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HP Operations Manager Connector Installation and
Configuration Guide

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Contents

A Customizing Microsoft HP Operations Manager

B Integrating OMU with Enterprise Manager

C Enterprise Manager Event Format

D OMU Web Service WSDL Format

E Enterprise Manager Event Examples

Index

Preface

This *HP Operations Manager Connector Installation and Configuration Guide* provides the information that you require to install and configure the HP Operations Manager Connector that integrates Oracle Enterprise Manager with HP Operations Manager management tools.

Audience

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

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 at 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.
italic	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.

1

Introduction to the Connector

The Hewlett-Packard Operations Manager Connector (version 12.1.0.2.0) integrates Oracle Enterprise Manager with HP Operations Manager Unix, or OMU (version 9.0), through web services. Using this connector you can create, update, or close messages on the OMU system for any event generated in Enterprise manager, which ensures an active synchronization between OMU and Enterprise Manager.

The following sections in this chapter discuss these topics:

- OMU Messages and Acknowledgements
- Event Templates
- Retry Option
- Versions Supported

1.1 OMU Messages and Acknowledgements

Conceptually, events in Oracle Enterprise Manager are equivalent to messages in OMU. In OMU, a message is information generated for the operation whenever an event occurs.

In OMU, the term acknowledge has a different meaning than for most applications. Acknowledging a message in OMU means that an event has been resolved and the message is closed.

1.2 Event Templates

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

The OMU event connector contains predefined event templates for Create and Update event operations on the OMU system. You can customize these templates to fulfill your particular requirements. Oracle recommends that you back up these factory-built templates before customizing them.

> **See Also:** Chapter 5, "Working With Event Templates" more details.

1.3 Retry Option

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

When you enable the Retry option, you can specify whether you want to resend a Create or Update request if the request fails the first time, and specify the time period after which you want to abandon the retry. Enterprise Manager retries every five minutes until the request is successful or the retry interval expires.

1.4 Versions Supported

This connector supports the following versions of Oracle Enterprise Manager and HP Operations Manager:

- Oracle Enterprise Manager Cloud Control 12c Release 1 (12.1.0.1 with Bundle Patch 1) and higher versions

- HP Operations Manager 8 and 9

You can install the HP Operations Manager Agent, which is part of the connector bundle, on the following platforms:

- HP-UX on Itanium architecture with OS version 8 and above

- Solaris on SPARC architecture with OS version 10 and above

- Linux Red Hat Enterprise OS version 5.2 and above

The base Enterprise Manager version number for HP Operations Manager Release 12.1.0.2.0 is Enterprise Manager 12c Release 1 (12.1.0.1 with Bundle Patch 1).

2

Installing the Connector

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

You can install the web service on a UNIX or Windows system that has connectivity with the OMU server. In addition to the OMU web service front-end, you must also install a back-end Oracle OMU Agent on the same physical system as the OMU server. The Oracle OMU Agent is preconfigured and is also included in the Oracle Enterprise Manager HP OMU installation package.

Figure 2–1 shows the communication between the various components of the OMU Connector.

Figure 2–1   Connector Communication Between Components
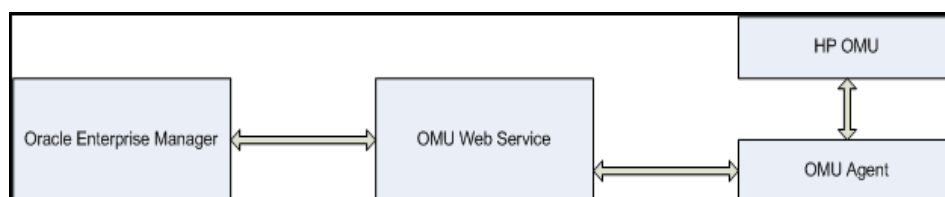
The following sections in this chapter discuss these topics:

- Installation Platforms

- Prerequisites

- Installing the Connector in Enterprise Manager

- Installing and Running the Oracle Agent for HP Operations Manager

- Installing the Oracle Web Service for HP Operations Manager

2.1 Installation Platforms

You can install the Oracle web service for HP Operations Manager on the following platforms that support Java JRE 1.6:

- Microsoft Windows

- Sun Solaris

- HP-UX

- Linux

You can install the Oracle Agent for HP Operations Manager on the following platforms:

- HP-UX on Itanium architecture with OS version 8 and above
- Solaris on SPARC architecture with OS version 10 and above
- Linux with Red Hat Enterprise versions 5.2 and above

2.2 Prerequisites

Ensure that the following prerequisites have been met before proceeding to the next section.

- My Oracle Support Preferred Credentials must be set.

    To set the credentials:

    1. From Setup menu of the Enterprise Manager menu, select **My Oracle Support**, then select **Set Credentials**.

    2. Enter the user name and password information, then click **Apply**.

    3. From the Enterprise Manager console Setup menu, select **Extensibilty**, then **Self Update**.

    4. From the Self Update page, click **Check Updates** to schedule a job to collect the metadata for the connector.

        See Also: "Using Self Update to Download Oracle Products" section of the *Enterprise Manager Cloud Administration Guide* for more details.

- The gunzip utility must be available on the system hosting HP Operations Manager.

- An HP Operations Manager user account must be set up that the Oracle OMU Agent can use.

    To forward events to HP OMU, you need to make some configuration changes in HP OMU as described in the following high-level steps.

        See Also: Appendix B, "Integrating OMU with Enterprise Manager" for detailed instructions on setting up HP OMU.

    1. Create a message group named OracleEnterpriseManager at the HP Operations Manager server.

        The HP Operations Manager account mentioned above must have access to this message group, and must be able to create and update messages in this message group.

    2. Create a node named OracleEnterpriseManager at the HP Operations Manager server.

        This node must be a Message Allowed type and must not have an associated IP address. Messages inserted by Enterprise Manager are assigned to this node.

    3. Create a template/policy that generates a message whenever an event is received for the OracleEnterpriseManager message group.

2.3 Installing the Connector in Enterprise Manager

The OMU connector is not included out-of-box, so you need to download it from the Oracle Enterprise Manager store. All connectors in the Enterprise Manager store are available on the Self Update page for downloading.

> **Note:** There are no special privileges needed to download a connector. However, you need the Super Administrator privilege to apply a connector.

To download and install (apply) the connector:

1. From the Enterprise Manager console Setup menu, select **Extensibility**, then select **Self Update**.

2. Click on the **Management Connector** link in the Type column.

   The OMU connectors appear in the list with a status of Available.

3. Click on the appropriate OMU connector to select it, and then click **Download**.

   The Schedule Download window appears, where you can determine when the download should be performed.

4. Click **Select** to download immediately.

   If you want to schedule the download for a later time, specify the date and time when the download should occur, and click **Select**. You will need to return and finish the remainder of this procedure after the scheduled download date and time.

5. If necessary, refresh the screen until the status of the connector changes to Downloaded.

6. Click on the OMU connector to select it, and then click **Apply**.

   After you respond to the prompt to confirm the operation, a page appears that indicates the request has been submitted.

7. Refresh the screen until the status of the connector changes from Apply Scheduled to Applied.

   > **See Also:** "Using Self Update to Download Oracle Products" section of the *Enterprise Manager Cloud Administration Guide* for detailed information and diagnostic procedures.

2.4 Installing and Running the Oracle Agent for HP Operations Manager

The following sections provide procedures to install the Agent, then subsequently run it.

2.4.1 Installing the Agent

The back-end Oracle OMU Agent exchanges data with the OMU API and must be run on the same physical system as the OMU server. The Oracle OMU Agent is preconfigured to interface with the OMU Web Service and requires minimal configuration.

To install the Oracle OMU Agent, perform the following steps:

1. Obtain a copy of the agent installation file from the Management Server host system as specified in Section 2.4.3, "Exporting the Agent Installation File".

2. Transfer the Agent installation file to the Operations Manager system host into the directory where you intend to install the Oracle OMU Agent.

   The Agent zip files are named as follows:

   - HP-UX platform — `hpomuAgentHPUX.tar.gz`

   - Solaris platform — `hpomuAgentSolaris.tar.gz`

   - Linux platform — `hpomuAgentLinux.tar.gz`

3. Open a terminal and change the working directory to the installation directory.

4. Enter the appropriate command listed below to extract the Agent installation files:

   - For HP-UX:

     `gunzip -c hpomuAgentHPUX.tar.gz | tar xvf -`

   - For Solaris:

     `gunzip -c hpomuAgentSolaris.tar.gz | tar xvf -`

   - For Linux:

     `tar xzvf hpomuAgentLinux.tar.gz`

     This creates the ovo-agent directory that contains the installation files.

5. Change the working directory to the ovo-agent/scripts directory.

6. Enter the following command to run the setup script to configure the Oracle OMU Agent:

   `./configure.sh`

   The following prompts appear in this sequence:

   a. **Enter the UserID to use when accessing the OMU API:** — Enter the user name of the OMU account for the Agent to use when accessing the OMU API. This is the OMU user account specified in the prerequisites section.

   b. **Enter the Password to use when accessing the OMU API:** — Enter the password of the OMU account the Agent uses to access the OMU API. This is the OMU user account specified in the prerequisites section.

   c. **Enter the system usernames that have access to start and stop the OMU Agent.** — You are prompted for a user name until an empty response is provided.

7. Open another terminal and log in as root.

8. Change the working directory to the `ovo-agent/scripts` directory in the Oracle OMU Agent installation directory.

9. Enter the following command to enable the Oracle OMU Agent to run with root permissions:

   `./root-setup.sh`

10. Close the terminal where you are logged in as root.

11. Delete the Agent .tar.gz file from the installation directory.

2.4.2 Running and Stopping the Agent

Running the Agent

Before starting the Agent on the Solaris platform, verify that the `LD_LIBRARY_PATH` environment variable contains the `/opt/OV/lib` path.

To start the Oracle OMU Agent, enter the following command from the `ovo-agent/scripts` directory in the Oracle OMU Agent installation directory:

```
./start.sh
```

Stopping the Agent

To stop the Oracle OMU Agent, enter the following command from the `ovo-agent/scripts` directory in the Oracle OMU Agent installation directory:

```
./stop.sh
```

You must specify the user name and password for an account that is authorized to stop the Oracle OMU Agent.

2.4.3 Exporting the Agent Installation File

The agent 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:

1. Determine the command required to export the adapter installation file. To do this, perform the following steps:

    a. From the **Setup** menu, select **Extensibility**, then **Self Update**.

    b. Click on the **Management Connector** link in the Type column.

    c. Click on the OMU connector to select it, then select **Export** from the **Actions** list.

        A pop-up window, like the example shown in Figure 2–2, appears with the command required to export the file.

