

Oracle® Enterprise Manager

HP Operations Manager Connector Installation and
Configuration Guide

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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

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Related Documents

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

- *Oracle Enterprise Manager Integration Guide*
- *Oracle Database 2 Day DBA*
- *Oracle Enterprise Manager Concepts*
- *Oracle Enterprise Manager Quick Installation Guide*
- *Oracle Enterprise Manager Grid Control Installation and Basic Configuration*
- *Oracle Enterprise Manager Advanced Configuration*
- *Oracle Enterprise Manager Metric Reference Manual*

- *Oracle Enterprise Manager Command Line Interface*
- *Extending Oracle Enterprise Manager*

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

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Conventions

The following text conventions are used in this document:

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

Introduction to the Connector

The Hewlett-Packard Operations Manager Connector (version 11.1.0.1.0) integrates Oracle Enterprise Manager with HP Operations Manager Unix, or OMU, (version 9.0) through web services, enabling you to exchange event information between the two applications.

1.1 Connector Features

The Oracle Management Connector for HP Operations Manager (OMU) enables customers who manage their data centers using HP Operations Manager to integrate with Oracle Enterprise Manager by enabling end-to-end event and alert sharing. The connector allows administrators to automatically forward OMU events to Oracle Enterprise Manager as well as forward Oracle Enterprise Manager alerts to OMU.

Additionally, the connector monitors all of the events forwarded from OMU and automatically updates alert information in the Oracle Enterprise Manager console whenever changes occur in OMU. A similar synchronization of alerts sent from Oracle Enterprise Manager occurs in OMU. This ensures that the two systems are always synchronized, providing administrators with current information about their entire data center.

The connector supports the following features:

- Synchronization of the alert life cycle on both ends
- Customization of alert mappings during the alert information exchange
- Bi-directional flow of alert information

The state change of the event/alert in the originating system is reflected in the other system but not vice versa. For example, if an alert is forwarded from Oracle Enterprise Manager to HP Operations Manager, all the state changes in Enterprise Manager are reflected in HP Operations Manager. However, if you change the state of the alert in HP Operations Manager, the change is not reflected in Enterprise Manager because the alert originated in Enterprise Manager. This is also the case for the other direction.

The following sections explain how the connector handles OMU messages and polls the OMU web service.

1.1.1 Oracle Enterprise Manager Alerts Transmitted to OMU Messages

Conceptually, alerts in Oracle Enterprise Manager are equivalent to messages in OMU. In OMU, a message is information generated for the operator whenever an event occurs. In OMU, the term *acknowledge* has a different meaning than it does for most

applications. Acknowledging a message in OMU means that an alert has been resolved and the message is closed.

Whenever an alert is triggered in Oracle Enterprise Manager, the OMU Connector can automatically open or update a message in OMU. You can use Notification Rules to specify the set of alerts for which messages must be opened, and the alert severity for which this should happen.

After the connector opens an event message in OMU, any subsequent change of the alert severity is propagated to HP Operations Manager. When the severity of the alert changes to Clear in Oracle Enterprise Manager, the corresponding message is acknowledged; that is, closed in OMU.

Figure 1–1 shows an example of an Oracle Enterprise Manager alert message that was created based on a message in OMU.

Figure 1–1 Oracle Enterprise Manager Alert Message

Alert Details

Metric [AgentTest](#)

AlertId **7862d12a-19eb-71e1-0896-0a0201460000**

Severity ✖ **Critical**

Alert Triggered **Nov 28, 2011 11:54:09 AM**

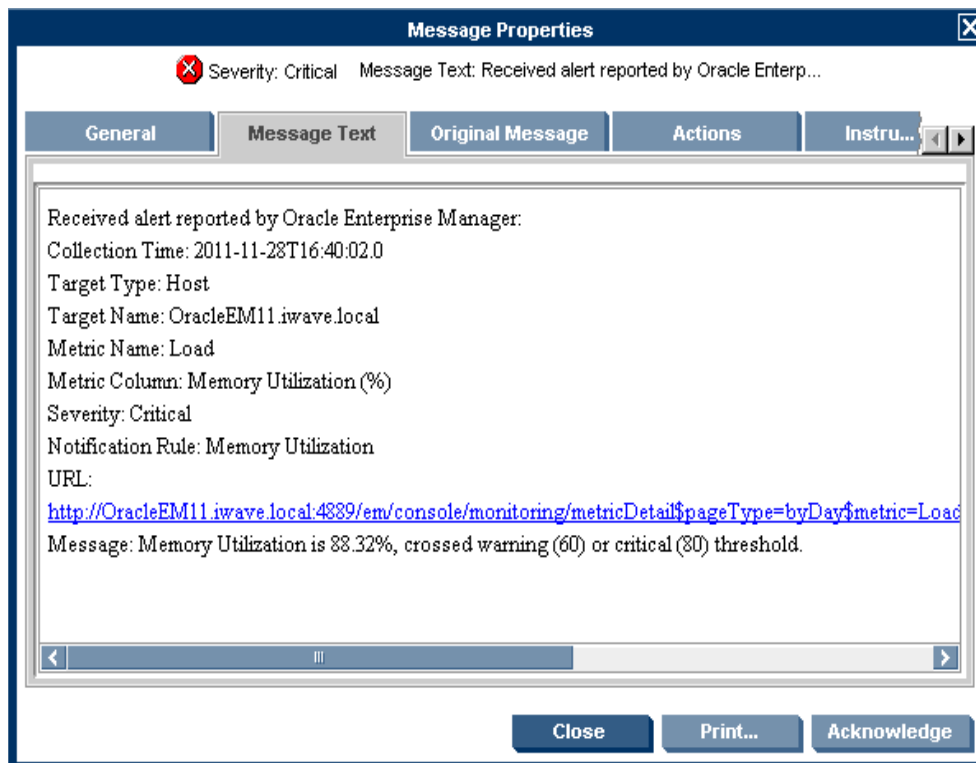
Last Updated **Nov 28, 2011 11:54:10 AM**

Acknowledged **No**

Acknowledged By **n/a**

Message **Severity: Critical; Message Group: AgentTest; Node: agenttest; Object: tstmsg_DEM; Application: tstmsg; Service Name: Applications; Message Key: ;**

Figure 1–2 shows an example of an HP OMU message that was created based on an alert in Enterprise Manager.

Figure 1–2 HP OMU Message

1.1.2 Oracle Enterprise Manager Event Polling to OMU

After installation and configuration, the event connector automatically polls the OMU web service for events to exchange alerts and messages with Oracle Enterprise Manager. The poll cycle is configurable, where the duration is specified in minutes with a minimum possible duration of 5 minutes.

Every poll cycle, the event connector polls for up to 200 new or updated events in OMU. The Oracle Enterprise Manager connector framework processes and acknowledges all of the events provided in the poll response.

1.2 Versions Supported

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

- Oracle Enterprise Manager Grid Control:
 - 10g Release 4 with one-off patch 6884527
 - 10g Release 5
 - 11g Release 1
- 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 10 (1.1.4.1.0) is Enterprise Manager 10g Release 4.

1.3 Prerequisites

Before using the HP Operations Manager Connector, ensure that you meet the following prerequisites:

- Oracle one-off patch 6884527 for 10g Release 4 is installed.
 1. Download patch # 6884527 from:
<http://metalink.oracle.com/>
 2. Follow the instructions included with the download in the README.txt file.

Note: No patches are required for 10g Release 5 or 11g Release 1.

- The gunzip utility is 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.

If you want Oracle Enterprise Manager to forward alerts to HP OMU, you need to make some configuration changes in HP OMU. Listed below are the necessary high-level steps.

Tip: See [Appendix B, "Integrating OMU with Enterprise Manager"](#) for detailed instructions on setting up HP OMU.

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

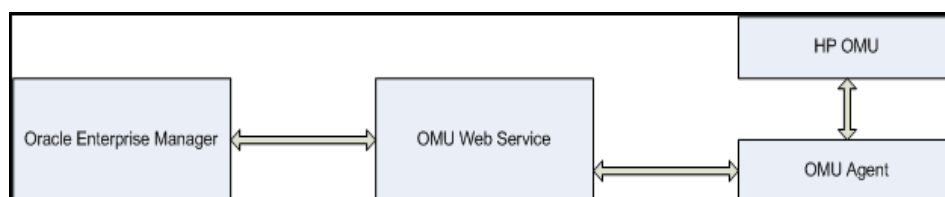
Installing the Connector

The Oracle Enterprise Manager Connector Framework requires a web service interface for exchanging 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 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 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](#)
- [Installing and Running the Oracle Agent for HP Operations Manager](#)
- [Installing the Oracle Web Service for HP Operations Manager](#)
- [Installing the HP Operations Manager Connector in Oracle Enterprise Manager](#)
- [Registering Templates](#)

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 Installing and Running the Oracle Agent for HP Operations Manager

The following sections provide procedures that successfully enable you to install the Agent, then subsequently run it.

2.2.1 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. Download the `hp_omu_connector_bundle.jar` file from the Oracle Technology Network to the installation directory.
2. Make sure the `JAVA_HOME` environment variable is set to the directory where Java 1.6 is installed.
3. Extract the installation file by running the following command:

```
jar xvf hp_omu_connector_bundle.jar
```

Note: If the system where the OMU Agent 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.

4. Put the appropriate installation file into the directory where you intend to install the Oracle OMU Agent. Note that you need to do this on the HP Operations Manager system host.

For the HP-UX platform, the Agent zip file is named `hpomuAgentHPUX.tar.gz`, for the Solaris platform, the Agent zip file is named `hpomuAgentSolaris.tar.gz`, and for the Linux platform, the Agent zip file is named `hpomuAgentLinux.tar.gz`.

