HP Operations Manager on Linux

Installation Guide

Software Version: 9.01

Red Hat Enterprise Linux 5.0 Advanced Platform

Edition 2

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Printing History

The printing date and part number of the manual indicate the edition of the manual. The printing date will change when a new edition is printed. Minor changes may be made before a reprint without changing the printing date. The part number of the manual will change when extensive changes are made.

Manual updates may be issued between editions to correct errors or to document product changes. To ensure that you receive the latest edition of the manual, you should subscribe to the product-support service. See your HP sales representative for details.

First Edition:	HPOM 9.01	August 2009
Second Edition:	HPOM 9.01	September 2009

Conventions

The following typographical conventions are used in this manual:

Table 1 Typographical Conventions

Font	Meaning	Example
Italic	Book or manual titles, and manpage names	See the *HPOM Administrator's Reference* and the *opc(1M)* manpage for more information.
	Emphasis	You *must* follow these steps.
	Variable that you must supply when entering a command	At the prompt, enter **`rlogin`** ***`username`***.
	Parameters to a function	The *`oper_name`* parameter returns an integer response.
Bold	New terms	The **HTTPS agent** tracks...
`Computer`	Text and other items on the computer screen	The following system message displays: `Are you sure you want to remove current group?`
	Command names	Use the `grep` command ...
	Function names	Use the `opc_connect()` function to connect...
	File and directory names	`/opt/OV/bin/OpC/`
	Process names	Check to see if `opcmona` is running.
	Window names	In the `Add Logfile` window...
	Menu name followed by a colon (`:`) means that you select the menu, then the item. When the item is followed by an arrow (`->`), a cascading menu follows.	Select `Actions: Filtering -> All Active Messages` from the menu bar.

Table 1 Typographical Conventions (Continued)

Font	Meaning	Example
`Computer Bold`	Text that you enter	At the prompt, enter **`ls -l`**
Keycap	Keyboard keys	Press **Return**.
`[Button]`	Buttons in the user interface	Click `[OK]`.

HPOM Documentation Map

HP Operations Manager (HPOM) provides a set of manuals and online help that help you to use the product and to understand the concepts underlying the product. This section describes what information is available and where you can find it.

Electronic Versions of the Manuals

All the manuals are available as Adobe Portable Document Format (PDF) files in the documentation directory on the HPOM product CD-ROM.

With the exception of the *HPOM Software Release Notes*, all the manuals are also available in the following HPOM web-server directory:

`http://<management_server>:3443/ITO_DOC/<lang>/manuals/*.pdf`

In this URL, <*management_server*> is the fully qualified hostname of your management server, and <*lang*> stands for your system language, for example, `C` for the English environment.

Alternatively, you can download the manuals from the following website:

`http://support.openview.hp.com/selfsolve/manuals`

Watch this website regularly for the latest edition of the *HPOM Software Release Notes*, which is updated every two to three months with the latest news (for example, additionally supported operating system versions, the latest patches and so on).

HPOM Manuals

This section provides an overview of the HPOM manuals and their contents.

Table 2 HPOM Manuals

Manual	Description	Media
HPOM Installation Guide for the Management Server	Designed for administrators who install HPOM software on the management server and perform the initial configuration. This manual describes the following: • Software and hardware requirements • Software installation and de-installation instructions • Configuration defaults	PDF only
HPOM Concepts Guide	Provides you with an understanding of HPOM on two levels. As an operator, you learn about the basic structure of HPOM. As an administrator, you gain an insight into the setup and configuration of HPOM in your own environment.	PDF only
HPOM Administrator's Reference	Designed for administrators who install HPOM on the managed nodes and are responsible for HPOM administration and troubleshooting. Contains conceptual and general information about the HPOM managed nodes.	PDF only
HPOM HTTPS Agent Concepts and Configuration Guide	Provides platform-specific information about each HTTPS-based managed node platform.	PDF only
HPOM Reporting and Database Schema	Provides a detailed description of the HPOM database tables, as well as examples for generating reports from the HPOM database.	PDF only
HPOM Java GUI Operator's Guide	Provides you with a detailed description of the HPOM Java-based operator GUI and the Service Navigator. This manual contains detailed information about general HPOM and Service Navigator concepts and tasks for HPOM operators, as well as reference and troubleshooting information.	PDF only

