException">
            <soap:fault name="ObjectNotFoundException" use="literal"/>
        </wsdl:fault>
        <wsdl:fault name="UnsupportedOperationException">
            <soap:fault name="UnsupportedOperationException" use="literal"/>
        </wsdl:fault>
        <wsdl:fault name="OperationsException">
            <soap:fault name="OperationsException" use="literal"/>
        </wsdl:fault>
        <wsdl:fault name="NonRecoverableOperationsException">
            <soap:fault name="NonRecoverableOperationsException"
use="literal"/>
        </wsdl:fault>
    </wsdl:operation>
    <wsdl:operation name="find">
        <soap:operation soapAction="" style="document"/>
        <wsdl:input name="find">
            <soap:body use="literal"/>
        </wsdl:input>
        <wsdl:output name="findResponse">
            <soap:body use="literal"/>
        </wsdl:output>
        <wsdl:fault name="UnsupportedOperationException">
            <soap:fault name="UnsupportedOperationException" use="literal"/>
        </wsdl:fault>
        <wsdl:fault name="OperationsException">
            <soap:fault name="OperationsException" use="literal"/>
        </wsdl:fault>
        <wsdl:fault name="NonRecoverableOperationsException">
            <soap:fault name="NonRecoverableOperationsException"
use="literal"/>
        </wsdl:fault>
    </wsdl:operation>

```



```
</wsdl:operation>
<wsdl:operation name="create">
  <soap:operation soapAction="" style="document"/>
  <wsdl:input name="create">
    <soap:body use="literal"/>
  </wsdl:input>
  <wsdl:output name="createResponse">
    <soap:body use="literal"/>
  </wsdl:output>
  <wsdl:fault name="OperationsException">
    <soap:fault name="OperationsException" use="literal"/>
  </wsdl:fault>
  <wsdl:fault name="NonRecoverableOperationsException">
    <soap:fault name="NonRecoverableOperationsException"
use="literal"/>
  </wsdl:fault>
</wsdl:operation>
</wsdl:binding>
<wsdl:service name="EventService">
  <wsdl:port binding="tns:EventServiceSoapBinding" name="EventServicePort">
    <soap:address
location="http://localhost:8080/services/SCOM2007/EventService"/>
  </wsdl:port>
</wsdl:service>
</wsdl:definitions>
```

Index

A

Agent, configuring, 2-13

B

back-end TEC Agent, 2-12

C

configuring
TEC Agent, 2-13

D

default port numbers, changing, A-2
delete connector, 2-15
delete template, 5-7

E

Enterprise Manager
alerts, XML format of, 5-4
versions supported by connector, 1-1
extended fields
XML path mappings, A-2

H

HTTP or HTTPS, choosing, 2-6, 2-8

I

install
offline mode, 2-3
installing web service, 2-5

M

mappings
between XML format and message field
names, A-1
changing, 5-8

O

offline mode, 2-3

P

port numbers, changing defaults, A-2

R

removing TEC Rules/BAROC files, 2-15
running
installation script, web service on Unix, 2-6
setup script, 2-13

S

sample format for IBM TEC web service, A-1
setup script, running, 2-13

T

TEC Connector
installing web service, 2-5
templates
delete, 5-7
edit, 5-6
Manage in Oracle Enterprise Manager, 5-6
restore, 5-7
view template code, 5-7

U

uninstall
connector, 2-15
uninstall web service
Unix, 2-7
Windows, 2-10
Unix
installing web service on, 2-5
running web service on, 2-6, 2-7, 2-10
testing web service on, 2-7

W

web service
installing web service on Unix, 2-5
installing web service on Windows, 2-7
run as a Windows service, 2-9
running installation script, 2-6
running web service on, 2-6, 2-7, 2-10

- running web service on Unix, 2-6
- running web service on Windows, 2-10
- testing web service on Unix, 2-7
- testing web service on Windows, 2-10
- uninstall on Unix, 2-7
- uninstall on Windows, 2-10

Windows

- installing web service on, 2-7
- running web service on, 2-10
- testing web service on, 2-10

X

XML format

- Enterprise Manager alerts, 5-4
- message field names, mappings between, A-1