5. Open a terminal and change the working directory to the installation directory.
6. Enter the appropriate command listed below to unzip the Agent zip:

- For HP-UX:

```
gunzip hpomuAgentHPUX.tar.gz
```

- For Solaris:

```
gunzip hpomuAgentSolaris.tar.gz
```

- For Linux:

```
gunzip hpomuAgentLinux.tar.gz
```

7. Enter the appropriate command listed below to extract the installation files from the resulting `.tar` file:

- For HP-UX:

```
tar xvf hpomuAgentHPUX.tar
```

- For Solaris:

```
tar xvf hpomuAgentSolaris.tar
```

- For Linux:

```
tar xvf hpomuAgentLinux.tar
```

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

8. Change the working directory to the `ovo-agent/scripts` directory.
9. 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. **Do you want to configure the agent to send OMU events to EM?** — Specify Y if you intend to send events from OMU to Enterprise Manager. Specify N if you only want event data to flow from Enterprise Manager to OMU.
- d. **Enter the IP address or hostname of the machine where the OMU web service will be installed:** — This prompt is only issued if the Agent is being configured to send OMU events to Enterprise Manager. To send events to Enterprise Manager, the Agent forwards event information to the OMU web service. Specify the system where the OMU web service will be installed.
- e. **Enter a comma-separated list of message groups to send to EM:** — This prompt is only issued if the Agent is being configured to send OMU events to Enterprise Manager. Enter a space-separated list of the OMU message group(s) to be picked up by Oracle Enterprise Manager when polling for new or updated alerts.

Note: All message groups registered with the Agent must have a defined automatic action. This enables the Agent to detect new messages created in OMU. For any message groups that do not already have a defined automatic action, the recommendation is to set up an automatic action to invoke a script that does nothing.

- f. **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.

10. Open another terminal and log in as root.
11. Change the working directory to the `ovo-agent/scripts` directory in the Oracle OMU Agent installation directory.
12. Enter the following command to enable the Oracle OMU Agent to run with root permissions:

```
./root-setup.sh
```
13. Close the terminal where you are logged in as root.
14. Delete the Agent `.tar` file from the installation directory.

2.2.2 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.

2.2.3 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 error 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.

2.2.3.1 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.

2.2.3.2 HP-UX

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

2.2.3.3 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.

2.2.3.4 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
```

2.3 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.

2.3.1 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.

2.3.1.1 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. Open a terminal and change the working directory to the installation directory.
3. Download the `hp_omu_connector_bundle.jar` file from the Oracle Technology Network to the installation directory.
4. Make sure the `JAVA_HOME` environment variable is set to the directory where Java 1.6 is installed.
5. Extract the connector components by running the following command:

```
jar xvf hp_omu_connector_bundle.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.

6. 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.

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

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

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

```
./install.sh
```

9. 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.
10. 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.

Note: 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.

11. When the script prompts for the password of the web service, enter the password that must be provided to access the OMU Web Service.

12. 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.

13. 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.

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

15. If the web service was configured to run using the HTTPS protocol, you must install a SSL certificate. You can install a self-signed certificate, or you can acquire a certificate from a Certificate Authority (CA).

- **To generate and install a self-signed SSL certificate:**

Enter the following commands, and replace <hostname> with the system host name or IP address that the OMU web service will use:

```
cd ../../conf

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

$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
```

- **To install a certificate that the Certificate Authority issues:**

- Request a certificate from a Certificate Authority, such as VeriSign.

Make sure to specify the host name or IP address that the OMU web service will use. The host name in the certificate must match the host name the web service uses. If they do not match, the web service cannot function.

- After you obtain the certificate from the Certificate Authority, enter the following commands to install the certificate, where <certificateFile> is the full path name of the file the Certificate Authority provides:

```
cd ../../conf

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

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

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

If the HP Operations Manager Web Service was configured to use the HTTPS protocol, the certificate must be imported into Enterprise Manager. See [Section 2.3.3, "Adding Signed Certificates to Enterprise Manager"](#) for instructions.

2.3.1.2 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`

2.3.1.3 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 11 of [Section 2.3.1.1, "Installing the Web Service on Unix"](#).

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

Note: If the HTTPS protocol is being used, the test fails if the installed JRE version is 1.6_10. An issue with this version causes the test to fail. To test the web service, you need to verify that you can load the WSDL in a web browser. See [Section 3.3, "Testing the HP OMU Connector"](#).

2.3.2 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.

2.3.2.1 Prerequisites

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

- Oracle Java Runtime Environment (JRE) version 6 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.

2.3.2.2 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. Open a terminal and change the working directory to the installation directory.
3. Download the `hp_omu_connector_bundle.jar` file from the Oracle Technology Network to the installation directory.
4. Make sure the `JAVA_HOME` environment variable is set to the directory where Java 1.6 is installed.
5. Extract the `.jar` file by running the following command:

```
jar xvf hp_omu_connector_bundle.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.

6. Open a command prompt window and change the working directory to the installation directory.

7. 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.

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

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

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

```
install.bat
```

10. 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.

11. 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.

Note: 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.

12. When the script prompts for the password of the web service, enter the password that must be provided to access the OMU Web Service.

13. 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.

14. 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.

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

16. If the web service was configured to run using the HTTPS protocol, you must install a SSL certificate. You can install a self-signed certificate, or you can acquire a certificate from a Certificate Authority (CA).

- **To generate and install a self-signed SSL certificate:**

Enter the following commands, and replace <hostname> with the system host name or IP address that the OMU web service will use:

```
cd ..\..\conf
```

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

```
iwavepw -keystore keystore.jks
```

```
"%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
```

- **To install a certificate that the Certificate Authority issues:**

- Request a certificate from a Certificate Authority, such as VeriSign.

Make sure to specify the host name or IP address that the OMU web service will use. The host name in the certificate must match the host name the web service uses. If they do not match, the web service cannot function.

- After you obtain the certificate from the Certificate Authority, enter the following commands to install the certificate, where <certificateFile> is the full path name of the file the Certificate Authority provides:

```
cd ..\..\conf
```

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

17. *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
```

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

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

If the HP Operations Manager Web Service was configured to use the HTTPS protocol, the certificate must be imported into Enterprise Manager. See [Section 2.3.3, "Adding Signed Certificates to Enterprise Manager"](#) for instructions.

2.3.2.3 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 adapter.

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
```

2.3.2.4 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 12 of [Section 2.3.2.2, "Installing the Web Service on Windows"](#).

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

Note: If the HTTPS protocol is being used, the test fails if the installed JRE version is 1.6_10. An issue with this version causes the test to fail. To test the web service, you need to verify that you can load the WSDL in a web browser. See [Section 3.3, "Testing the HP OMU Connector"](#).

2.3.3 Adding Signed Certificates to Enterprise Manager

The OMU Web Service SSL certificate must be imported into Enterprise Manager. For versions 10.2.0.4 and 10.2.0.5, perform the steps in [Section 2.3.3.1, "Adding Signed Certificates to Wallet Manager"](#). For version 11.1.0.1, perform the steps in [Section 2.3.3.2, "Adding Signed Certificates to cacerts"](#).

2.3.3.1 Adding Signed Certificates to Wallet Manager

Note: Oracle Wallet Manager is available at `$ORACLE_HOME/bin` on OMS for versions 10.2.0.4 and 10.2.0.5. See the *Oracle Application Server Administrator's Guide* for details.

Perform the following steps in Oracle Enterprise Manager to add signed certificates:

1. Do the following to obtain a copy of the certificate that the OMU web service is using:
 - a. Open a command prompt window and change the working directory to ...

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

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

- b. Issue the following command to extract the certificate:

— Unix platforms:

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

— Windows platforms:

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

- c. Transfer the certificate file `omuws.cer` to the system where Enterprise Manager is installed.
2. Open a new terminal and set the `ORACLE_HOME` environment variable to the directory where OMS is installed.
3. As Super Administrator, create a wallet using the following `orapki` utility command at the OMS host:

```
$OMS_HOME/./agent11g/orapki wallet create -wallet client -auto_login
```

4. Add the trusted certificate to the wallet by entering the following command:

```
$OMS_HOME/./agent11g/orapki wallet add -wallet client -trusted_cert -cert
<certFile>
```

5. To view the content of the wallet, enter the following command:

```
$OMS_HOME/./agent11g/orapki wallet display -wallet client
```

Verify that the certificate that was added is listed in the Trusted Certificates.

6. Start Oracle Wallet Manager and open the client wallet.
7. Click on Trusted Certificates and select **Operations** on the main menu.
8. Select **Export All Trusted Certificates**.
9. Save the file as `certdb.txt`.
10. Place the file `certdb.txt` in the connector home root directory (`$OMS_HOME/sysman/connector`).

If the `certdb.txt` file already exists in the root directory, open the file and add the contents of your `certdb.txt` file to the existing content.

Java SSL can now use this file for communication between Oracle Enterprise Manager and the OMU web service in HTTPS mode.

See Also: For additional information on creating a wallet, see "Creating and Viewing Oracle Wallets with `orapki`" in the *Oracle Database Advanced Security Administrator's Guide, 10g Release 2 (10.2)*.

2.3.3.2 Adding Signed Certificates to cacerts

Do the following in Enterprise Manager to add signed certificates to the Java `cacerts` keystore:

1. Obtain a copy of the certificate that the OMU web service is using:
 - a. Open a command prompt window and change the working directory to ...