Figure 2–2   Export Command Example
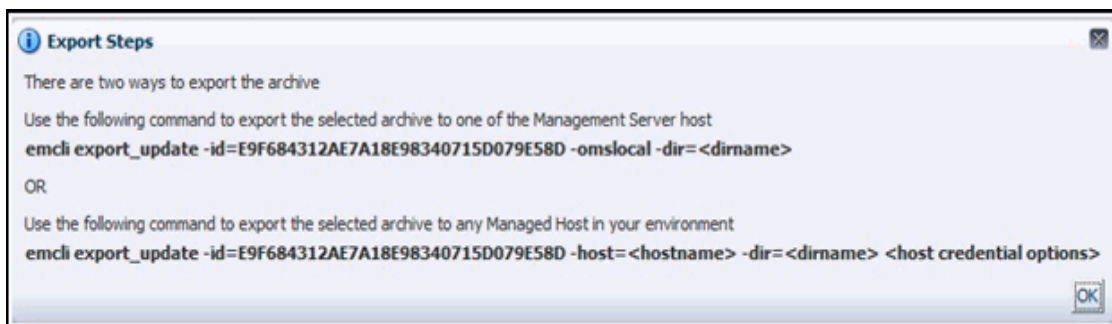
2. Open a command window on the Operations Manager host system and navigate to a temporary directory where you can copy the file.

3. Log into EM CLI using the following command. You will be asked to provide the password information for the sysman account.

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

EM CLI must be executed from the OMS server system. See the *Oracle Enterprise Manager Command Line Interface* for information about setting up EM CLI.

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

    This action creates a zip file. The file name is comprised of the id value you specify in the export_update command with a .zip extension. In the example command in Figure 2–2, the zip file name would be `E9F684312AE7A18E98340715D079E58D.zip`.

5. 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 HP-UX:

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

    - For Solaris:

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

    - For Linux:

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

2.4.4 Troubleshooting the Agent

The Oracle OMU Agent links in OMU libraries at run time. On some systems, you might receive an error similar to the following example when attempting to run the Agent using an account other than root.

```
ld.so.1: ovooper: fatal: libovsnmp.so: open failed: No such file or directory
```

This error message indicates that the OS runtime does not know where to pick up the OMU library files. On all supported platforms, you can use the ldd command to determine which libraries cannot be loaded.

The following sections explain about what is required to change the run-time configuration on the supported platforms.

2.4.4.1 Linux

For Linux systems, do the following to configure the run-time loader to pick up the OMU libraries:

1. Add the library paths to the `/etc/ld.so.conf` file.

2. Run the `ldconfig` command.

2.4.4.2 HP-UX

For HP-UX systems, you must add the library paths to the `/etc/dld.sl.conf` file.

2.4.4.3 Solaris

For Solaris systems, you must run the `crle` command with the `-s` option to add the OMU library paths to the run-time configuration.

2.4.4.4 Examples for Solaris

ldd Command Examples

- Run the `ldd` command with no options to analyze the run-time libraries loaded by the `ovooper` binary. The output shows that some of the files cannot be found.

```
$ ldd ovooper
        libovsnmp.so =>  (file not found)
        libov.so =>      (file not found)
        libopcsv_r.so => (file not found)
        libopcdb.so =>   (file not found)
        libnsp.so =>     (file not found)
        libnsl.so.1 =>   /lib/libnsl.so.1
        libdce.so =>     /usr/lib/libdce.so
        libsocket.so.1 => /lib/libsocket.so.1
        libthread.so.1 => /lib/libthread.so.1
        libm.so.2 =>     /lib/libm.so.2
        libw.so.1 =>     /lib/libw.so.1
        libdl.so.1 =>    /lib/libdl.so.1
        libz.so =>       /usr/lib/libz.so
        libiconv.so.2 => (file not found)
        libc.so.1 =>     /lib/libc.so.1
        libmp.so.2 =>    /lib/libmp.so.2
        libmd5.so.1 =>   /lib/libmd5.so.1
        libscf.so.1 =>   /lib/libscf.so.1
        libdcecrypt.so => /usr/lib/libdcecrypt.so
        libm.so.1 =>     /lib/libm.so.1
        libdoor.so.1 =>  /lib/libdoor.so.1
        libuutil.so.1 => /lib/libuutil.so.1
        /platform/SUNW,Sun-Fire-280R/lib/libc_psr.so.1
        /platform/SUNW,Sun-Fire-280R/lib/libmd5_psr.so.1
```

- Run the `ldd` command with the `-s` option to provide additional information, as shown below. The command output shows that the `/opt/OV/lib` and `/opt/OV/lib` paths are being ignored because of an insecure directory name. This means that the libraries are not defined in the run-time linking environment.

```
$ ldd -s ovooper

  find object=libovsnmp.so; required by ovooper
   search path=/opt/OV/lib:/usr/local/lib  (LD_LIBRARY_PATH)
   ignore path=/opt/OV/lib  (insecure directory name)
   ignore path=/usr/local/lib  (insecure directory name)
   search path=/lib:/usr/lib  (default)
   trying path=/lib/libovsnmp.so
   trying path=/usr/lib/libovsnmp.so
        libovsnmp.so =>  (file not found)
```

crle Command Examples

- Run the `crle` command with no options to show the library paths currently defined for the run-time linking environment:

```
# crle

Configuration file [version 4]: /var/ld/ld.config
  Default Library Path (ELF):  /lib:/usr/lib  (system default)
  Trusted Directories (ELF):   /usr/lib/secure:/lib/secure

Command line:
```

```
crle -c /var/ld/ld.config -s /usr/lib/secure:/lib/secure
```

■ Run the `crle` command with the `-s` option to add the OMU library paths to the run-time linking environment:

```
# crle -s /lib/secure:/usr/lib/secure:/opt/OV/lib:/usr/local/lib
```

■ Run the crle command again with no options to verify that the library paths are now correct for the run-time linking environment:

```
Configuration file [version 4]: /var/ld/ld.config
  Default Library Path (ELF):   /lib:/usr/lib  (system default)
  Trusted Directories (ELF):
/lib/secure:/usr/lib/secure:/opt/OV/lib:/usr/local/lib

Command line:
  crle -c /var/ld/ld.config
    -s /lib/secure:/usr/lib/secure:/opt/OV/lib:/usr/local/lib
```

2.5 Installing the Oracle Web Service for HP Operations Manager

The Oracle OMU web service acts as a front-end for all data flowing into and out of OMU. Oracle Enterprise Manager posts calls to the web service whenever it needs to create or update a message, or get new or updated messages from OMU.

You can install the OMU web service on any UNIX or Windows system that runs the Oracle JRE 1.6 and has connectivity to the OMU server and the Oracle Enterprise Manager server.

2.5.1 Installing and Running the HP Operations Manager Web Service on Unix

The following sections explain how to install and then subsequently run the Web Service on a Unix platform.

2.5.1.1 Prerequisites

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

■ Oracle Java Runtime Environment (JRE) version 6 Update 11 or higher is installed.

■ `JAVA_HOME` environment variable is set to the JRE installation directory.

2.5.1.2 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 web service `HPOMU_webservices_adapter.jar` installation file from the Management Server host system as specified in Section 2.5.3, "Exporting the Web Service Installation File".

3. Copy the `HPOMU_webservices_adapter.jar` file to the web service installation directory.

4. Open a command prompt window and change the working directory to the Web service installation directory.

5. Enter the following command to extract the web services components from the web services `.jar` file:

```
jar xvf HPOMU_webservices_adapter.jar
```

> **Note:** If the system where the OMU 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 installed JDK and transfer the files after they have been extracted.

This creates the adapters directory that contains the installation files.

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

    ```
    cd adapters/endpoints/hpovou
    ```

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

    ```
    ./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 a user name that must be provided to access the OMU Web Service.

    The user name can be any value and is not associated with any specific OS or OMU account. Note this value and supply it when configuring the OMU 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 OMU Web Service.

    The password can be any value and is not associated with any specific OS or OMU account. Note this value and supply it when configuring the OMU connector in Enterprise Manager.

11. When the script prompts for the system where the Agent was installed, enter the host name or IP address where the Oracle OMU Agent was installed.

    You cannot specify the host name of localhost. The host name must be the actual host name or IP address of the system.

12. When the script prompts for the port number the Agent uses, enter the port number the Oracle OMU Agent uses. Unless you have manually configured the Agent to use a different port number, just accept the default port number of 9007.

13. After the script displays the message "OMU Web Service Complete," press **Enter** to complete the installation.

14. 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".

15. Delete the `HPOMU_webservices_adapter.jar` file from the installation directory.

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

2.5.1.3 Running the Web Service on Unix

To run the HP Operations Manager Web Service framework commands listed with the following tasks, first change the working directory to ...

```
adapters/bin
```

... in the installation directory.

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

2.5.1.4 Testing the Web Service on Unix

Perform the following steps to verify that the OMU 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 OMU web service in step 10 of Section 2.5.1.2, "Installing the Web Service on Unix".

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

2.5.2 Installing and Running the HP Operations Manager Web Service on Windows

The following sections explain how to install and then subsequently run the Web Service on a Windows platform.

2.5.2.1 Prerequisites

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

- Oracle Java Runtime Environment (JRE) version 6 Update 11 or higher is installed.
- `JAVA_HOME` environment variable is set to the JRE installation directory.
- Zip utility, such as WinZip, is installed for unzipping a zip file.

2.5.2.2 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 `HPOMU_webservices_adapter.jar` installation file from the Management Server host system as specified in Section 2.5.3, "Exporting the Web Service Installation File".

3. Copy the `HPOMU_webservices_adapter.jar` file to the web service installation directory.

4. Open a command prompt window and change the working directory to the Web service installation directory.

5. Enter the following command to extract the web services components from the web services .jar file:

   `jar xvf HPOMU_webservices_adapter.jar`

> **Note:** If the system where the OMU 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 installed JDK and transfer the files after they have been extracted.

This creates the adapters directory that contains the installation files.

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

   ```
   cd adapters\endpoints\hpovou
   ```

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 a user name that must be provided to access the OMU Web Service.

   The user name can be any value and is not associated with any specific OS or OMU account. Note this value and supply it when configuring the OMU 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 OMU Web Service.

    The password can be any value and is not associated with any specific OS or OMU account. Note this value and supply it when configuring the OMU connector in Enterprise Manager.

11. When the script prompts for the system where the Agent was installed, enter the host name or IP address where the Oracle OMU Agent was installed.

    You cannot specify the host name of localhost. The host name must be the actual host name or IP address of the system.

12. When the script prompts for the port number the Agent uses, enter the port number the Oracle OMU Agent uses. Unless you have manually configured the Agent to use a different port number, just accept the default port number of 9007.

13. After the script displays the message "OMU Web Service Complete," click **Enter** to complete the installation.

14. 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".

15. *Optional:* If you want to run the web service as a Windows service, perform the following steps:

    a. Change the working directory to the adapters\bin directory in the installation directory.

    b. Enter the following command to install the web service as a Windows service:

       ```
       service.bat install
       ```

16. Delete the HPOMU_webservices_adapter.jar file from the installation directory.

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

2.5.2.3 Running the Web Service on Windows

You can run the Web Service either as a standalone service or Windows service.

Running as a Standalone Service

To start the OMU 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 OMU web service framework, close the window where you started the Web service.

Running as a Windows Service

To start the OMU web service framework when set up to run as a Windows service, enter the following command:

```
net start iWaveAdapters
```

To shut down the OMU web service framework, enter the following command:

```
net stop iWaveAdapters
```

2.5.2.4 Testing the Web Service on Windows

Perform the following steps to verify that the OMU 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 OMU web service in step 10 of Section 2.5.2.2, "Installing the Web Service on Windows".