Table 2 HPOM Manuals (Continued)

Manual	Description	Media
Service Navigator Concepts and Configuration Guide	Provides information for administrators who are responsible for installing, configuring, maintaining, and troubleshooting the HP Operations Service Navigator. This manual also contains a high-level overview of the concepts behind service management.	PDF only
HPOM Software Release Notes	Describes new features and helps you: • Compare features of the current software with features of previous versions. • Determine system and software compatibility. • Solve known problems.	PDF only
HPOM Firewall Concepts and Configuration Guide	Designed for administrators. This manual describes the HPOM firewall concepts and provides instructions for configuring the secure environment.	PDF only
HPOM Web Services Integration Guide	Designed for administrators and operators. This manual describes the HPOM Web Services integration.	PDF only
HPOM Security Advisory	Designed for administrators. This manual describes the the HPOM security concepts and provides instructions for configuring the secure environment.	PDF only
HPOM Server Configuration Variables	Designed for administrators. This manual contains a list of the HPOM server configuration variables.	PDF only

Additional HPOM-Related Products

This section provides an overview of the HPOM-related manuals and their contents.

Table 3 Additional HPOM-Related Manuals

Manual	Description	Media
HP Operations Manager on Linux Developer's Toolkit If you purchase the HP Operations Manager on Linux Developer's Toolkit, you receive the full HPOM documentation set, as well as the following manuals:		
HPOM Application Integration Guide	Suggests several ways in which external applications can be integrated into HPOM.	PDF
HPOM Developer's Reference	Provides an overview of all the available application programming interfaces (APIs).	PDF

HPOM Online Information

The following information is available online.

Table 4 HPOM Online Information

Online Information	Description
HPOM Java GUI Online Information	HTML-based help system for the HPOM Java-based operator GUI and Service Navigator. This help system contains detailed information about general HPOM and Service Navigator concepts and tasks for HPOM operators, as well as reference and troubleshooting information.
HPOM Manpages	Manpages available online for HPOM. These manpages are also available in HTML format. To access these pages, go to the following location (URL) with your web browser: `http://<management_server>:3443/ITO_MAN` In this URL, the variable <*management_server*> is the fully qualified hostname of your management server. Note that the manpages for the HP Operations HTTPS agents are installed on each managed node.

HPOM Online Help

This preface describes online documentation for the HP Operations Manager (HPOM) Java operator graphical user interface (GUI).

Online Help for the Java GUI and Service Navigator

The online help for the HP Operations Manager (HPOM) Java graphical user interface (GUI), including Service Navigator, helps operators to become familiar with and use the HPOM product.

Types of Online Help

The online help for the HPOM Java GUI includes the following information:

- **Tasks**

  Step-by-step instructions.

- **Concepts**

  Introduction to the key concepts and features.

- **References**

  Detailed information about the product.

- **Troubleshooting**

  Solutions to common problems you might encounter while using the product.

- **Index**

  Alphabetized list of topics to help you find the information you need, quickly and easily.

Viewing a Topic

To view any topic, open a folder in the left frame of the online documentation window, then click the topic title. Hyperlinks provide access to related help topics.

Accessing the Online Help

To access the help system, select `Help: Contents` from the menu bar of the Java GUI. A web browser opens and displays the help contents.

NOTE To access online help for the Java GUI, you must first configure HPOM to use your preferred browser.

1 Installation Requirements for the Management Server

In This Chapter

This chapter describes how to select the correct management server for HP Operations Manager (HPOM).

Check your system parameters before running the HPOM installation script. This chapter helps you to set the system parameters.