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

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

- b. Issue the following command to extract the certificate:

Unix platforms —

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

Windows platforms —

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

- c. Transfer the certificate file omuws.cer to the system where Enterprise Manager is installed.
2. Determine the location of the JRE in the Oracle Home directory.
 3. Open a command window and navigate to the JRE bin directory.
 4. Enter the following command to add the certificate to the cacerts keystore:

Unix platforms —

```
./keytool -importcert -keystore ../lib/security/cacerts -storepass changeit
-trustcacerts -file <OMUWS_INSTALL>/adapters/conf/omuws.cer -alias omuws_cert
```

Windows platforms —

```
.\keytool -importcert -keystore ..\lib\security\cacerts -storepass changeit
-trustcacerts -file <OMUWS_INSTALL>\adapters\conf\omuws.cer -alias omuws_cert
```

5. Restart OMS by opening a command window, changing the working directory to <ORACLE_HOME>/oms11g/bin, and issuing the following commands:

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

2.4 Installing the HP Operations Manager Connector in Oracle Enterprise Manager

The following steps explain how to add the new HP Operations Manager Unix Connector to Oracle Enterprise Manager Grid Control.

Note: [Table 2-1](#) at the end of this section provides descriptions for the parameters shown for the emctl command in this procedure.

Note: The commands in this section and the following section reference the OMS_HOME environment variable. OMS_HOME must be set to the OMS sub-directory in the Enterprise Manager installation directory. For versions 10.2.0.4 and 10.2.0.5, this is the oms10g directory. For version 11.1.0.1, this is the oms11g directory.

Example settings of the OMS_HOME variable are /gc/OracleHomes/oms10g on a Unix platform running version 10.2.0.5, and C:\Oracle\Middleware2\oms11g on a Windows platform running version 11.1.0.1.

1. Enter the following command to extract the connector .jar file for versions 10.2.0.5 and 11.1.0.1:

```
$OMS_HOME/bin/emctl extract_jar connector -jar <jarfile> -cname
<connectorTypeName>
```

For version 10.2.0.4, enter the following command:

```
$OMS_HOME/bin/emctl extract_jar connector <jarfile> <connectorTypeName>
<OracleHome>
```

Note: You should perform this extraction on all OMS instances, because all OMS instances need to access the files locally.

10.2.0.5 and 11.1.0.1 Command Example

```
$OMS_HOME/bin/emctl extract_jar connector -jar "$OMS_HOME/
bin/sysman/connector/hpomu_connector.jar" -cname "HP OMU Connector"
```

When run, this creates the following new connector sub-directory:

```
$OMS_HOME/sysman/connector/HP_OMU_Connector
```

2. Register the connector by entering the following command based on your Enterprise Manager version, noting the required double-quotes. You only need to perform the registration once.

11.1.0.1

```
$OMS_HOME/bin/emctl register_connector connector -dd "<deployment file>"
-repos_pwd <repos_pwd>
```

10.2.0.5

```
$OMS_HOME/bin/emctl register_connector connector -dd "<deployment file>" -cs
//<server>:<port>/<databaseSID> -repos_user <repos_user> -repos_pwd
<repos_pwd>
```

10.2.0.4

```
$OMS_HOME/bin/emctl register_connector connector "<deployment file>" <server>
<port> <databaseSid> <reposuser> <repospwd> "<omshome>"
```

11.1.0.1 Command Example

```
$OMS_HOME/bin/emctl register_connector connector -dd "$OMS_HOME/
sysman/connector/HP_OMU_Connector/HPOMUConnector.xml"
-repos_pwd password
```

The new HP OMU connector should now appear in the Management Connectors page after the `emctl register_connector` command has loaded the connector, as shown in Figure 2-2.

Figure 2-2 Installed HP OMU Connector

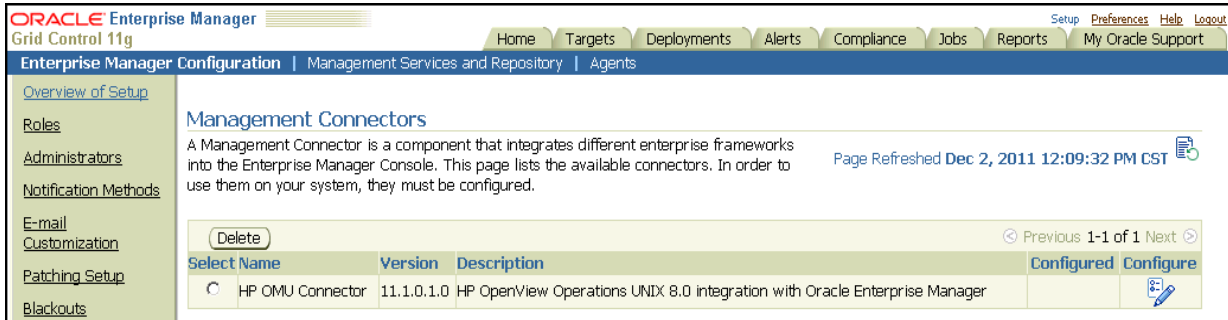


Table 2-1 provides descriptions for the parameters shown in the procedure above.

Table 2-1 emctl Parameters

Parameter	Description
<code>cname</code>	Connector name. Specify "HP OMU Connector". The double quotes (") are mandatory.
<code>cs</code>	Connect string. Specify as " <code>//\$emHost:\$dbPort/\$dbSID</code> ", where, <code>\$emHost</code> is the server, <code>\$dbPort</code> is the port, and <code>\$dbSID</code> is the database session identifier.
<code>ctname</code>	Connector type name. Specify "HP OMU Connector". The double quotes (") are mandatory.
<code>database sid/ Service Name for RAC DB</code>	Repository database instance ID or service name if you are using a RAC database as the repository.
<code>deployment file</code>	Fully-qualified name of the connector deployment file. This <code>HPOMUConnector.xml</code> file resides in the following HP OMU connector directory: <code>\$OMS_HOME/sysman/connector/HP_OMU_Connector/</code>
<code>description</code>	Short description for the ticket template. This description is also displayed in Enterprise Manager.
<code>iname</code>	Internal name — Depending on the template, the values can be <code>acknowledgeAlerts</code> , <code>createEvent</code> , <code>getNewAlerts</code> , <code>getUpdatedAlerts</code> , or <code>updateEvent</code> .
<code>oraclehome</code>	Top directory of the OMS installation.
<code>omshome</code>	" <code><oraclehome>\oms10g</code> " with double quotes is recommended.
<code>port</code>	Listener port of the repository.
<code>repos_pwd</code>	Password for SYSMAN.
<code>repos_user</code>	Specify SYSMAN.
<code>server</code>	Host name of the Enterprise Manager repository.
<code>tname</code>	Template name — Depending on the template, the values can be <code>Acknowledge Alerts</code> , <code>Create Event</code> , <code>Get New Alerts</code> , <code>Get Updated Alerts</code> , or <code>Update Event</code> .

Table 2–1 (Cont.) emctl Parameters

Parameter	Description
ttype	Template type — Specify 1 for inbound transformation and 2 for outbound transformation.

2.5 Registering Templates

The following steps explain how to register templates for various Enterprise Manager versions.

1. For each template, run the following `emctl register_template connector` command based on the Enterprise Manager version. The command must be run as a user with execute privilege on `emctl` and the ability to read the template.

11.1.0.1

```
$OMS_HOME/bin/emctl register_template connector -t <template.xml> -repos_pwd
<password> -ctname <connector_type_name> -cname <connector_name> -tname
<template_name> -iname <internal_name> -ttype <template_type> -d <description>
```

10.2.0.5

```
$OMS_HOME/bin/emctl register_template connector -t <template.xml> -cs
//<server>:<port> /<database sid> -repos_user <username> -repos_pwd <password>
-ctname <connector_type_name> -cname <connector_name> -tname <template_name>
-iname <internal_name> -ttype <template_type> -d <description>
```

10.2.0.4

```
$OMS_HOME/bin/emctl register_template connector -t <template.xml> -cs
//<server>:<port>/<databaseSID> -repos_user <username> -repos_pwd <password>
-ctname <connector_type_name> -cname <connector_name> -iname <internal_name>
-tname <template_name> -ttype <template_type> -d <description>
```

2. Replace `<template.xml>`, `<internal_name>`, `<template_name>` and `<template_type>` with the values listed in [Table 2–2](#), which lists the properties of each template for the HP Operations Manager Connector.

Table 2–2 Possible Replacement Values For register_template Parameters

template.xml and template_xml	template_name	internal_name	template_type
acknowledge_request.xml	Acknowledge Alerts	acknowledgeAlerts	2
createEvent_request.xml	Create Event	createEvent	2
createEvent_response.xml	Create Event	createEvent	1
generic_request_ acknowledgedalerts.xml	Acknowledge Alert	acknowledgeAlerts	3
getNewAlert_request.xml	Get New Alerts	getNewAlerts	2
getNewAlerts_response.xml	Get New Alerts	getNewAlerts	1
getUpdatedAlert_request.xml	Get Updated Alerts	getUpdatedAlerts	2
getUpdatedAlerts_response.xml	Get Updated Alerts	getUpdatedAlerts	1
updateEvent_request.xml	Update Event	updateEvent	2
updateEvent_response.xml	Update Event	updateEvent	1

Table 2–2 (Cont.) Possible Replacement Values For register_template Parameters

template.xml and template_xml	template_name	internal_name	template_type
template_type Key:			
template_type1 — Inbound transformation			
template_type 2 — Outbound transformation			
template_type 3 — XML outbound transformation			

The following example is based on the template values shown in [Table 2–2](#).