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

2.5.3 Exporting the Web Service Installation File

The web service installation file is included in the zip file that was extracted in section Section 2.4.3, "Exporting the Agent Installation File".

To extract the installation file:

1. Open a command window on the Operations Manager host system and navigate to the temporary directory where the zip file was created.

2. Extract the web service installation file using the following command:

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

3

Configuring the HP OMU Connector

This chapter provides procedures to configure the two sub-pages of 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 and Disabling the Connector
- Providing General Settings
- Testing the HP OMU Connector

3.1 Creating a Connector Instance

After the OMU 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, and so forth of the OMU system. Multiple connector instances for the same connector type are supported, which provides the flexibility to configure multiple OMU systems with Enterprise Manager.

For example, you could have a production database and test database that Enterprise Manager monitors, and you could create two different connector instances that point to two different OMU systems, and then associate each instance with separate event rules. Using this setup, you can forward Enterprise Manager events generated from these two databases to two different OMU systems.

To create a connector instance:

1. From the Setup menu of the Enterprise Manager console, select **Extensibility**, then **Management Connectors**.

2. Select a connector type of OMU from the Create Connector drop-down list, then click **Go**.

3. Enter the connector name and description on the next page and click **OK**.

   The connector instance appears as unconfigured in the Connector Setup page. Figure 3–1 shows an unconfigured OMU connector instance.

Figure 3–1   Unconfigured HP OMU Connector
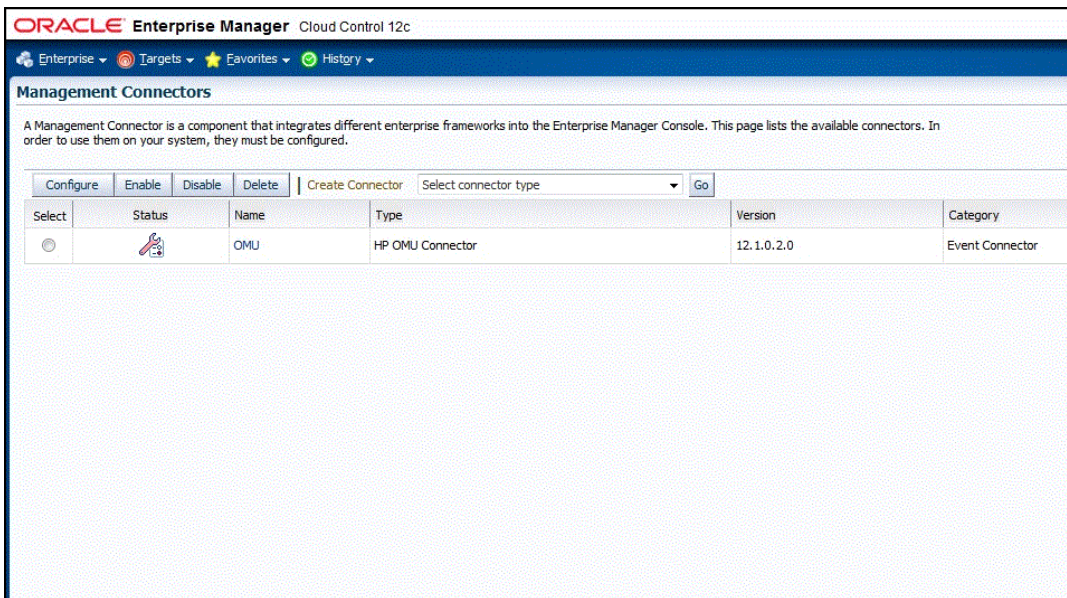
3.2 Configuring the Connector

To configure the connector:

1. From the Setup menu of the Enterprise Manager console as Super Administrator, select **Extensibility**, then **Management Connectors**.

    The Management Connectors page appears, which lists all created connector instances.

    > **Note:**   The connector is already configured if a green checkmark appears in the Status column.

2. Click on the name of the OMU Connector.

    The General tab of the Configure Management Connector page appears, as shown in Figure 3–2.

3. Provide the required settings. See Section 3.4, "Providing General Settings" for details.

4. Click **OK**.

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

    > **Note:**   If you chose HTTPS as the protocol to establish a connection between OMU 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

3.3 Enabling and 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 the Enable or Disable button. 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 OMU Connector communicates with Operations Manager through the OMU web service installed in Section 2.5, "Installing the Oracle Web Service for HP Operations Manager". All of the following fields are mandatory.

- **Web Service End Points** — URL to use when creating and updating events (messages) in OMU. The OMU web service uses the same URL for the `createEvent` and `updateEvent` operations. The default format for both operations is as follows:

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

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

For HTTP —

- Replace [Hostname] in the URL with the host name or IP address of the system where the OMU 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 OMU web service was installed.

- Change the port number from 8080 to 8443.

Examples:

If the OMU web service was installed on a system with a host name of omuws, the following URLs would be configured for the different protocols.

- For HTTP —

  ```
  http://omuws:8080/services/hpovou/EventService
  ```

- For HTTPS —

  ```
  https://omuws:8443/services/hpovou/EventService
  ```

- **OMU Web Service Username** - User name that was configured for accessing the OMU web service in step 9 of the appropriate web service installation section (Section 2.5.1.2 for Unix and Section 2.5.2.2 for Windows).

- **OMU Web Service Password** - Password that was configured for accessing the OMU web service in step 10 of the appropriate web service installation section (Section 2.5.1.2 for Unix and Section 2.5.2.2 for Windows).

3.4.2 Retry

You can enable and disable the Retry option and configure its interval value. By default, the Retry is disabled. This setting applies to all events the OMU Connector processes. See Section 1.3, "Retry Option" for details.

The retry period interval accepts the number of hours as any integer value; for example, 1 or 2.

3.5 Testing the HP OMU Connector

To verify that the connector is configured correctly:

1. Log in to the Oracle Enterprise Manager console with an account that has Super Administrator permissions.

2. From the Setup menu of the Enterprise Manager console, select **Extensibility**, then **Management Connectors**.

   The Management Connectors page appears.