Example 2–1 Request XSL File for acknowledgeAlerts Method

```
$OMS_HOME/bin/emctl register_template connector -t $OMS_HOME/sysman/connector/
HP_OMU_Connector/acknowledge_request.xml -repos_pwd mypassword -ctname "HP OMU
Connector" -cname "HP OMU Connector" -tname "Acknowledge Alerts" -iname
"acknowledgeAlerts" -ttype 2 -d "This is the request xsl file for
acknowledgeAlerts method"
```

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:

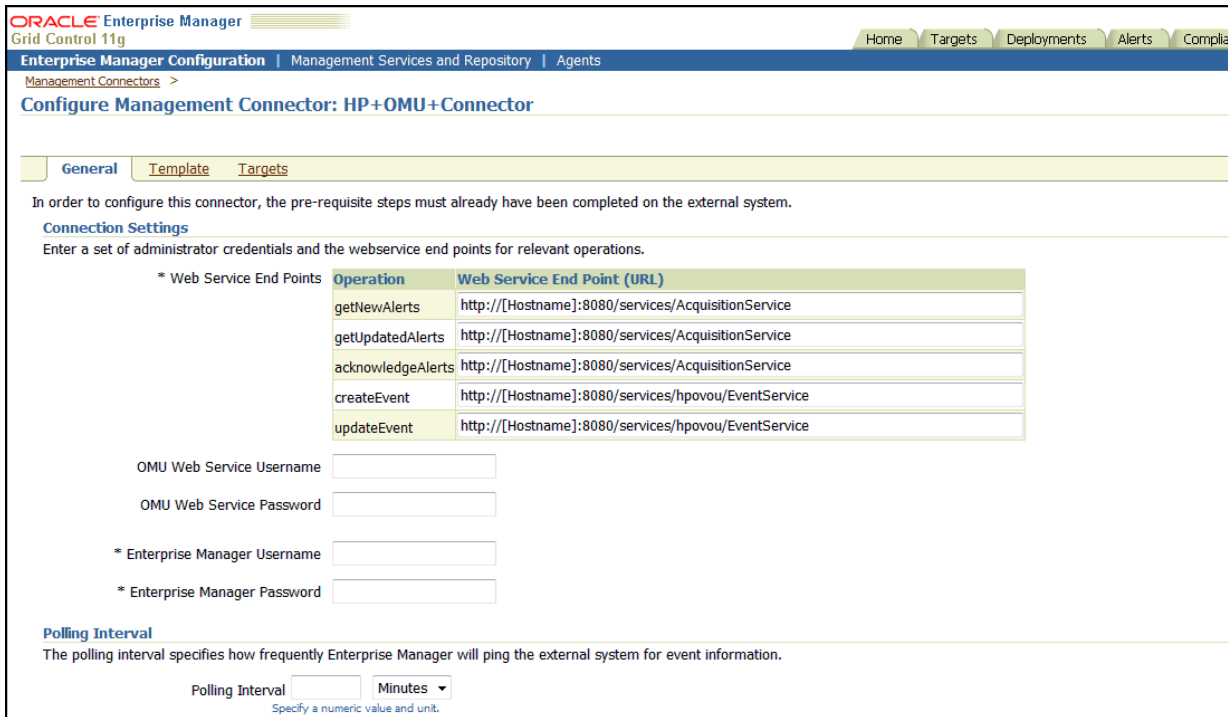
- [Configuring the General Page](#)
- [Configuring the Targets Page](#)
- [Testing the HP OMU Connector](#)
- [Sending Oracle Enterprise Manager Alerts to HP OMU](#)

3.1 Configuring the General Page

To configure the General page:

1. From the Management Connectors page, select the **HP OMU Connector** and click the **Configure** icon. By default, the General sub-page of the Configure Management Connector page appears, as shown in [Figure 3-1](#).

Figure 3-1 HP OMU Connector General Settings



2. Change HTTP to HTTPS at the beginning of the web service URLs if you have configured the HP Operations Manager web services with HTTPS. Otherwise, go to the next step.
3. Change the port to the port on which the web services are running. For example, the default port for HTTP is 8080 and the default port for HTTPS is 8443.

If you are using HTTPS as the protocol, you must also include the HP Operations Manager web service certificate in the Enterprise Manager as described in [Section 2.3.3, "Adding Signed Certificates to Enterprise Manager"](#) on page 2-12.

Operation Descriptions

- **getNewAlerts** — Creates alerts in Oracle Enterprise Manager based on events (messages) that originate in HP Operations Manager. Oracle Enterprise Manager uses this operation when polling for events in HP Operations Manager.
- **getUpdatedAlerts** — Updates alerts in Oracle Enterprise Manager based on events (messages) that originate from HP Operations Manager. Oracle Enterprise Manager uses this operation when polling for events from HP Operations Manager.
- **acknowledgeAlerts** — Acknowledges the alerts after Oracle Enterprise Manager has processed them. Oracle Enterprise Manager uses this operation when polling for events in HP Operations Manager.
- **createEvent** — Generates events (messages) in HP Operations Manager based on alerts that originate in Oracle Enterprise Manager. Oracle Enterprise Manager invokes this operation when it forwards a new alert to OMU.
- **updateEvent** — Updates events (messages) in HP Operations Manager based on alerts that originate in Oracle Enterprise Manager. Oracle Enterprise

Manager invokes this operation when it forwards an updated alert to OMU.

URL Types

The connector uses two different URLs. One URL is used for operations that poll data out of HP Operations Manager (`getNewAlerts`, `getUpdatedAlerts` and `acknowledgeAlerts`), and defaults to the following value:

```
http://[Hostname]:8080/services/AcquisitionService
```

You need to replace `[Hostname]` in the URL when configuring it for HTTP.

The other URL is used for operations that push data into HP Operations Manager (`createEvent` and `updateEvent`), and defaults to the following value:

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

You need to replace `[Hostname]` in the URL when configuring it for HTTP.

4. Enter the user name and password you specified when you installed the OMU web service, which is discussed in steps 10 and 11 of [Section 2.3.1.1, "Installing the Web Service on Unix"](#), and steps 11 and 12 of [Section 2.3.2.2, "Installing the Web Service on Windows"](#).
5. Enter the user name and password of the Oracle Enterprise Manager account.
6. Optionally enter a polling interval to specify how often Oracle Enterprise Manager should poll the HP Operations Manager web service for new or updated messages to process. The poll interval defaults to 5 minutes if not specified.
7. Click **OK** to save your configuration changes.

3.2 Configuring the Targets Page

Whenever an HP Operations Manager message is translated into an Oracle Enterprise Manager alert, the HP OMU message node determines the target-type instance associated with the alert in Oracle Enterprise Manager. If a target instance that matches the message node is not found, the default target instance of `generic_omu_managed_node` is used for the alert.

To add proxy targets in Oracle Enterprise Manager:

1. From the Configure Management Connector page, click the **Targets** link to display the Targets page, as shown in [Figure 3-2](#).

Figure 3–2 HP OMU Connector Target Settings

ORACLE Enterprise Manager
Grid Control 11g

Home Targets Deployments Alerts Compliance

Enterprise Manager Configuration | Management Services and Repository | Agents

Management Connectors >

Configure Management Connector: HP OMU Connector

General Template **Targets**

Default Connector Target

Configuring the connector automatically creates a default managed target instance in Enterprise Manager, in order to retrieve events from the external system. Optionally you can create managed entities from the external system. It is highly recommended that you do not delete the default target.

Default Connector Target

Targets Managed by External System

In order to associate alerts from a specific managed entity from the external system to a corresponding target instance within Enterprise Manager, you can create the specific target instances. Alerts for the following target instances will not show up under the default managed target for this connector.

Select All | Select None

Select Target Name	OMU NODE NAME
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

2. Provide a target name. The Target Name field is set to the node name specified in the OMU message and must match the message node name exactly.
3. Provide the fully qualified OMU node name in the OMU NODE NAME field. This field must be set to the same value as the Target Name field.
4. Repeat this process for as many target instances as desired.
5. Click **OK** to save your configuration changes.

3.3 Testing the HP OMU Connector

Perform the following steps to test the connector:

1. Log in to the Oracle Enterprise Manager console by entering a user name with a 'Super Administrator' role, entering the appropriate password, then clicking **Login**.
2. Click the **Setup** link at the top right part of the window. The Overview of Setup page appears.
3. Click the **Management Connectors** link on the left side of the window. The Management Connectors page appears, which shows the installed connectors.
4. Click on the **Configure** icon associated with the HP OMU Connector.
5. Click the **General** link.
6. Select and copy the URL specified for the `createEvent` or `updateEvent` operation.

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

```
http://[Hostname]:8080/services/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.

9. At the Oracle Enterprise Manager console, select and copy the URL specified for the `getNewAlerts`, `getUpdatedAlerts`, or the `acknowledgeAlerts` operation. They should all be set to the same URL.
10. Open an internet browser on the system where the Oracle Enterprise Manager server is installed.
11. In the address window, enter the URL that you copied in step 9 above. Add `?wsdl` to the end of the URL. The URL should similar to the following example:

```
http://[Hostname]:8080/services/AcquisitionService?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 polling event information from OMU.

3.4 Sending Oracle Enterprise Manager Alerts to HP OMU

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

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

3.4.1 Creating Notification Rules

The following procedure explains how to create a new notification rule to invoke the OMU notification method.

1. Click the **Preferences** link in the upper right corner of the Oracle Enterprise Manager console. The General page appears.
2. Click the **Notification Rules** link on the left side of the window. The Notification Rules page appears and displays a list of all defined notification rules.
3. Click **Create** to create a new notification rule.
4. From the **General** sub-page, enter a name for the notification rule and an optional description.

Select the target type and whether you want it to apply to all targets of that type or a specific instance. If you indicate that you want a specific instance, you need to click **Add** and select the desired target instance.

5. Click the **Availability** link, then select the availability states for which you would like to receive notifications. Each state you select invokes the notification method whenever it is reached.
6. Click the **Metrics** link. If you want to trigger the notification method based on metric violations, click **Add** and select the metrics and states for which you want to invoke the notification method, then click **Continue**.
7. Click the **Methods** link. In the Advanced Notification Methods section, click the check box next to the HP OMU Connector to assign the OMU notification method to the notification rule.
8. Click **OK** to complete the setup.

3.4.2 Updating Notification Rules

The following procedure explains how to update an existing notification rule to invoke the OMU notification method.

1. Click the **Preferences** link in the upper right corner of the Oracle Enterprise Manager console. The General page appears.
2. Click the **Notification Rules** link on the left side of the window. The Notification Rules page appears and displays a list of all defined notification rules.
3. Click on the radio button next to the notification rule you want to update, and click **Edit** to update the notification rule.
4. Click the **Methods** link. In the Advanced Notification Methods section, click on the check box next to the HP OMU Connector to assign the OMU notification method to the notification rule.
5. Click **OK** to complete the update.

3.4.3 Viewing Oracle Enterprise Manager Alerts

Whenever a message is created in HP Operations Manager from an alert that originates in Oracle Enterprise Manager, a link is provided in the message text. To view the Oracle Enterprise Manager alert 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 alert information is displayed.

Changing Default Configurations

This chapter explains how to change default mappings and change other common configurations. This chapter discusses the following topics:

- [Customizing Mappings](#)
- [Changing Default Port Numbers](#)
- [Changing Web Service Credentials](#)

4.1 Customizing Mappings

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

- [XML Format of HP Operations Manager Messages](#)
- [XML Format of Oracle Enterprise Manager Alerts](#)
- [Changing a Mapping](#)

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

For reference information on the default mappings, see [Appendix A, "Default Mappings"](#).

4.1.1 XML Format of HP Operations Manager Messages

Example 4–1 represents the format that the HP Operations Manager web service expects for creating new messages in HP Operations Manager. The format for update requests is the same, except the root node would be `update` instead of `create`.

Example 4–1 Sample Format for HP Operations Manager 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>

```

4.1.1.1 Mappings Between XML Format and Message Field Names

Table 4–1 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 A–1.

Table 4–1 Message Attributes and XML Path Mappings

HP Operations Manager Message Attributes	XML Path
Identifier	/create/event/identifier
Message Text	/create/event/summary
Severity	/create/event/urgency
Message Group	/create/event/group/name
Object	/create/event/object/displayName
Node	/create/event/source/computerName
Application	See "Extended Fields" below.
ResolvedBy	/create/event/resolvedBy
CMA Fields	See "Extended Fields" below.

4.1.1.2 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` — Used to change 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` — Used to prevent 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.

4.1.2 XML Format of Oracle Enterprise Manager Alerts

[Example 4-2](#) shows the format that the Oracle Enterprise Manager Connector Framework provides when an alert is created or updated in Oracle Enterprise Manager.

Example 4-2 XML Format of Alerts

```
<EMEvent>
  <EventGuid/>
  <ExternalEventId/>
  <ViolationId/>
  <TargetType/>
  <TargetName/>
  <MetricName/>
  <MetricColumn/>
  <KeyValues/>
  <Message/>
  <Severity/>
  <SeverityCode/>
  <CollectionTime/>
  <EventPageURL/>
  <EMUser/>
  <NotificationRuleName/>
  <TargetHost/>
  <TargetTimezone/>
  <Property>
    <Name/>
    <Value/>
  </Property>
</EMEvent>
```

[Table 4-2](#) provides a description of the fields shown in [Example 4-2](#).

Table 4-2 Field Descriptions for XML Format

Field	Description
EventGuid	Unique identifier of the alert in Oracle Enterprise Manager.
ExternalEventId	Unique identifier of the message in HP Operations Manager. This will only be set for updates.
CollectionTime	Time the alert was generated.

Table 4–2 (Cont.) Field Descriptions for XML Format

Field	Description
TargetType	Target type for which the alert was generated.
TargetName	Target name that is a unique instance of the target type.
MetricName	Name of the metric that was violated.
MetricColumn	Column under the metric that was violated.
KeyValues	Key values associated with the metric column that was violated.
Severity	Severity text assigned to the alert.
SeverityCode	Severity numeric code assigned to the alert.
EMUser	User that owns the rule that generated the alert.
NotificationRuleName	Name of the notification rule that caused the alert to be forwarded to HP Operations Manager.
EventPageURL	Link to the web page for the alert.
Message	Description of the alert.
TargetHost	Host name of the system where the target resides.
TargetTimezone	Time zone of the system where the target resides.
Property	Additional properties that do not have a specific field in the alert model.

4.1.3 Changing a Mapping

The following procedure provides the steps required for changing a mapping. Following this procedure below, an example is provided to more fully illustrate the procedure.

1. Study the default mapping and determine the changes you want to make.
2. Create a back-up copy of the XSL file you want to change.
3. Open the XSL file in a text editor or in an XSLT editor.
4. Change the file to map the fields as determined in step 1. You might need to study the information in [Section 4.1.1](#) and [Section 4.1.2](#). These sections describe the data formats of the HP Operations Manager messages and Oracle Enterprise Manager alerts.
5. Save your changes.
6. Rerun the register command for the template that was modified to pick up the changes. See [Section 2.5, "Registering Templates"](#) for details.

Example of Changing a Mapping

By default, the Application field in the HP Operations Manager message is set to the Oracle Enterprise Manager target type, and no CMA fields are defined. The example

procedure below shows how to change the value assigned to the Application field to a different value. The example also shows how to add a CMA field.

The changes made to the default mapping are as follows:

- The Application field is modified to use a hard-coded value of Oracle Enterprise Manager.
 - A new CMA field named `TargetType` is added to contain the `TargetType` associated with the Oracle Enterprise Manager alert.
1. Make a back-up copy of the `createEvent_request.xml` file and name it `default_createEvent_request.xml`.
 2. Make a back-up copy of the `updateEvent_request.xml` file and name it `default_updateEvent_request.xml`.
 3. Open the `createEvent_request.xml` file in your text editor.
 4. Change the Extended Fields section to reflect the new mapping.

■ Before Changes

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

```
<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>
```

■ After Changes

The code below 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-fieldstring-field name="TargetType">
    <xsl:value-of select="a:TargetType"/>
  </string-field

```

5. Save your changes after making the updates.
6. Open the `updateEvent_request.xml` file and make the same changes. In this case, you cannot just cut and paste the Extended Fields section, because there are some differences between the create and update translations. You will need to edit them separately.
7. Save your changes after making the updates.
8. Run the following register command for the template that was modified to enable OMS to pick up the changes:

```
emctl register_template connector -t
$OMS_HOME/sysman/connector/HP_OMU_Connector/createEvent_request.xml
-repos_pwd testPass -ctname "HP OMU Connector" -cname "HP OMU Connector"
-tname "Create Event Request" -iname "createEvent" -ttype 2 -d "This is the
request xml file for createEvent method"
```

4.2 Changing Default Port Numbers

In most cases, you can use the default port numbers that the HP Operations Manager 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.

4.2.1 Changing the Agent Listener Port (9007)

9007 is the default port number used for communication between the HP Operations Manager Agent and the HP Operations Manager 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 HP Operations Manager Agent is installed.

1. Open a command prompt window and change the working directory to:
2. Enter the following command to stop the HP Operations Manager Agent. You will be prompted for the credentials to stop the Oracle OMU 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 2.2, "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:
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 will pick up the configuration changes and use the new port number.

Perform the following steps at the system where the HP Operations Manager web services are installed. Replace <OMUWS_INSTALL> with the directory where the HP Operations Manager 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 web service as instructed in [Section 2.3.1.2, "Running the Web Service on Unix"](#) and [Section 2.3.2.3, "Running the Web Service on Windows"](#).

4.2.2 Changing the Agent Shutdown Ports (9008, 9009)

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.

Replace `<OMUA_INSTALL>` with the directory where the HP Operations Manager Agent is installed as follows:

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 HP Operations Manager 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 2.2, "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 `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. If the `ovoacq.txt` file exists, perform the following steps. Otherwise skip to step 8.
 - a. Make a back-up copy of the `ovoacq.txt` file, then open the file in a text editor.
 - b. Search for the line containing the `ShutdownPort=` string.
 - c. Change the default port number from 9009 to the new port number.
 - d. Save the file and exit.
8. Enter the following command to start the HP Operations Manager Agent:
`./start.sh`

The Oracle OMU Agent will pick up the configuration changes and use the new port numbers.

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

```
cd ../scripts
```

10. Make a back-up of the `stop.sh` script file, then open the file in a text editor.
11. Change the `SEND_SHUTDOWN_PORT` and `RCV_SHUTDOWN_PORT` variables from 9008/9009 to the new port numbers.
12. Save the file and exit.

4.2.3 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.

Replace `<OMUA_INSTALL>` with the directory where the HP Operations Manager Agent is installed.

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

```
<OMUA_INSTALL>/ovo-agent/conf
```

2. Verify that the `ovoacq.txt` file exists. If the file exists, perform the following steps. If it does not exist, skip to the next procedure that begins with "Open a command prompt window ..."