3. Click on the name of the OMU 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/hpovou/EventService?wsdl
```

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

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

4

Forwarding Events to HP OMU

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

The following sections provide procedures that explain how to create and update rules.

- Setting Events Rules
- Viewing Oracle Enterprise Manager Events

4.1 Setting Events Rules

This section explains how to create new rules in Enterprise Manager that invoke the OMU connector.

To set events rules:

1. Log into the Enterprise Manager console with an account that has Super Administrator permissions.

2. From the Setup menu of the Enterprise Manager console, click **Incidents**, then **Incident Rules**.

3. Identify an existing rule set where the new rule can be added, or create a new rule set as follows:

   a. Click on **Create Rule Set** to invoke the Create Rule Set page.

   b. Enter a name and description, then click **Save**.

   The Incident Rules page appears again, and lists the new rule set.

4. Click on the rule set for which you want to add the rule, then click **Edit**.

5. Click on the **Rules** tab then click **Create**.

   The Select Type of Rule to Create pop-up appears. As you proceed below, the wizard interface explains various rules and their usage. For detailed information, see the "Incident Management" chapter in the *Oracle Enterprise Manager Cloud Control Administrator's Guide*.

6. Select **Incoming events and updates to events**, then click **Continue**.

   The Select Events page appears.

7. Set the criteria that you want to be met to trigger the rule, then click **Next**.

   The Add Actions page will be displayed as shown in Figure 4–1.

Figure 4–1   Add Actions Page
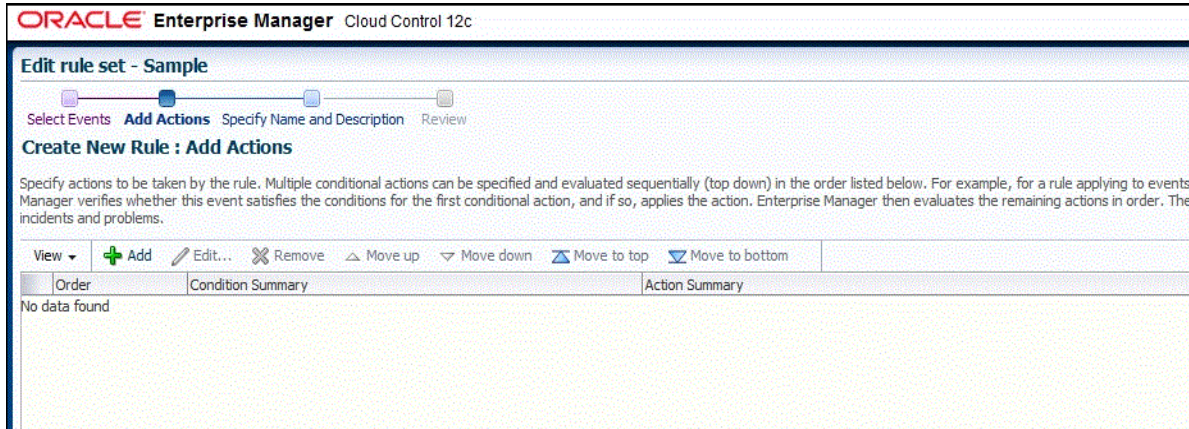
8. Click **Add**.

    The Add Conditional Actions page appears, as shown in Figure 4–2.

Figure 4–2   Add Conditional Actions Page
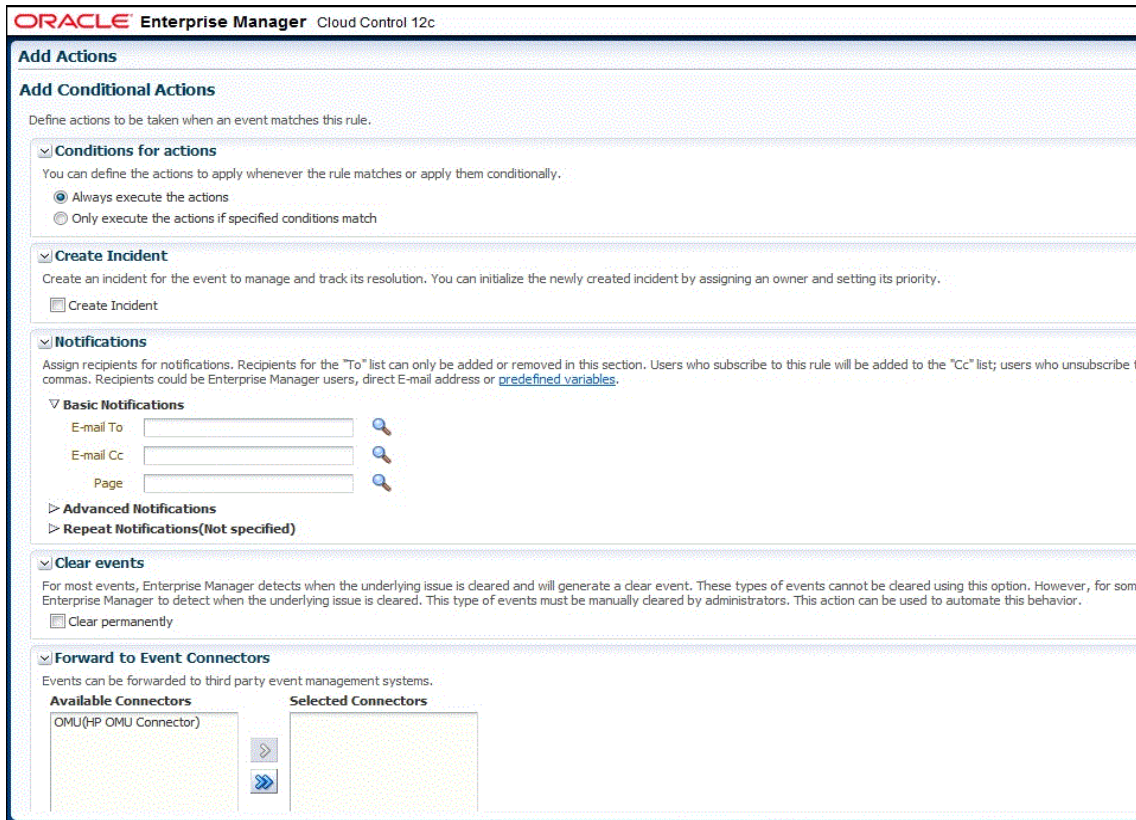
9. Select **OMU (HP OMU Connector)** in the Forward to Event Connectors section and, click the **>** button, then click **Continue**.

    The Add Actions page appears again, and lists the new action.

10. Click **Next**.

The Specify Name and Description page appears.

11. Enter a name and description for the rule, then click **Next**.

The Review page appears.

12. Click **Continue** if everything appears correct.

An information pop-up appears that states, "Rule has been successfully added to the current rule set. Newly added rules are not saved until the Save button is clicked."

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

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

The following process occurs after the event rule has been created successfully:

- A request is sent to the OMU Connector when an event is created per the criteria mentioned in the rule.

- The message is created or updated on the OMU console.

- In Enterprise Manager, the event is annotated with a comment on the Updates tab to indicate that an event is created or updated, as shown in Figure 4–3.

Figure 4–3   Event Annotations

4.2 Viewing Oracle Enterprise Manager Events

Whenever a message is created in HP Operations Manager from an event that originates in Oracle Enterprise Manager, a link is provided in the message text. To view the Oracle Enterprise Manager event that triggered the message, click on the link and you will be asked to log into Oracle Enterprise Manager. After logging in, the Oracle Enterprise Manager event information is displayed, as shown in Figure 4–4.

Figure 4–4   Event Details

5
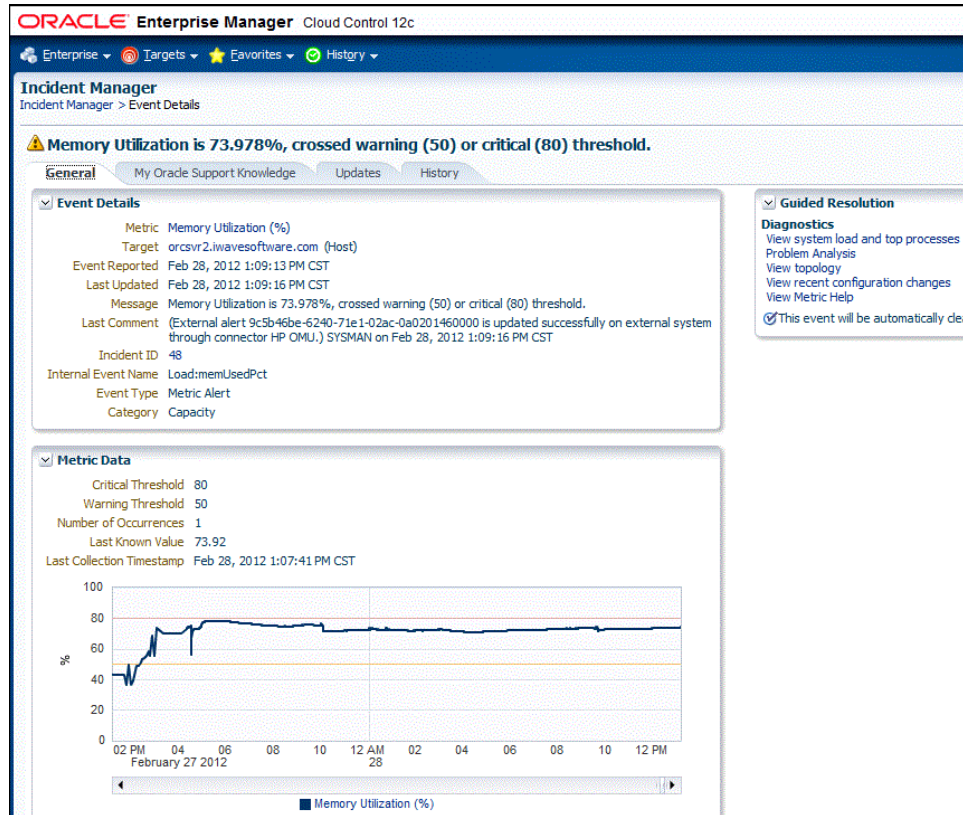
Working With Event Templates

This chapter provides information about the default event templates shipped with the OMU Connector. The event templates specify the mappings between Enterprise Manager event attributes and OMU web service attributes.

This chapter discusses the following topics:

- Default Templates
- Formatted Enterprise Manager Event Contents
- Severity Mappings
- Customizing Event Mappings

5.1 Default Templates

This section describes the default mappings between the Enterprise Manager event data fields and the OMU message data fields.

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". To extract the installation file, perform the steps in Section 4.1.3.1, "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 HP Operations Manager message format for the createEvent operation.
updateEvent_request.xsl	Transforms the Oracle Enterprise Manager event data to the HP Operations Manager message format for the updateEvent operation.

The following sections provide details about the default mappings in each of the files.

5.1.1 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 OMU connector. `createEvent_request.xsl` is invoked during the process to transform the data from Oracle Enterprise Manager

format to OMU message format. Table 5–2 lists the default field mappings between the HP Operations Manager message and the Oracle Enterprise Manager event.

Table 5–2   Create Event Template Mapping

Operations Manager Field Name	Value
Message Text	Set to the formatted contents of the incident as specified in Section 5.2, "Formatted Enterprise Manager Event Contents".
Severity	Set the severity based on the event severity as specified in the section below entitled Section 5.2, "Formatted Enterprise Manager Event Contents".
Message Group	Hard-coded to "OracleEnterpriseManager."
Object	Set to the event TargetName field.
Node	Hard-coded to "OracleEnterpriseManager."
Application	Set to the event TargetTypeLabel field.

5.1.2 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 OMU connector. updateEvent_request.xsl is invoked during the process to transform the data from Oracle Enterprise Manager format to OMU message format. Table 5–3 lists the default field mappings between the HP Operations Manager message and the Oracle Enterprise Manager event.

Table 5–3   Update Event Template Mapping

Operations Manager Field Name	Value
Message No.	Set to the event ExternalEventId field.
Message Text	Set to the formatted contents of the incident as specified in Section 5.2, "Formatted Enterprise Manager Event Contents"
Severity	Set the severity based on the event severity. See Section 5.3, "Severity Mappings" for details.
Message Group	Hard-coded to "OracleEnterpriseManager."
Object	Set to the event TargetName field.
Node	Hard-coded to "OracleEnterpriseManager."
Application	Set to the event TargetTypeLabel field.

5.2 Formatted Enterprise Manager Event Contents

The format the templates use for the Description fields is shown below. 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 the format 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/TargetTypeLabel>
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 is only present if the event contains target property values. Listed below are a couple of sample target property name/value pairs:

  ```
  Line of business: Finance
  Owner: Finance-DB Team
  ```

- The Event Context section is only 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. The URL is set up as a link that you can click directly to view the event in Enterprise Manager.

5.3 Severity Mappings

The OMU message severity is set based on the Enterprise Manager event severity value. Table 5–4shows the values used when creating the message in OMU.

Table 5–4   OMU Message Severity Mappings

When the incident severity is ...	Set the ticket severity to …
Fatal	Critical
Critical	Critical
Warning	Warning
Minor Warning	Warning
Information	Normal

5.4 Customizing Event Mappings

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

- Changing a Mapping

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

For reference information on the OMU mappings, see Appendix A, "Customizing Microsoft HP Operations Manager".

5.4.1 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 5–5 provides a description of the fields shown in Example 5–1.

Table 5–5   Field Descriptions for XML Format

Field	Description
ExternalEventId	Unique identifier of the message in HP Operations Manager. 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.

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

Field	Description
SeverityCode	Severity code for the event: FATAL, CRITICAL, WARNING, MINOR_ WARNING, INFORMATIONAL, or CLEAR.
TargetType	Target name that is a unique instance of the target type.
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).

5.4.2 Changing a Mapping

The following procedure provides the steps required to change a mapping.

1. Export the default template XSLT files from Enterprise Manager to use as a baseline. Follow the instructions in Section 5.4.2.1, "Exporting the Template Files" to obtain copies of the default template files.

2. Create a back-up copy of the XSL file you want to change.

3. Make the desired mapping changes to the template file. See Section 5.4.2.2, "Modifying Templates" for guidance on mapping changes.

4. Register the new template with Enterprise Manager as specified in Section 5.4.2.3, "Registering Templates".

See Section 5.4.2.4, "Template Customization Example" for an example of how to customize templates.

5.4.2.1 Exporting the Template Files

The connector installation jar 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:

1. Determine the command required to export the adapter installation file. To do this, perform the following steps:

   a. From the Setup menu in the Enterprise Manager console, select **Extensibility**, then **Self Update**.

   b. Click on the **Management Connector** link.

   c. Click on the **OMU connector** and then select **Export** from the Actions list.

   A pop-up window appears with the command required to export the file. Figure 5–1 shows an example of the window.

Figure 5–1   Export Command Example
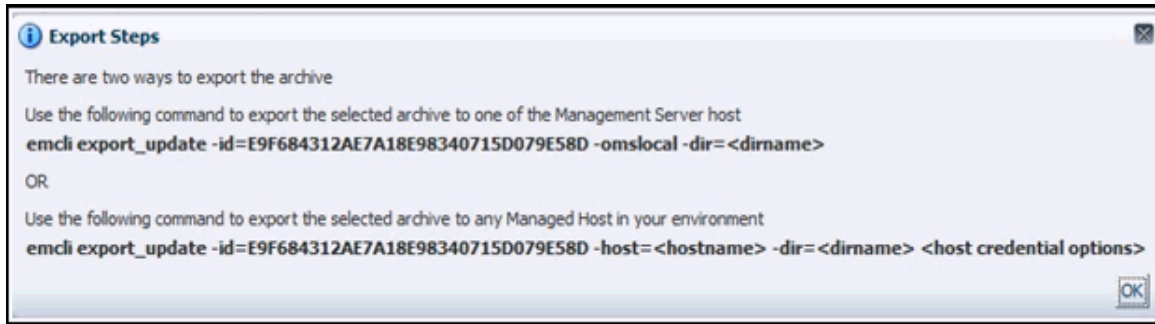
2. Open a command window on the Management Server host system and navigate to a temporary directory where you can copy the file.

3. Log into EM CLI using the following command. You are asked to provide the password information for the sysman account.

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

> **Note:** You must execute EM CLI from the OMS host. See the Oracle Enterprise Manager Command Line Interface for information about setting up EM CLI.

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

   This creates a zip file. 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 5–1, the zip file name would be:

```
E9F684312AE7A18E98340715D079E58D.zip
```

5. Extract the adapter 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.xsl
updateEvent_request.xsl
```

> **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.