- a. Make a back-up copy of the `ovoacq.txt` file, then open the file in a text editor.
- b. Search for the line containing the `URL=` string.
- c. Change the default port number from 8080 to the new port number.
- d. Save the file and exit.
- e. Change the working directory to the scripts directory by entering the following command:

```
cd ../scripts
```

- f. Stop the Agent by entering the following command:

```
./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 2.2, "Installing and Running the Oracle Agent for HP Operations Manager"](#) for information about the account that is authorized to stop the Oracle OMU Agent.

- g. Start the Agent by entering the following command:

```
./start.sh
```

Perform the following steps at the system where the HP Operations Manager web services are installed. Replace `<OMUWS_INSTALL>` with the directory where the HP OMU web services are 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, then open the file with a text editor.
3. Replace all references to the old port number with the new port number, then save the file.
4. Restart the web service as instructed in [Section 2.3.1.2, "Running the Web Service on Unix"](#) and [Section 2.3.2.3, "Running the Web Service on Windows"](#).

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

1. Log in to the Oracle Enterprise Manager console by entering a user name with a 'Super Administrator' role, entering the appropriate password, then clicking **Login**.
2. Click the **Setup** link at the top right part of the window. The Overview of Setup page appears.
3. Click the **Management Connectors** link on the left side of the window. The Management Connectors page appears, which shows the installed connectors.
4. Click on the **Configure** icon associated with the HP OMU Connector. This invokes edit mode, enabling you to configure the connector.
5. Change the URLs listed in the Web Service End Points section to use the new port number.
6. Click **OK** to save your changes.

4.2.4 Changing the Web Service Port (8443)

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

4.3 Changing Web Service Credentials

Sometimes problems occur when accessing the 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.

Perform the following steps to reset the web service credentials:

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

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

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

```
../bin/propertiesEditor.sh -h
framework.username="<username>" -e
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 web service as instructed in [Section 2.3.1.2, "Running the Web Service on Unix"](#) and [Section 2.3.2.3, "Running the Web Service on Windows"](#).

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:

- [Preparing for Troubleshooting](#)
- [Using the Correct URL for OMU Web Service Operations](#)
- [Diagnosing Problems with Message Generation and Updates](#)
- [Resolving Alerts from Oracle Enterprise Manager](#)
- [Resolving Messages from OMU](#)

5.1 Preparing for Troubleshooting

In order to troubleshoot integration issues, you must adjust the Oracle Enterprise Manager logging options to capture additional information.

To enable debug logging information for 10.2.0.5:

1. Edit the `emomslogging.properties` file using a text editor. The file is located in the following directory ...

```
<ORACLE_HOME>/oms10g/sysman/config
```

... where `<ORACLE_HOME>` is the Oracle install directory.

2. Set the parameters as follows:

```
log4j.appender.emlogAppender.Threshold = DEBUG
log4j.rootCategory=DEBUG, emlogAppender, emtrcAppender
```

3. After setting the debug logging parameters, restart OMS by opening a command window, changing the working directory to `<ORACLE_HOME>/oms10g/bin`, and issuing the following commands:

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

To enable debug logging information for 11.1.0.1, see "Controlling the Contents of the Oracle Management Service Trace File," in *Oracle Enterprise Manager Administration 11g Release 1 (11.1.0.1)*.

5.2 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 `AcquisitionService`. The URL listed there is the URL that should be specified for the `getNewAlerts`, `getUpdatedAlerts`, and `acknowledgeAlerts` operations.
5. 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.
6. Log in to the Oracle Enterprise Manager console by entering a user name with a 'Super Administrator' role, entering the appropriate password, then clicking **Login**.
7. Click the **Setup** link at the top right part of the window. The Overview of Setup page appears.
8. Click the **Management Connectors** link on the left side of the window. The Management Connectors page appears, which shows the installed connectors.
9. Click on the **Configure** icon associated with the HP OMU Connector. This invokes edit mode, enabling you to configure the connector.
10. Verify that the URL identified in step 4 is specified for the `getNewAlerts`, `getUpdatedAlerts`, and `acknowledgeAlerts` operations.
11. Verify that the URL identified in step 5 is specified for the `createEvent` and `updateEvent` operations.
12. If any of the operations are incorrect, change to the correct URL and click **OK**.

5.3 Diagnosing Problems with Message Generation and Updates

You might encounter issues involved in generating or updating messages in OMU from alerts that have originated in Oracle Enterprise Manager or vice versa. The following sections provide diagnostic information to resolve these problems.

5.3.1 Alerts from Oracle Enterprise Manager to OMU

OMU can generate or update messages from alerts that have originated in Oracle Enterprise Manager. Perform the following diagnostic steps if OMU messages are not being generated or updated as expected.

1. Verify that a notification rule is set up for the condition that triggered the alert. Perform the following steps to verify that it is setup correctly:
 - a. Open an Oracle Enterprise Manager console window and log in.
 - b. Click on the **Setup** link in the upper right corner of the Oracle Enterprise Manager console.
 - c. Click on the **Notification Methods** link on the left side of the window.
 - d. Locate the HP OMU Connector in the table near the bottom of the window and click on it to list and note the notification rules that use this method.
 - e. Click on the **Preferences** link in the upper right corner.
 - f. Click on the **Notification Rules** link on the left side of the window. This displays a list of all defined notification methods.
 - g. Examine the details for the rules listed in step d above and verify that at least one rule matches the conditions that triggered the alert.
 - h. If you did not find at least one rule, you need to modify an existing notification rule or add a new one to invoke the OMU notification method.
2. Determine the error that Oracle Enterprise Manager has reported.
 - a. Navigate to the page that displays the alert information that should have triggered the new message in OMU.
 For example, if the Memory Utilization % metric was set up to invoke the HP OMU Connector method, you would perform the following steps to access the page that displays alert information. This example assumes that the generated alert was critical.
 - 1.) Click on the **Alerts** tab.
 - 2.) Click on the **Critical** sub-tab.
 - 3.) Click on the **Memory Utilization %** alert.
 - b. Click on the details and look for any error messages.
 After the alert is generated, it initially indicates that the method will be invoked, but no error messages appear. The Enterprise Manager Connector Framework makes several attempts to transfer the alert information to the OMU web service. After all attempts have failed, an error message is usually added to the details for the alert. If there are no errors after several minutes, it is likely that no error messages will be added to the log.
 - c. If there is no error information in the alert details, you need to examine the log file for errors. Perform the following steps to locate errors in the log file:
 - 1.) Open the `emoms.trc` file in a text editor. The location of the file depends on the Enterprise Manager version.

For 11.1.0.1, the file is located at:

```
<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 10.2.0.5, the file is located at:

```
$OMS_HOME/sysman/log
```

2.) Go to the bottom of the file and search backwards for this string:

```
ERROR core.EMEventConnectorServiceImpl createEvent
```

The error message is contained in the Exception information.

3. Diagnose the problem based on the error message. See [Section 5.4, "Resolving Alerts from Oracle Enterprise Manager"](#) for information on troubleshooting common error messages.

5.3.2 Messages from OMU to Oracle Enterprise Manager

Oracle Enterprise Manager can generate or update alerts resulting from messages that have originated in OMU. Perform the following diagnostic steps if Oracle Enterprise Manager alerts are not being generated or updated as expected.

1. Open the `emoms.trc` file in a text editor. The location of the file depends on the Enterprise Manager version.
 - For 11.1.0.1, the file is located at:


```
<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 10.2.0.5, the file is located at:


```
$OMS_HOME/sysman/log
```
2. Go to the bottom of the file perform a backwards search for `getNewAlerts()`. Any instances you find are immediately followed by exception information that identifies the cause of the failure.

See [Section 5.5, "Resolving Messages from OMU"](#) for the error message you found in the log file. Each message entry explains the cause of the problem and the steps required to correct the problem.

5.4 Resolving Alerts from Oracle Enterprise Manager

This section provides cause and solution information on troubleshooting common alert messages. Find the error message in [Table 5-1](#) that matches your alert message, then refer to the corresponding section(s) indicated under Possible Cause for instructions on diagnosing and correcting the problem.

Table 5-1 Enterprise Manager Alert Messages

Alert Message	Possible Cause	Applicable Versions
targetException=oracle.xml.parser.v2.XMLParseException: Start of root element expected	Invalid Web Service Credentials	10.2.0.4, 10.2.0.5
javax.net.ssl.SSLException: SSL handshake failed: X509CertChainInvalidErr	SSL Not Configured in Enterprise Manager	10.2.0.4, 10.2.0.5
The wallet "/gc/OracleHomes/oms10g/sysman/connector//certdb.txt" does not exist	Missing certdb.txt File	10.2.0.4, 10.2.0.5
Error opening socket: java.net.ConnectException: Connection refused	OMU Web Service Is Down	10.2.0.4, 10.2.0.5

Table 5–1 (Cont.) Enterprise Manager Alert Messages

Alert Message	Possible Cause	Applicable Versions
java.lang.Exception: Error occurred while calling Web Service:	Invalid XML Format	10.2.0.4, 10.2.0.5
Error occurred while calling Web Service: soap:Serverjava.net.ConnectException: Connection refused (errno:239)	Unable to Connect to Oracle OMU Agent	10.2.0.4, 10.2.0.5
Error occurred while calling Web Service: soap:Servercom.iwave.operations.NonRecoverableOperationsException: Error creating event: keyword 'object' is missing	Request Missing Required Field	10.2.0.4, 10.2.0.5
Error opening socket: java.net.UnknownHostException: <hostname>	Unknown Host	10.2.0.4, 10.2.0.5
Error opening socket: java.net.NoRouteToHostException: No route to host	Invalid IP Address or Port Number	10.2.0.4, 10.2.0.5
SOAPException: faultCode=SOAP-ENV:Protocol; msg=Unsupported response content type "text/html;	Invalid URL Path	10.2.0.4, 10.2.0.5
The server sent HTTP status code 403: Forbidden	Invalid Web Service Credentials	11.1.0.1
javax.net.ssl.SSLKeyException: [Security:090477]Certificate chain received from <hostname> - <IPAddress> was not trusted causing SSL handshake failure	SSL Not Configured in Enterprise Manager	11.1.0.1
HTTP transport error: java.net.SocketException: Socket Closed	OMU Web Service Is Down, Invalid IP Address or Port Number	11.1.0.1
java.net.ConnectException: Connection refused (errno:239)	Unable to Connect to Oracle OMU Agent	11.1.0.1
Error creating event: keyword 'object' is missing	Request Missing Required Field	11.1.0.1
HTTP transport error: java.net.UnknownHostException: <hostname>	Unknown Host	11.1.0.1
The server sent HTTP status code 404: Not Found	Invalid URL Path	11.1.0.1
Error creating event: opcmsg_get_msgids failed to return a result after 10 attempts	Timeout	11.1.0.1

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 by entering a user name with a 'Super Administrator' role, entering the appropriate password, then clicking **Login**.
2. Click the **Setup** link at the top right part of the window. The Overview of Setup page appears.
3. Click the **Management Connectors** link on the left side of the window. The Management Connectors page appears, which shows the installed connectors.

4. Click on the **Configure** icon associated with the OMU Connector.
5. Click the **General** tab.
6. Correct the OMU Web Service Username and OMU Web Service Password fields and click **OK**.
7. 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 4.3, "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 certificate store. The certificate is either missing from the wallet 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 wallet manager. See [Section 2.3.3, "Adding Signed Certificates to Enterprise Manager"](#) for details on setting up Oracle Enterprise Manager with the OMU SSL certificate.

Missing certdb.txt File

Cause

The OMU web service is configured to use SSL, but the `certdb.txt` file that contains the SSL information is missing.

Solution

Import the SSL certificate from the OMU web service into the wallet manager. See [Section 2.3.3, "Adding Signed Certificates to Enterprise Manager"](#) on page 2-12 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 2.3.1.2, "Running 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 2.3.2.3, "Running the Web Service on Windows"](#).

Invalid XML Format

Cause

The request sent to the OMU web service was rejected because the XML was formatted incorrectly. This problem should not occur unless the connector configuration XML files are manually updated.

Solution

Look at the error message in the fault-string node of the SOAP fault response and determine what is incorrect in the request document. Examine any changes made to the XML configuration files for mistakes that could have caused the problem. You can determine the correct XML format by accessing the WSDL using a web browser.

Perform the following steps to access the WSDL:

1. Log in to the Oracle Enterprise Manager console by entering a user name with a 'Super Administrator' role, entering the appropriate password, then clicking **Login**.
2. Click the **Setup** link at the top right portion of the window. The Overview of Setup page appears.
3. Click the **Management Connectors** link on the left side of the window. The Management Connectors page appears, which shows the installed connectors.
4. Click on the **Configure** icon associated with the HP OMU Connector.
5. Click the **General** tab.
6. Select and copy the URL specified for the `createEvent` operation.
7. Open an internet browser on the system where the Oracle Enterprise Manager server is installed.
8. In the address window, enter the URL that was copied in step 6 above. Add `?wsdl` to the end of the URL. The URL should appear similar to the following example:

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

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

If you cannot determine why the format is incorrect, contact Oracle support.

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 `ovoooper.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 2.3.1.2, "Running the Web Service on Unix"](#) and [Section 2.3.2.3, "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 modified and a required field was omitted.

Solution

You need to modify the XSL file to generate the XML node that maps to the missing OMU field. See [Appendix A, "Default Mappings"](#) 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 by entering a user name with a 'Super Administrator' role, entering the appropriate password, then clicking **Login**.
 3. Click the **Setup** link at the top right part of the window. The Overview of Setup page appears.
 4. Click the **Management Connectors** link on the left side of the window. The Management Connectors page appears, which shows the installed connectors.
 5. Click on the **Configure** icon associated with the HP OMU Connector. This invokes edit mode, enabling you to configure the connector.
 6. Change the host name to the IP address in the URL specified for the applicable operations. You will minimally need to change the `createEvent` and `updateEvent` operations.
 7. Click **OK**.

Invalid IP Address or Port Number

Cause

The IP address or port number 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 by entering a user name with a 'Super Administrator' role, entering the appropriate password, then clicking **Login**.
2. Click the **Setup** link at the top right part of the window. The Overview of Setup page appears.
3. Click the **Management Connectors** link on the left side of the window. The Management Connectors page appears, which shows the installed connectors.
4. Click on the **Configure** icon associated with the HP OMU Connector. This invokes edit mode, enabling you to configure the connector.
5. Verify that the hostname/IP address and port number specified in the URL for the `createEvent` and `updateEvent` operations are correct.
6. If the hostname/IP address and port number are 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 URL Path

Cause

The web service received the request and rejected it because there was a problem. This likely indicates that an invalid path was specified in the URL.

Solution

To determine the reason for the failure, examine the HTML document listed with the Exception information in the `emoms.trc` log file. In the HTML document, it provides error information that indicates the reason why it was rejected. The error information may be difficult to spot because the HTML tag delimiters are encoded.

If the error information specifies "HTTP Error: 404", this indicates that the path in the URL is incorrect. Perform the following steps to test the URL the connector is using.

1. Log in to the Oracle Enterprise Manager console by entering a user name with a 'Super Administrator' role, entering the appropriate password, then clicking **Login**.
2. Click the **Setup** link at the top right part of the window. The Overview of Setup page appears.

3. Click the **Management Connectors** link on the left side of the window. The Management Connectors page appears, which shows the installed connectors.
4. Click on the **Configure** icon associated with the HP OMU Connector.
5. Click the **General** tab.
6. Select and copy the URL specified for the `createEvent` operation.
7. Open an internet browser on the system where the Oracle Enterprise Manager server is installed.
8. In the address window, enter the URL that was copied in step 6 above. Add `?wsdl` to the end of the URL. The URL should appear similar to the following example:

```
http://[Hostname]:8080/services/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 5.2, "Using the Correct URL for OMU Web Service Operations"](#) to configure the connector to use the correct URL.

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.

5.5 Resolving Messages from OMU

This section provides cause and solution information on troubleshooting common messages from OMU. Find the error message in [Table 5-2](#) 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 5-2 OMU Error Messages

Error Message	Possible Cause	Applicable Versions
targetException=oracle.xml.parser.v2.XMLParseException: Start of root element expected.	Invalid Web Service Credentials	10.2.0.4, 10.2.0.5
SOAPException: faultCode=SOAP-ENV:IOException; msg=javax.net.ssl.SSLException: SSL handshake failed: X509CertChainInvalidErr	SSL Not Configured in Enterprise Manager	10.2.0.4, 10.2.0.5
SOAPException: faultCode=SOAP-ENV:IOException; msg="The wallet "/gc/OracleHomes/oms10g/sysman/connector/certdb.txt" does not exist	Missing certdb.txt File	10.2.0.4, 10.2.0.5

Table 5–2 (Cont.) OMU Error Messages

Error Message	Possible Cause	Applicable Versions
SOAPException: faultCode=SOAP-ENV:Client; msg=Error opening socket: java.net.ConnectException: Connection refused;	OMU Web Service Is Down, Invalid Port Number	10.2.0.4, 10.2.0.5
SOAPException: faultCode=SOAP-ENV:Client; msg=Error opening socket: java.net.UnknownHostException: <hostname>;	Unknown Host	10.2.0.4, 10.2.0.5
SOAPException: faultCode=SOAP-ENV:Client; msg=Error opening socket: java.net.NoRouteToHostException: No route to host;	Invalid IP Address	10.2.0.4, 10.2.0.5
SOAPException: faultCode=SOAP-ENV:Protocol; msg=Unsupported response content type	Invalid URL Path	10.2.0.4, 10.2.0.5
The server sent HTTP status code 403: Forbidden	Unknown Host	10.2.0.4, 10.2.0.5
Certificate chain received from <hostname> - <IPAddress> was not trusted causing SSL handshake failure.	SSL Not Configured in Enterprise Manager	11.1.0.1
Tried all: 1 addresses, but could not connect over HTTPS to server: <IPAddress> port: <port>	OMU Web Service Is Down	11.1.0.1
HTTP transport error: java.net.SocketException: Socket Closed	Invalid Port Number, Invalid IP Address	11.1.0.1
HTTP transport error: java.net.UnknownHostException: <hostname>	Unknown Host	11.1.0.1
The server sent HTTP status code 404: Not Found	Invalid URL Path	11.1.0.1

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 by entering a user name with a 'Super Administrator' role, entering the appropriate password, then clicking **Login**.
2. Click the **Setup** link at the top right part of the window. The Overview of Setup page appears.
3. Click the **Management Connectors** link on the left side of the window. The Management Connectors page appears, which shows the installed connectors.
4. Click on the **Configure** icon associated with the OMU Connector.
5. Click the **General** tab.
6. Correct the OMU Web Service Username and OMU Web Service Password fields and click **OK**.

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 4.3, "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 when the SSL certificate in the certificate store does not match the SSL certificate that the OMU web service provides.

Solution

You need to import the SSL certificate from the OMU web service into the certificate store. See [Section 2.3.3, "Adding Signed Certificates to Enterprise Manager"](#) for details on setting up Oracle Enterprise Manager with the OMU SSL certificate.

Missing certdb.txt File

Cause

The OMU web service is configured to use SSL, but the certdb.txt file that contains the SSL information is missing.

Solution

You need to import the SSL certificate from the OMU web service into the wallet manager. See [Section 2.3.3, "Adding Signed Certificates to Enterprise Manager"](#) 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, enter the following command:

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

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, start the web service as specified in [Section 2.3.2.3, "Running the Web Service on Windows"](#).

Invalid Port Number

Cause

The port number in the URL is incorrect.

Solution

Perform the steps specified in [Section 5.2, "Using the Correct URL for OMU Web Service Operations"](#) to identify the correct URL, including the port number.

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 by entering a user name with a 'Super Administrator' role, entering the appropriate password, then clicking **Login**.
 3. Click the **Setup** link at the top right part of the window. The Overview of Setup page appears.
 4. Click the **Management Connectors** link on the left side of the window. The Management Connectors page appears, which shows the installed connectors.
 5. Click on the **Configure** icon associated with the HP OMU Connector. This invokes edit mode, enabling you to configure the connector.
 6. Change the host name to the IP address in the URL specified for the applicable operations. You will minimally need to change the `getNewAlerts`, `getUpdatedAlerts`, and `acknowledgeAlerts` operations.
 7. Click **OK**.

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 by entering a user name with a 'Super Administrator' role, entering the appropriate password, then clicking **Login**.
2. Click the **Setup** link at the top right part of the window. The Overview of Setup page appears.
3. Click the **Management Connectors** link on the left side of the window. The Management Connectors page appears, which shows the installed connectors.
4. Click on the **Configure** icon associated with the HP OMU Connector. This invokes edit mode, enabling you to configure the connector.
5. Verify that the hostname/IP address specified in the URL for the `getNewAlerts`, `getUpdatedAlerts`, and `acknowledgeAlerts` operations are correct.
6. 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 URL Path

Cause

The URL hostname/IP address and port numbers are correct, but there is an invalid path.

Solution

Perform the steps specified in [Section 5.2, "Using the Correct URL for OMU Web Service Operations"](#) to identify the correct URL, including the port number.

Default Mappings

This appendix describes the default mappings between the Enterprise Manager alert data fields and the HP Operations Manager message fields. The data is formatted in XML, and the XSLT files transform the data from one format to another.

For information on customizing the field mappings, see [Section 4.1, "Customizing Mappings"](#).

This appendix discusses the following topics:

- [Data Translation Files](#)
- [createEvent Operation](#)
- [updateEvent Operation](#)
- [getNewAlerts and getUpdatedAlerts Operations](#)

Data Translation Files

XML Style Sheet (XSL) files contain the mappings between the two systems. These files are located in the following directory:

```
$ORACLE_HOME/sysman/connector/HPOMU_Connector
```

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

Table A-1 XSL Files that Perform Mappings

File	Description
<code>createEvent_request.xml</code>	Transforms the Oracle Enterprise Manager alert data to the HP Operations Manager message format for the <code>createEvent</code> operation.
<code>updateEvent_request.xml</code>	Transforms the Oracle Enterprise Manager alert data to the HP Operations Manager message format for the <code>updateEvent</code> operation.
<code>getNewAlerts_response.xml</code>	Transforms data in the HP Operations Manager message format to the Oracle Enterprise Manager alert format. This file is invoked to transform the response for the <code>getNewAlerts</code> poll operation.
<code>getUpdatedAlerts_response.xml</code>	Transforms data in the HP Operations Manager message format to the Oracle Enterprise Manager alert format. This file is invoked to transform the response for the <code>getUpdatedAlerts</code> poll operation.

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

createEvent Operation

The Oracle Enterprise Manager Connector Framework invokes the `createEvent` operation whenever an alert is generated in Oracle Enterprise Manager and there is a notification rule configured to invoke the OMU connector. `createEvent_request.xml` is invoked during the process to transform the data from Oracle Enterprise Manager format to OMU message format. [Table A-2](#) lists the default field mappings between the HP Operations Manager message and the Oracle Enterprise Manager alert.

Table A-2 *createEvent Operation Mappings*

OMU Event Attribute	OMU Attribute Type	Req'd?	Oracle Enterprise Manager Alert Attributes	Value
Message Text	String	Yes	Values from the alert context are listed in angle brackets in the Value column.	Received alert reported by Oracle Enterprise Manager: Collection Time — <Collection Time> * Key Values — <KeyValues> Message — <Message> Metric Column — <MetricColumn> Metric Name — <MetricName> * Notification Rule — <NotificationRuleName> Target Name — <TargetName> Target Type — <TargetType> Severity — <Severity> * URL — <EventPageURL> Fields preceded with an asterisk (*) are only present if the corresponding Enterprise Manager alert field has data.
Severity	String	Yes	Conditional based on the Oracle Enterprise Manager severity.	Set to Normal if Oracle Enterprise Manager Severity is Information. Set to Critical if Oracle Enterprise Manager Severity is Critical. Set to Warning for all other Oracle Enterprise Manager Severity values.
Message Group	String	Yes	Value defaulted.	OracleEnterpriseManager
Object	String	Yes	Set to the target name specified in the Oracle Enterprise Manager alert data.	<TargetName>
Node	String	Yes	Value defaulted.	OracleEnterpriseManager
Application	String	Yes	Set to the target name specified in the Oracle Enterprise Manager alert data.	<TargetType>

updateEvent Operation

The Oracle Enterprise Manager Connector Framework invokes the `updateEvent` operation whenever an alert is generated in Oracle Enterprise Manager and there is a notification rule configured to invoke the OMU connector. `updateEvent_request.xml` is invoked during the process to transform the data from Oracle

Enterprise Manager format to OMU message format. [Table A-3](#) lists the default field mappings between the HP Operations Manager message and the Oracle Enterprise Manager alert.

Table A-3 *updateEvent Operation Mappings*

OMU Event Attribute	OMU Attribute Type	Req'd?	Oracle Enterprise Manager Alert Attributes	Value
Message text	String	Yes	Values from the alert context are listed in angle brackets in the Value column.	Received alert reported by Oracle Enterprise Manager: Collection Time — <Collection Time> * Key Values — <KeyValues> Message — <Message> Metric Column — <MetricColumn> Metric Name — <MetricName> * Notification Rule — <NotificationRuleName> Target Name — <TargetName> Target Type — <TargetType> Severity — <Severity> * URL — <EventPageURL> Fields preceded with an asterisk (*) are only present if the corresponding Enterprise Manager alert field has data.
Severity	String	Yes	Conditional based on the Oracle Enterprise Manager severity.	Set to Normal if Oracle Enterprise Manager Severity is Information. Set to Critical if Oracle Enterprise Manager Severity is Critical. Set to Warning for all other Oracle Enterprise Manager Severity values.
Message Group	String	Yes	Value defaulted.	OracleEnterpriseManager
Object	String	Yes	Set to the target name specified in the Oracle Enterprise Manager alert data.	<TargetName>
Node	String	Yes	Value defaulted.	OracleEnterpriseManager
Application	String	Yes	Set to the target name specified in the Oracle Enterprise Manager alert data.	<TargetType>

getNewAlerts and getUpdatedAlerts Operations

The Oracle Enterprise Manager Connector Framework invokes the `getNewAlerts` operation on the poll cycle interval configured for the OMU connector. One step in the operation is to send a request to the HP Operations Manager web service for new alerts in HP Operations Manager. When the response is returned, the `getNewAlerts_response.xml` file is invoked to transform the HP Operations Manager message data to the format required to create a new alert in Oracle Enterprise Manager.

After the `getNewAlerts` operation is complete, the Enterprise Manager Connector Framework performs the `getUpdatedAlerts` operation. Like the `getNewAlerts` operation, it sends a request to the HP Operations Manager web service for updated alerts. When the response comes back, the `getUpdatedAlerts_response.xml` file

is invoked to transform the HP Operations Manager message data to the format required to update the alert in Oracle Enterprise Manager.

Table A-4 lists the default field mappings between the HP Operations Manager message and the Oracle Enterprise Manager alert. These mappings are applicable to new and updated alerts, and must always be the same.

Table A-4 *getNewAlerts and getUpdatedAlerts Operation Mappings*

Oracle Enterprise Manager Event Attribute	OMU Attribute Type	Req'd?	Oracle Enterprise Manager Alert Attributes	Value
key1	String	Yes	Set to the HP Operations Manager message identifier.	<Identifier>
message	String	Yes	Values from the alert context are listed in angle brackets in the Value column.	Severity — <Severity> Message Group — <MessageGroup> Node — <Node> Object — <Object> Application — <Application> Service Name — <ServiceName> Message Key — <MessageKey>
comment	String	Yes	Set to message text.	<MessageText>
producerID	String	No	Value defaulted.	OMU
targetName	String	Yes	Set to the node that reported the problem.	<Node>
TargetType	String	No	Value defaulted.	omu_managed_node
username	String	No	Value defaulted to no value.	
password	String	No	Value default to no value.	
metricName	String	Yes	Set to the message group the alert belongs to.	<MessageGroup>
category	String	Yes	Set to the message group.	<MessageGroup>
value	String	Yes	Set to the transaction identifier. This is not part of the message data. It is provided by the web service for tracking transactions.	<transactionID>
severity	String	Yes	Conditional based on the HP Operations Manager severity and on the ResolvedBy field.	Set to Clear if the ResolvedBy field is not empty. Set to Informational if the ResolvedBy field is empty and the HP Operations Manager Severity is Normal. Set to Critical if the ResolvedBy field is empty and the HP Operations Manager Severity is Major or Critical. Set to Warning if the ResolvedBy field is empty and any other HP Operations Manager Severity value is specified.

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 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 machine.
 - 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 machine 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**.

- 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.
4. 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.
 5. 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 4.
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.

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