5.4.2.2 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 the template generates. The input document is the XML document that contains the Enterprise Manager event information. The

output document is the request being sent to the OMU Web service. The output XML document must conform to the data format specified in the OMU 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 OMU EventService Web service. Section A.1.1, "Mappings Between XML Format and Message Field Names" provides the mapping between the OMU EventService Web service fields and the field names in OMU. Listed below are the steps you should follow to modify the template file.

To modify a template:

1. Review Section A.1.1 and Appendix D to identify the names of the fields in the OMU Web service that you are planning to modify. For example, if you want to populate the Source field in OMU, look up the field in Section A.1.1 and observe that the OMU 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 E provides 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 it.

5. Unless the change is very basic, you should test the changes that you have made using the sample data from Appendix E. This requires a utility that performs XSLT translations.

5.4.2.3 Registering Templates

You need to 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.xsl> -repos_pwd <reposPassword>
-cname <connectorName> -iname <internalName>
-tname <templateName> -ttype 2 [-d <description>]
```

Where:

`<template.xsl>` is the full path name 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 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, the following command updates the `createEvent` template for the connector instance with the name of "OMU:"

```
emctl register_template connector
```

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

5.4.2.4 Template Customization Example

In this scenario, the customer has determined that the default mapping does not work for their environment. Instead of placing the target type information in the application field, the customer would like to hard-code the application field to "Oracle Enterprise Manager". The customer would also like to place the target type information in a CMA field named TargetType. They have created a temporary directory on the OMS server system at /home/oracle/customized_templates to contain the templates.

The following steps explain how the customer would customize the templates to meet their requirements.

1. Navigate to the Management Connector Updates page and export the OMU Connector. Copy the first EM CLI 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 system and change the working directory to the temporary directory:

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

3. Log into EM CLI:

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

4. Run the EM CLI 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 extracts the createEvent and updateEvent template files:

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

7. Make a back-up copy of the template files for modification:

   ```
   cp createEvent_request.xsl createEvent_request.xsl.orig
   cp updateEvent_request.xsl updateEvent_request.xsl.orig
   ```

8. Open the createEvent_request.xsl file in a text editor.

9. Change the Extended Fields section to reflect the new mapping.

   - **Before Changes**

The following code shows the Extended Fields section in the file before the changes.

```
<extended-fields>
  <!-- OMU Application -->
  <string-field name="application">
    <xsl:value-of
select="a:SystemAttributes/a:SourceInfo/a:TargetInfo/a:TargetTypeLabel"/>
  </string-field>
  <!-- Do not add CMA data -->
  <string-field name="ovo_ts_field">NONE</string-field>
  <!-- Own the event after it is created -->
  <string-field name="own">true</string-field>
</extended-fields>
```

- **After Changes**

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

```
<extended-fields>
  <!-- OMU Application -->
  <string-field name="application">Oracle Enterprise Manager</string-field>
  <!-- Do not add CMA data -->
  <string-field name="ovo_ts_field">NONE</string-field>
  <!-- Own the event after it is created -->
  <string-field name="own">true</string-field>
  <string-field name="TargetType">
    <xsl:value-of
select="a:SystemAttributes/a:SourceInfo/a:TargetInfo/a:TargetTypeLabel"/>
  </string-field>
</extended-fields>
```

10. Save your changes after making the updates.

11. Open the `updateEvent_request.xsl` file and make the same changes. In this case, you cannot just cut and paste the Extended Fields section, because there are some differences between the create and update translations. You will need to edit them separately.

12. Save your changes after making the updates.

13. To set up for testing, create the `create.xml` and `update.xml` files and open them in a text editor.

14. Copy the contents of the XML document in the "Create Example" section of Appendix E into the create.xml file and save it.

15. Copy the contents of the XML document in the "Update Example" section of Appendix E into the update.xml file and save it.

16. 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.

17. Examine the output XML document and verify that the results are correct.

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

---

18. If the XML document has problems, make any necessary corrections and repeat steps 16 and 17.

19. At the OMS server system, run the following command to re-register your customized `createEvent` template:

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

20. At the OMS server system, run the following command to re-register your customized `updateEvent` template:

```
emctl register_template connector
-t /home/oracle/customized_templates/updateEvent_request.xsl
-repos_pwd sysmanpass
-cname "OMU"
-iname "updateEvent"
-tname "Update Event Request"
-ttype 2
-d " This is the customized request xsl file for the updateEvent method"6
```

6

Enabling SSL for HTTPS

This chapter provides the following procedures for configuring the OMU connector to use the HTTPS protocol:

- Configuring Enterprise Manager to Use SSL

- Installing a Self-Signed Certificate

- Installing a Certificate from a Certificate Authority

- Importing the Web Service Certificate into Enterprise Manager

6.1 Configuring Enterprise Manager to Use SSL

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

1. Install an SSL certificate in the OMU 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 OMU 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

To generate and install a self-signed SSL certificate for the OMU adapter web service:

1. Open a command prompt window and change the working directory to the `adapters/conf` directory in the OMU web service installation directory.

2. Enter the following command to delete the default SSL entry from the OMU 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 OMU web service keystore. You will need to replace `<hostname>` with the host name or IP address of the system where the OMU web service is installed.

> **Note:** The host name in the certificate must match the host name or IP address the web service uses. If they do not match, a failure occurs when Enterprise Manager attempts 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

To request and install a signed SSL certificate for the OMU web service:

1. Request a certificate for the OMU 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 OMU web service is installed. The host name in the certificate must match the host name or IP address the web service uses. If they do not match, a failure occurs when Enterprise Manager attempts to invoke the web service.

2. After you obtain the certificate from the Certificate Authority, perform the following steps to install the certificate:

   a. Open a command prompt window and change the working directory to the `adapters/conf` directory in the OMU web service installation directory.

   b. 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

To import the OMU 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 OMU web service installation directory.

2. Issue the following command to extract the SSL certificate from the OMU web service keystore and place it in the `OMUws.cer` certificate file:

   ■ Unix platforms

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

   ■ Windows platforms

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

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

4. Append the contents of the `OMUws.cer` file to:

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

5. Ensure that only the following lines are appended to the `b64LocalCertificate.txt` file (that is, do not include blank lines, 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.

7

Troubleshooting the Connector

The Oracle Enterprise Manager Connector Framework requires a web service interface for exchanging event information with OMU. Since OMU does not come with a web services front end, an Oracle-provided web service front end must be installed before Oracle Enterprise Manager can exchange event information with OMU. Additionally, an Oracle back-end Agent must also be installed on the same system as the OMU server.

This chapter provides information to assist in troubleshooting integration issues with HP OMU. 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 OMU Web Service Operations
- Troubleshooting Web Service Operations Errors
- Resolving Errors from Oracle Enterprise Manager

Before you start the troubleshooting process, ensure that you have done the following:

1. Installed the OMU Connector as specified in Section 2.3, "Installing the Connector in Enterprise Manager".

2. Installed and started the Oracle OMU Agent as specified in Section 2.4, "Installing and Running the Oracle Agent for HP Operations Manager".

3. Installed, started, and tested the OMU Web service as specified in Section 2.5, "Installing the Oracle Web Service for HP Operations Manager".

4. Created a connector instance as specified in Section 3.1, "Creating a Connector Instance".

5. Configured the connector instance as specified in Section 3.2, "Configuring the Connector".

6. Set up one or more rules as specified in Section 4.1, "Setting Events 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 the problem:

1. Verify that the OMU Web service has been successfully started and the WSDL for the OMU Web service can be accessed from the system where the OMU Web service is installed. Perform the following steps to do this:

    a. Perform the steps in Section 7.4, "Using the Correct URL for OMU Web Service Operations" to determine the URL used by the OMU 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 Adapter 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 OMU Web service can be accessed from the system 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 host name for the URL will be `localhost`. Change `localhost` to the actual host name or IP address of the system where the OMU Web service is installed. If you specify a host name, make sure that the host name is recognized at the Enterprise Manager server system. This can be done using the ping command.

    For example, if the OMU Web service is installed on the server with a host name of `SDServer01` and the URL listed in `framework.log` is:

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

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

    `http://OMServer01:8080/services/hpovou/EventService`

    b. Attempt to load the WSDL by appending `?WSDL` at the end of the URL. If the WSDL cannot be loaded, either the host name is not recognized at the Enterprise Manager system, or there is a connectivity issue between the two systems. If you specified a host name, try using the IP address instead of the host name in the URL. If it still does not load, you have a connectivity problem. You will need to consult with your IT department to resolve this issue.

3. Verify that the OMU Connector specifies the correct URL for the `createEvent` and `updateEvent` operations.

    a. Log into the Oracle Enterprise Manager console with an account that has Super Administrator permissions.

    b. From the **Setup** menu of the Enterprise Manager console, select **Extensibility**, then **Management Connectors**.

    The Management Connectors page appears, which shows the installed connectors.

c. Click on the **Configure** icon associated with the OMU Connector. This invokes edit mode, enabling you to configure the connector.

d. 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.

---

e. Click **OK**.

If no errors were found in the previous steps, this rules out connectivity issues between the connector and the OMU Web Service. The problem must originate in the OMU Web Service or the Oracle OMU 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 OMU Web Service installation 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 OMU Web Service to use a different port. To change the OMU Web Service to use a different port, see Section A.2, "Changing Default Port Numbers".

2. An instance of the Web service is already running. If this is the case, no change is 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 OMU Web Service runs read and execute permissions.

For any other startup errors, consult with Oracle Support.

7.3 JVM Errors

The OMU Web Service requires version 1.6 of the JVM. If multiple versions of the JVM are installed on the system, 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:

- Set the JAVA_HOME environment variable to the Java 1.6 installation directory.

- Navigate to the adapters/bin sub-directory in the Web service installation directory.

- 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.

- Navigate to the adapters/bin sub-directory in the Web service installation directory.

- Run the iWaveAdaptersw.exe executable.

- Click on the Java tab.

- Make sure that the Use Default check box is not checked.

- In the Java Virtual system box, specify the path to the jvm.dll file in the Java 1.6 installation directory.

- Click **OK**.

7.4 Using the Correct URL for OMU Web Service Operations

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

1. Open a command terminal on the system where the OMU web service is installed.

2. Change the working directory to the adapters/log directory in the OMU 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 you find the URL that contains EventService. 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 Setup menu of the Enterprise Manager console, select **Extensibility**, then **Management Connectors**.

   The General tab of the Configure Management Connector page appears.

7. Click on the name of the OMU connector.

8. Verify that the URL identified in step 4 is specified for the createEvent and updateEvent operations.

9. If any of the operations are incorrect, change to the correct URL and click **OK**.

7.5 Troubleshooting Web Service Operations Errors

Perform the following diagnostic steps if messages are not being generated or updated as expected in Operations Manager.

1. Verify that the event that was triggered is referenced in a rule that forwards events to the OMU connector.

2. Determine the error that Oracle Enterprise Manager has reported by examining the log file for errors. Perform the following steps to locate errors in the log file:

   a. Open the `emoms.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 the `/u01/app/Oracle/Middleware/gc_inst/em/EMGC_OMS1/sysman/log/` directory path.

   b. 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 appears 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, "Resolving Errors from Oracle Enterprise Manager" for information on troubleshooting common error events.

7.6 Resolving 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 on diagnosing and correcting 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
jjavax.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	OMU Web Service is Down

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

Error Message	Possible Cause
javax.xml.soap.SOAPException: javax.xml.soap.SOAPException: Message send failed: No route to host	Invalid IP Address
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
java.net.ConnectException: Connection refused	Unable to Connect to Oracle OMU Agent
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
Error creating event: opcmsg_get_msgids failed to return a result after 10 attempts	Timeout
Error creating event: opc_connect failed: -50: Login failed. Either the userid is not a OVO operator or the password is invalid	Invalid Agent User Name or Password
Error creating event: keyword 'object' is missing	Request Missing Required Field

Invalid Web Service Credentials

Cause

The user name or password for accessing the OMU 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 Setup menu of the Enterprise Manager console, select **Extensibility**, then **Management Connectors**.

   The Management Connectors page appears.

3. Click on the name of the OMU Connector.

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

4. Correct the OMU Web Service Username and OMU Web Service Password fields and click **OK**.

5. If the credentials supplied appear to have been entered correctly but still do not work, a typographical error might have been made during the setup of the web service. The recommended option is to reset the web service credentials and attempt this again. Refer to Section A.3, "Changing Web Service Credentials" for the steps required to reset the credentials.

SSL Not Configured in Enterprise Manager

Cause

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

Solution

Import the SSL certificate from the OMU web service into the Enterprise Manager key store. See Section 6.1, "Configuring Enterprise Manager to Use SSL" for details on setting up Oracle Enterprise Manager with the OMU SSL certificate.

OMU Web Service Is Down

Cause

The OMU web service is down.

Solution

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

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

1. Open a command terminal on the system where the OMU web service is installed.

2. Change the working directory to the `adapters/bin` directory in the OMU web service installation directory.

3. Enter the following command:

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

4. If the command indicates that the service is not running, restart the web service as specified in Section 2.5.1.2, "Installing the Web Service on Unix".

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

1. Open a command terminal on the system where the OMU web service is installed.

2. Change the working directory to the `adapters/log` directory in the OMU 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, restart the web service as specified in Section 2.5.2.3, "Running the Web Service on Windows".

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 has been customized.

Solution

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

Unable to Connect to Oracle OMU Agent

Cause

The OMU web service could not connect to the Oracle OMU Agent. Some of the causes could be:

- The Oracle OMU Agent is down.
- A configuration error in the Oracle OMU Agent or web service is preventing communication.

Solution

Perform the following steps to verify that the Oracle OMU Agent is operational:

1. Open a command prompt at the system where the OMU server is installed.

2. Change the working directory to ...

   `<OVAG_INST>/ovo-agent/scripts`

   ... where `<OVAG_INST>` is the Oracle OMU Agent installation directory.

3. Enter the following command to attempt to start the Agent:

   `./start.sh`

   If the Agent is already started, the script displays information indicating that the send/receive Agent is already running.

Perform the following steps to verify that the configuration is correct:

1. Open a command prompt window at the OMU server system and change the working directory to ...

   `<OMUA_INSTALL>/ovo-agent/conf`

   ... where `<OMUA_INSTALL>` is the directory where the Oracle OMU Agent is installed.

2. Open the `ovooper.txt` file in a text editor.

3. Search for the line containing the string `ListenHost=`.

   This parameter defines the hostname/IP address that the Oracle OMU Agent uses when listening for requests from the OMU web service. Make a note of this value.

4. Search for the line containing the string `ListenPort=`.

   This parameter defines the port that the Oracle OMU Agent uses when listening for requests from the OMU web service. Make a note of this value.

5. Open a command prompt window at the system where the OMU web service is installed, and change the working directory to:

   `<OMUWS_INSTALL>/adapters/conf`

   ... where `<OMUWS_INSTALL>` is the directory where the OMU web service is installed

6. Open the `framework.properties` file in a text editor.

7. Search for the `hpovou.xmlagent` parameter. The format of the parameter is:

   `http\://<hostname>\:<port>`

8. Verify that the hostname/IP address and the port number specified in this file match the information in steps 3 and 4.

9. If the information does not match, correct the information and save the file.

10. If a change was required in the previous step, stop and then start the web service as instructed in Section 2.5.1.3, "Running the Web Service on Unix" and Section 2.5.2.3, "Running the Web Service on Windows".

Request Missing Required Field

Cause

The Oracle OMU Agent could not process the request because key information was missing. This error should not occur if you are using the default configuration. It only occurs if the default mappings were customized and a required field was omitted.

X**Solution**

You need to modify the XSL file to generate the XML node that maps to the missing OMU field. See Appendix A, "Customizing Microsoft HP Operations Manager" for information on customizing the default mappings.

Unknown Host

Cause

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

Solution

You have the following options for addressing 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 OMU web service is installed.

  2. Log in to the Oracle Enterprise Manager console with an account that has Super Administrator privileges.

  3. From the **Setup** menu of the Enterprise Manager console, select **Extensibility**, then **Management Connectors**.

     The Management Connectors page appears, which shows the installed connectors.

  4. Click on the name of the OMU Connector. This invokes edit mode, enabling you to configure the connector.

  5. Change the host name to the IP address in the URL specified for the `createEvent` and `updateEvent` operations.

  6. Click **OK**.

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 OMU 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 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 **Setup** menu of the Enterprise Manager console, select **Extensibility**, then **Management Connectors**.

   The Management Connectors page appears, which shows the installed connectors.

3. Click on the name of the OMU Connector. This invokes edit mode, enabling you to configure the connector.

4. Verify that the hostname/IP address specified in the URL for the `createEvent` and `updateEvent` operations are correct.

5. If the hostname/IP address is incorrect, provide the correct values and 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 OMU 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 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 **Setup** menu of the Enterprise Manager console, select **Extensibility**, then **Management Connectors**.

   The Management Connectors page appears, which shows the installed connectors.

3. Click on the name of the OMU Connector. This invokes edit mode, enabling you to configure the connector.

4. Verify that the port number specified in the URL for the `createEvent` and `updateEvent` operations are correct.

5. If the port number is incorrect, provide the correct value and 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, entering the appropriate password, then clicking **Login**.

2. From the **Setup** menu of the Enterprise Manager console, select **Extensibility**, then **Management Connectors**.

    The Management Connectors page appears, which shows the installed connectors.

3. Click on the name of the OMU Connector. This invokes edit mode, enabling you to configure the connector.

4. Select and copy the URL specified for the `createEvent` 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 6 above. Add `?wsdl` to the end of the URL. The URL should appear similar to the following example:

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

    `[Hostname]` is the actual host name or IP address where the OMU 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 OMU 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 OMU Web Service is installed.

Solution

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

Timeout

Cause

The web service received the request and successfully sent the request to the Agent. The Agent successfully submitted the create/update request to the OMU API. The Agent timed out waiting for OMU to provide an ID of the resulting message that was created. This error occurs because OMU is not properly configured to create messages for Enterprise Manager.

Solution

Verify that the steps specified in Appendix B have been performed to properly configure OMU for Enterprise Manager messages.

Invalid Agent Username or Password

Cause

The credentials that the agent is configured to use to access the OMU API are incorrect.

Solution

Perform the following steps to verify that the Oracle OMU Agent is operational:

1. Open a command prompt at the system where the OMU server is installed.

2. Change the working directory to ...

   ```
   <OVAG_INST>/ovo-agent/scripts
   ```

   ... where `<OVAG_INST>` is the Oracle OMU Agent installation directory.

3. Enter the following command to reconfigure the Agent and reset the username/password information used by the Agent to access the API. See Section 2.4.1, "Installing the Agent" for details on the configuration process.

   ```
   ./configure.sh
   ```

4. Stop and then start the Oracle OMU Agent as specified in Section 2.4.2, "Running and Stopping the Agent".

A

Customizing Microsoft HP Operations Manager

This appendix describes the HP OMU mappings and various other configuration defaults in the following sections:

- XML Format of HP OMU Messages
- Changing Default Port Numbers
- Changing Web Service Credentials

A.1 XML Format of HP OMU Messages

Example A–1 represents the format that the HP OMU Web service expects for creating new messages in HP OMU. The format for update requests is the same, except that the root node would be `update` instead of `create`.

Example A–1   Sample Create Format for HP OMU Web Service

```
<iwaveaf:create xmlns:iwaveaf="http://iwavesoftware.com/services/
   adapter-framework">
     <event>

       <summary></summary>

       <urgency></urgency>

       <resolvedBy></resolvedBy>

       <identifier></identifier>

       <group>
         <name></name>
       </group>

       <object>
         <displayName></displayName>
       </object>

       <source>
         <computerName></computerName>
       </source>

       <extended-fields>
         <!-- OMU Application -->
         <string-field name="application">
```

```
      <xsl:value-of select="a:TargetType"/>
    </string-field>
    <!-- Do not add CMA data -->
    <string-field name="ovo_ts_field">NONE</string-field>
    <!-- Own the event after it is created -->
    <string-field name="own">true</string-field>
</extended-fields>
```

A.1.1 Mappings Between XML Format and Message Field Names

Table A–1 identifies the mappings between the HP Operations Manager message field names and the XML format that the HP Operations Manager Web services uses. To set the HP Operations Manager message attributes, the XML document presented to the HP Operations Manager Web service must have the corresponding fields set. This must be handled in the appropriate translation file identified in Table 5–1.

Table A–1   Message Attributes and XML Path Mappings

HP Operations Manager Message Attributes	XML Path
Message No.	/create/event/type
Message Text	/create/event/summary
Message Type	/create/event/type
Severity	/create/event/urgency
No. of Duplicates	/create/event/repeatCount
Owned By	/create/event/owner
Time Created	/create/event/createDate
Time Acknowledged	/create/event/resolvedDate
Acknowledged By	/create/event/resolvedBy
Message Group	/create/event/group/name
Object	/create/event/object/displayName
Source	/create/event/source/name
Application	/create/event/source/name
Node	See "Extended Fields" below.
CMA Fields	See "Extended Fields" below.

A.1.2 Extended Fields

An extended field is defined as a `<string-field/>` element that is a child of the extended-fields node. The name of the extended field is specified in the name attribute, and the value of this field is specified as the element value.

Some reserved extended field names are handled differently. The reserved field names are listed below along with a description of how they are handled.

- application — Reserved for the HP Operations Manager application attribute. The specified value for this field is used to set the application field when creating or updating an HP Operations Manager message.

- disown — Changes the behavior of the HP Operations Manager Agent. By default, the HP Operations Manager account used to create the message is left as the owner. By setting this field to true, the message is disowned after it is created.

■ ovo_ts_field — Prevents transaction loopback, and should always be set to NONE.

Any other extended field name you specify adds a Custom Message Attribute (CMA) field to the message. You specify the name of the CMA field for the Name attribute, and you specify the value in the element.

> **Note:** Adding CMA fields causes overhead. Attempting to add a large number of CMA fields can affect performance somewhat.

A.2 Changing Default Port Numbers

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

The following sections provide procedures on how to change these default port numbers.

A.2.1 Changing the Agent Listener Port (9007)

9007 is the default port number used for communication between the Oracle OMU Agent and the OMU Web service. To change this port number, perform the following steps at the HP Operations Manager server system.

Replace `<OMUA_INSTALL>` with the directory where the Oracle OMU Agent is installed.

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

    `<OMUA_INSTALL>/ovo-agent/scripts`

2. Enter the following command to stop the Oracle OMU Agent. You will be prompted for the credentials to stop the Agent.

    `./stop.sh`

    > **Note:** You must specify the user name and password for the account that is authorized to stop the Oracle OMU Agent. See Section 2.4, "Installing and Running the Oracle Agent for HP Operations Manager" for information about the account that is authorized to stop the Oracle OMU Agent.

3. Make a back-up copy of the following file:

    `<OMUA_INSTALL>/ovo-agent/conf/ovooper.txt`

4. Open the file above in a text editor.

5. Search for the line containing the `ListenPort=` string.

6. Change 9007 to the new port number.

7. Save the file and exit.

8. Enter the following command to start the HP Operations Manager Agent:

    `./start.sh`

    The Oracle OMU Agent picks up the configuration changes and uses the new port number.

Perform the following steps at the system where the OMU Web services are installed. Replace <OMUWS_INSTALL> with the directory where the OMU Web service is installed.

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

   `<OMUWS_INSTALL>/adapters/conf`

2. Make a back-up copy of the `framework.properties` file.

3. Open the `framework.properties` file in a text editor.

4. Search for the line containing the `hpovou.xmlagent` property. Change the port number from 9007 to the new port number.

5. Save the file and exit.

6. Restart the OMU Web service as instructed in Section 2.5.1.3, "Running the Web Service on Unix" and Section 2.5.1.4, "Testing the Web Service on Unix".

A.2.2 Changing the Agent Shutdown Port (9008)

The OMU Agent has two components that you must shut down whenever the Agent is stopped. The default port numbers these components use are 9008 and 9009. To change these port numbers, perform the following steps at the HP Operations Manager server system.

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

   `<OMUA_INSTALL>/ovo-agent/scripts`

   Replace <OMUA_INSTALL> with the directory where the Oracle OMU Agent is installed.

2. Enter the following command to stop the Oracle OMU Agent. You will be prompted for the credentials to stop the Oracle OMU Agent.

   `./stop.sh`

   You must specify the user name and password for the account that is authorized to stop the Oracle OMU Agent. See Section 2.4, "Installing and Running the Oracle Agent for HP Operations Manager" for information about the account that is authorized to stop the Agent.

3. Make a back-up copy of the `ovooper.txt` file, then open the file in a text editor.

4. Search for the line containing the `ShutdownPort=` string.

5. Change the default port number from 9008 to the new port number.

6. Save the file and exit.

7. Enter the following command to start the HP Operations Manager Agent:

   `./start.sh`

   The Oracle OMU Agent picks up the configuration changes and uses the new port number.

8. Change the working directory to the scripts directory by entering the following command:

   `cd ../scripts`

9. Make a back-up copy of the `stop.sh` script file, then open the file in a text editor.

10. Change the `SEND_SHUTDOWN_PORT` and `RCV_SHUTDOWN_PORT` variables from 9008 to the new port number.

11. Save the file and exit.

A.2.3 Changing the Web Service Port (8080)

The OMU 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 on the system where the Oracle OMU Agent is installed.

Perform the following steps at the system where the HP OMU Web services are installed. Replace `<OMUWS_INSTALL>` with the directory where the HP OMU Web services are installed.

1. From the Setup menu of the Enterprise Manager console, select **Extensibility**, then **Management Connectors**.

2. Click on the name of the OMU Connector.

   The General tab of the Configure Management Connector page appears.

3. Change the URLs listed in the Web Service End Points section to use the new port number.

4. Click **OK** to save your changes.

A.2.4 Changing the Web Service Port (8443)

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

A.3 Changing Web Service Credentials

Occasionally, problems occur when accessing the OMU Web service, because the credentials provided are incorrect. Whenever this happens, you receive an HTTP 403 error from the Web service. You first want to check the specified credentials and verify that you entered the correct information. If the credentials you have specified appear to be correct, but you still receive the 403 error, the best option is to reset the Web service credentials.

To reset the OMU Web service credentials:

1. Open a command prompt window and change the working directory to the OMU web service conf directory using the following command:

   ```
   <OMUWS_INSTALL>/adapters/conf
   ```

   Replace `<OMUWS_INSTALL>` with the directory where the HP OMU web services are installed.

2. Enter the following command to change the user name and password for accessing the OMU Web service:

   ```
   ../bin/propertiesEditor.sh -e
   framework.username="<username>" -h
   framework.password="<password>" framework.properties
   ```

   ... where `<username>` is the user name to specify for the Web service, and `<password>` is the password.

The `propertiesEditor.sh` script is specifically for the UNIX platform. The equivalent script for Windows platforms is `propertiesEditor.bat`.

3. Stop and then start the OMU Web service as instructed in Section 2.5.1.3, "Running the Web Service on Unix" and Section 2.5.1.4, "Testing the Web Service on Unix".

B

Integrating OMU with Enterprise Manager

This appendix provides detailed steps for setting up OMU for use with the Oracle Enterprise Manager OMU Connector. The steps required depend on the version of OMU involved in the integration.

Perform the steps in one of the following sections based on your version of OMU:

- Setting Up OMU Version 8
- Setting Up OMU Version 9

Setting Up OMU Version 8

Perform the following steps to set up OMU version 8 for integration with Oracle Enterprise Manager. You need to perform these steps from the administrative console and the account must have administrative permissions.

1. Create a Message Group to be used exclusively by Oracle Enterprise Manager:

   a. From the Root window, select **Message Group Bank** from the Window menu.

      The Message Group Bank window appears.

   b. Select **Message Group** from the Actions menu, then select **Add...**

      The Add Message Group window appears.

   c. Enter **OracleEnterpriseManager** for the Name and Label fields, as well as an optional description.

   d. Click **OK**.

2. Create a new user or select an existing user that the OMU Agent will use to connect to OMU.

3. Give the user access to the Message Group from step 1:

   a. From the Root window, select **User Bank** from the Window menu.

      The User Bank window appears.

   b. Click on the user selected in step 2.

   c. Right-click and select **Modify…**

      The Modify User window appears.

   d. Click **Responsibilities…**

      The Responsibilities for Operator window appears.

   e. Locate the name of the new Message Group and click on it to enable access to the user.

   f. Click **Close**.

   The Modify User window appears.

   g. Click **OK**.

4. Create a Message Source Template for the new Message Group:

   a. From the Root window, select **Message Source Templates** from the Window menu.

   The Message Source Templates window appears.

   b. Select an existing Group or create a new group to contain the template. To create a new group, perform the following steps:

   * Click in the left pane on the location where you want to create the new Group. This can be [Toplevel] or an existing Group.

   * Click on the arrow on the **Add LogFile…** button and select **Add Group…** from the list.

      The Add Template Group window appears.

   * Specify a Template Group Name and a description. The Template Group Name can be whatever you choose.

   * Click **OK**.

   c. From the Message Source Templates window, click on the arrow on the **Add LogFile…** button and select **Add Message…** from the list.

   The Add OMU Interface Messages window appears.

   d. Provide input for the **Template Name**, **Description**, and **Message Group** fields, then click **OK**.

   Message Group must be set to the name of the Message Group you created in step 1. You can set the Template Name field to whatever you choose.

   e. Click in the right pane on the message that was just created, then click **Conditions ...**

   the Message and Suppress Conditions window appears.

   f. From the Message and Suppress Conditions window, click **Add…**

   The Condition No. 1 window appears.

   g. Provide the following input:

   * Enter the Description

   * Select Warning, Minor, Major, and Critical in Condition:Severity.

   * Set Condition:Message Group to the message group created in step 1.

   * Set Actions:Automatic:Node to `<$OPC_MGMTSV>`

   * Set Actions:Automatic:Command to `/opt/oem/scripts/ dummy <$MSG_ID>` .

> **Note:** The script referenced above does not need to exist. This is simply a required parameter that you must specify to forcibly activate the automatic action.

    h. From the Condition No. 1 window, click **OK**.

      The Message and Suppress Conditions window appears.

    i. Click **Close**, then close the Message Source Templates window.

5. Create a node to be used exclusively by Oracle Enterprise Manager:

    a. From the Root window, select **Node Bank** from the Window menu.

      The OMU Node Bank window appears.

    b. From the Actions menu, select **Node**, then select **Add…**

      The Add Node window appears.

    c. Specify a Label and a Hostname of **OracleEnterpriseManager**.

    d. Select **non IP** from the Net Type list.

> **Note:** An error message appears indicating that the host name cannot be resolved. This is a normal response, so just ignore this message.

    e. Make sure that the Type of Managed Node is set to **Message Allowed**.

    f. Click **OK**.

6. Add the new node to the server node group:

    a. From the Root window, select **Node Group Bank** from the Window menu.

      The OMU Node Group Bank window appears.

    b. Double-click on the node group bank for the OMU server system.

    c. Drag the new node created in step 5 from the OMU Node Bank window to the Node Group window.

7. Associate the template with the server node:

    a. From the Root window, select **Node Bank** from the Window menu.

      The OMU Node Bank window appears.

    b. Click on the node for the OMU server system to select it.

    c. From the Actions menu, select **Agents**, then select **Assign Templates**.

      The Define Configuration window appears.

    d. Click **Add ...**

      The Add Configuration window appears.

    e. Click **Open Template Window…**

      The Message Source Templates window appears.

    f. Select the group that was added for the Oracle Enterprise Manager connector.

    g. From the Add Configuration window, click **Get Template Selections**.

> **Note:** The Add Configuration and the Message Source Templates
> windows have a Get Template Selections button. If you receive an
> error, you probably clicked the button on the Message Source
> Templates window instead of the Add Configuration window.

    h. From the Add Configuration window, click **OK**.

        The Define Configuration window appears.

    i. Click **OK**, then close the Message Source Templates window.

8. Deploy the changes to the server:

    a. From the Root window, select **Node Bank** from the Window menu.

        The OMU Node Bank window appears.

    b. Click on the node for the OMU server system to select it.

    c. From the Actions menu select **Agents**, then select **Install/Update SW & Config**.

        The Install/Update OMU Software and Configuration window appears.

    d. Select **Components:Templates** and **Target Nodes: Nodes** in the list requiring updating.

    e. Click **OK**.

Setting Up OMU Version 9

Perform the following steps to set up OMU version 9 for integration with Oracle Enterprise Manager. You need to perform these steps from the administrative console and the account must have administrative permissions.

1. Create a Message Group to be used exclusively by Oracle Enterprise Manager:

    a. Click the **OMU** icon at the top of the screen to configure OMU.

    b. Click the **All Message Groups** link under the All Objects section.

    c. At the bottom of the screen, select **Add Message Group...** from the list and click the **>>** button.

    d. Enter **OracleEnterpriseManager** in the Name and Label fields, as well as an optional description.

    e. Click **Save**.

2. Create a node to be used exclusively by Oracle Enterprise Manager:

    a. Click the **OMU** icon at the top of the screen to configure OMU.

    b. Click the **All Nodes** link under the All Objects section.

    c. At the bottom of the screen, select **Add Node...** from the list and click the **>>** button.

    d. Set the Node Type field to **non IP->other ->other**.

    e. Click the **Properties** tab.

    f. Set the Host Name and Label fields to **OracleEnterpriseManager**.

    g. Set the Parent Group field to **NodeBank**.

    h. Click the **Management** tab.

    i. Make sure the Management type field is set to **Message allowed**.

    j. Click **Save**.

3. Add the new node to the server node group:

    a. Click the **OMU** icon at the top of the screen to configure OMU.

    b. Click the **All Node Groups** link under the All Objects section.

    c. Click on the Name of the server system.

    d. At the bottom of the screen, select **Assign Nodes to this Node Group…** from the list, then click the **>>** button.

       A Selector window appears.

    e. Enter filter information to find the new node, then click **Filter**.

    f. Select the new node from the list, then click **OK**.

4. Create a new user or select an existing user that the OMU Agent will use to connect to OMU.

5. Give the user access to the Message Group from step 1:

    a. Click the **OMU** icon at the top of the screen to configure OMU.

    b. Click the **All Users** link under the All Objects section.

    c. Click on the Name of the user name you created/selected in step 4.

    d. Select **Edit Responsibilities…** from the Actions list next to the User name at the top of the window.

    e. Click **Edit View** at the bottom of the screen.

    f. In the Available Message Groups section, click on the message group that you added in step 1, then click on the **>** button.

    g. Click **OK** to add the new message group to the user.

       The new message group should be listed with an empty checkbox for each associated node group.

    h. Click on the new message group name to select all of the empty checkboxes.

    i. Click **Save** to save all of your changes.

6. Create a Policy Group to be used exclusively by Oracle Enterprise Manager:

    a. Click the **OMU** icon at the top of the screen to configure OMU.

    b. Click the **All Policy Groups** link under the All Objects section.

    c. At the bottom of the screen, select **Add policy group** from the list, and click the **>>** button.

    d. Enter **OracleEnterpriseManager** in the Name field, as well as an optional description.

    e. Click **Save**.

    All policy groups should be listed and the new one should be included in the list.

7. Add a policy to create a message for Enterprise Manager to the new policy group:

    a. Click the **OMU** icon at the top of the screen to configure OMU.

    b. Click the **All Policy Groups** link under the All Objects section.

    c. Click on the Name of the new policy group created in step 6.

        Information for the new policy group should be listed.

    d. At the bottom of the screen, select **Add Policy…** from the list and click the **>>** button.

        A window should appear where you enter the policy type.

    e. Select **Open_Message_Interface** from the list, then click **OK**.

    f. On the Properties tab, enter a Name of "**Generate EM Message**" and a Description of "**Policy to generate a message for Oracle Enterprise Manager**."

    g. Click the **Message Defaults** tab, and enter **OracleEnterpriseManager** in the Message Group field.

    h. Click the **Conditions** tab and select **Add Condition** at the bottom of the screen.

    i. Click the **Condition** tab and make sure the Type field is set to **Message On Matched Condition**.

    j. Enter "**Condition to filter message from the OracleEnterpriseManager message group**" in the Description field.

    k. Select all values in the Severity field.

    l. Enter **OracleEnterpriseManager** in the Message Group field.

    m. Click the **Actions** tab and click in the **Automatic** check box. Additional fields should be displayed under the Automatic section.

    n. Enter "**/opt/oem/scripts/dummy <$MSG_ID>**" in the Command field, and "**<$OPC_MGMTSV>**" in the Node field.

    o. Click **Save** to save the policy.

C

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.

- EMEvent.xsd
- connectorCommon.xsd
- externalEvent.xsd

EMEvent.xsd

```xml
<?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>
```

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 complext 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:element name="SourceObjType" type="xsd:string">
            <xsd:annotation>
                <xsd:documentation>
                  The type of the source object.
                </xsd:documentation>
            </xsd:annotation>
          </xsd:element>
        <xsd:element name="SourceObjSubType" type="xsd:string" minOccurs="0">
            <xsd:annotation>
                <xsd:documentation>
                  The subtype of the source object.
                </xsd:documentation>
            </xsd:annotation>
          </xsd:element>
        </xsd:sequence>
      </xsd:complexType>
      <xsd:complexType name="TargetInfoType">
        <xsd:annotation>
            <xsd:documentation>
              This section defines a complex type for target information.
            </xsd:documentation>
        </xsd:annotation>
        <xsd:sequence>
          <xsd:element name="TargetGUID" type="xsd:string">
            <xsd:annotation>
                <xsd:documentation>
                  A unique GUID for the target.
                </xsd:documentation>
            </xsd:annotation>
          </xsd:element>
          <xsd:element name="TargetName" type="xsd:string">
            <xsd:annotation>
                <xsd:documentation>
                  Name of the target.
                </xsd:documentation>
            </xsd:annotation>
          </xsd:element>
          <xsd:element name="TargetType" type="xsd:string">
            <xsd:annotation>
<xsd:documentation>
                  Type of the target.
                </xsd:documentation>
            </xsd:annotation>
          </xsd:element>
          <xsd:element name="TargetTypeLabel" type="xsd:string">
            <xsd:annotation>
                <xsd:documentation>
                  The display label of the target type.
                </xsd:documentation>
            </xsd:annotation>
          </xsd:element>
          <xsd:element name="TargetURL" type="xsd:string">
            <xsd:annotation>
                <xsd:documentation>
```

```
                    The URL of the target.
                </xsd:documentation>
            </xsd:annotation>
        </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 up to 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 varialbe 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>
```

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 extenral 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: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 simillar 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 extenral 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>
```

D

OMU 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 the OMU web service requires.

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 Example D–1.

Example 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: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" />
```

```xml
<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="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"
name="knowledge" type="tns:knowledge" />
                        </xs:sequence>
                    </xs:complexType>
                </xs:element>
                <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 default="1970-01-01T00:00:00.0-00:00"
```

```
minOccurs="0" name="lastModifiedNonConnector" 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" name="maintenanceModeLastModified" type="xs:dateTime" />
                        <xs:element minOccurs="0" name="metric" type="tns: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 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" />
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                            <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 maxOccurs="unbounded" minOccurs="0"
name="log" 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 />
```

```xml
        </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="IEventService">
      <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:IEventService">
        <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 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/hpovou/EventService"
               />
            </wsdl:port>
          </wsdl:service>
```

```
</wsdl:definitions>
```

E

Enterprise Manager Event Examples

This appendix contains examples that show the XML format of events from Enterprise Manager that conform to the schemas defined in Appendix C. You can use these examples to help identify the fields to map when customizing the event templates. You can also use them to test your customizations after they have been built.

The following examples are presented:

- Create Example
- Update Example
- Clear Example

Create Example

The following example shows the XML format Enterprise Manager generates for OMU create operations.

```
<EMEvent xmlns="http://xmlns.oracle.com/sysman/connector">
    <ConnectorGUID>E0BAAB42C7634A448DD0FE5C6FE996E8</ConnectorGUID>
    <NotificationRuleOwner>SYSMAN</NotificationRuleOwner>
    <NotificationRuleName>HP OMU Rule</NotificationRuleName>
    <Property>
        <Name>Notification_Method_Name</Name>
        <Value>OMU</Value>
    </Property>
    <Property>
        <Name>AuthenticationType</Name>
        <Value>HTTPBasicAuthentication</Value>
    </Property>
    <Property>
        <Name>IsNewTargetType</Name>
        <Value>yes</Value>
    </Property>
    <SystemAttributes>
        <EventClass>metric_alert</EventClass>
        <EventID>B609743F17830220E040020A78012524</EventID>
        <SequenceID>B609743F17840220E040020A78012524</SequenceID>
        <ReportedDate>2012-01-13T14:24:16.000-06:00</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>
                  <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 83.62%, 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=B609743F17840220E040020A78012524</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>B609743F17800220E040020A78012524</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>83.62</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>B609743F17800220E040020A78012524</Value>
    </StringAttribute>
  </EventClassSpecificAttributes>
</EMEvent>
```

Update Example

The following example shows the XML format Enterprise Manager generates for OMU update operations.

```
<EMEvent xmlns="http://xmlns.oracle.com/sysman/connector">
    <ConnectorGUID>E0BAAB42C7634A448DD0FE5C6FE996E8</ConnectorGUID>
    <ExternalEventID>77c93b64-3e26-71e1-15cd-0a0201460000</ExternalEventID>
    <NotificationRuleOwner>SYSMAN</NotificationRuleOwner>
    <NotificationRuleName>HP OMU Rule</NotificationRuleName>
    <Property>
        <Name>Notification_Method_Name</Name>
        <Value>OMU</Value>
    </Property>
    <Property>
        <Name>AuthenticationType</Name>
        <Value>HTTPBasicAuthentication</Value>
    </Property>
<Property>
        <Name>IsNewTargetType</Name>
        <Value>yes</Value>
    </Property>
    <SystemAttributes>
        <EventClass>metric_alert</EventClass>
        <EventID>B609743F17890220E040020A78012524</EventID>
        <SequenceID>B609743F17840220E040020A78012524</SequenceID>
        <ReportedDate>2012-01-13T16:08:45.000-06:00</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>5.5.0.0.0</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 84.236%, crossed warning (50) or critical
            (99) threshold.</Message>

<EventURL>https://orcsvr1.iwavesoftware.com:7801/em/redirect?pageType=sdk-core-eve
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```

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            </EventClassSpecificAttributes>
    </EMEvent>
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Clear Example

The following example shows the XML format Enterprise Manager generates for OMU clear operations.

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<EMEvent xmlns="http://xmlns.oracle.com/sysman/connector">
    <ConnectorGUID>E0BAAB42C7634A448DD0FE5C6FE996E8</ConnectorGUID>
    <ExternalEventID>77c93b64-3e26-71e1-15cd-0a0201460000</ExternalEventID>
    <NotificationRuleOwner>SYSMAN</NotificationRuleOwner>
    <NotificationRuleName>HP OMU Rule</NotificationRuleName>
    <Property>
        <Name>Notification_Method_Name</Name>
        <Value>OMU</Value>
    </Property>
    <Property>
        <Name>AuthenticationType</Name>
        <Value>HTTPBasicAuthentication</Value>
    </Property>
    <Property>
        <Name>IsNewTargetType</Name>
        <Value>yes</Value>
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    <SystemAttributes>
        <EventClass>metric_alert</EventClass>
        <EventID>B60974257C002B09E040020A7801251A</EventID>
        <SequenceID>B609743F17840220E040020A78012524</SequenceID>
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        <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>
                <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>
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                    <Name>Target_Host</Name>
                    <Value>orcsvr1.iwavesoftware.com</Value>
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                    <Name>Line of Business</Name>
                    <Value>Software</Value>
                </TargetProperty>
                <TargetProperty>
                    <Name>Location</Name>
                    <Value>Frisco, TX</Value>
                </TargetProperty>
                <TargetProperty>
                    <Name>Comment</Name>
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                </TargetProperty>
            </TargetInfo>
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        <Message>Memory Utilization is 84.737%, 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=B609743F17840220E040020A78012524</EventURL>
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```

```
        </EventClassSpecificAttributes>
    </EMEvent>
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Index

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