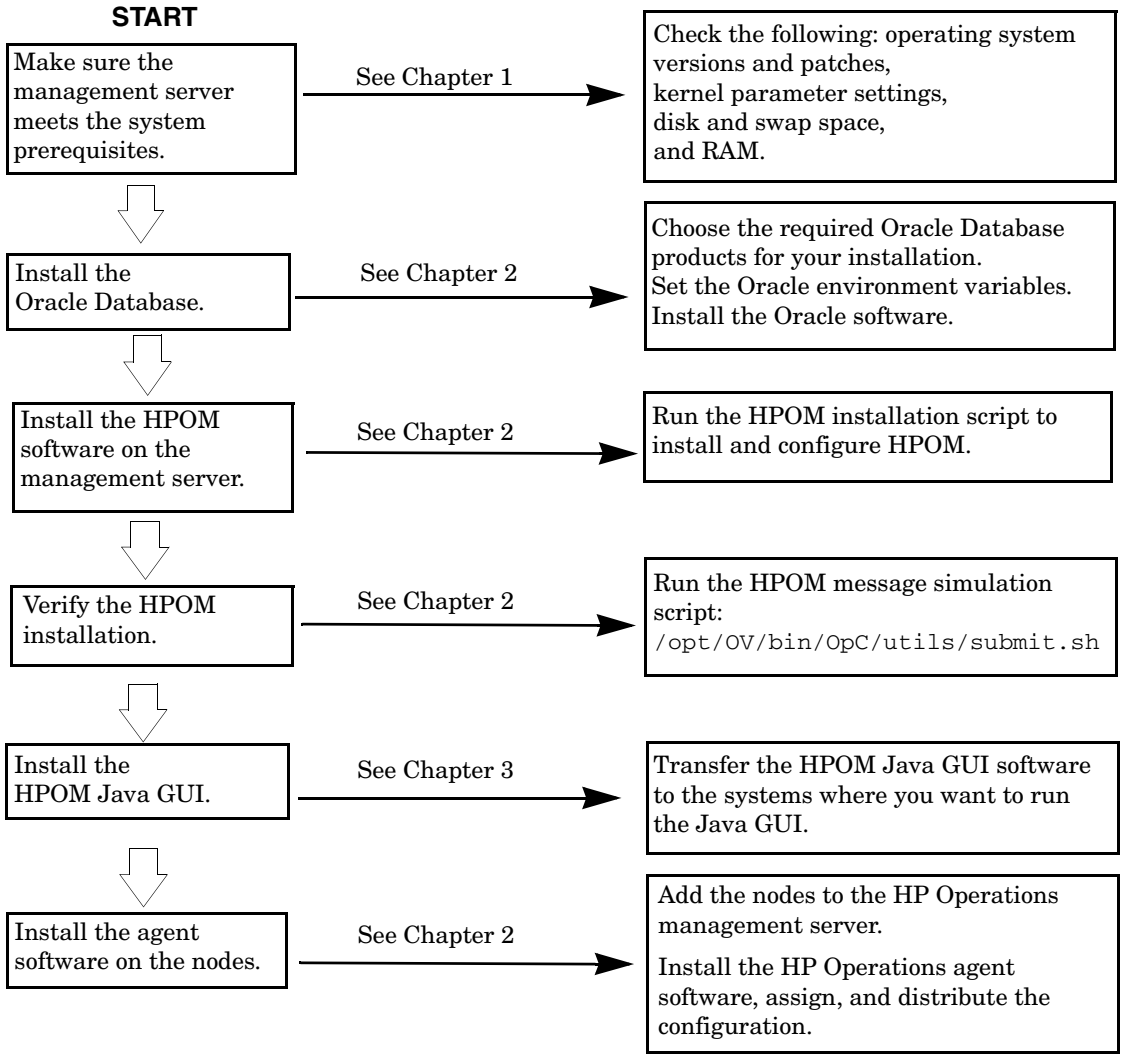
Choosing the Correct Installation Path

Before you start to install HPOM, you need to choose an installation path that best suits your requirements. For a description of the standard HPOM installation tasks, see Table 1-1.

Table 1-1 Choosing the Correct Installation and Upgrade Path

Task	Requirement	Reference
1. Install HPOM 9.00 for UNIX on the management server.	1. Have management server hardware that conforms to *at least* the minimum system requirements for the HP Operations management server.	This Chapter. Chapter 2, "Installing HPOM on the Management Server," on page 41
2. Install the HPOM Java GUI.	1. Have HPOM 9.00 installed on the management server. 2. Install the HPOM Java GUI software on the systems where the HPOM Java GUI will be running.	Chapter 3, "Installing the Java Operator GUI," on page 79
3. Install HPOM in a Red Hat Cluster Suite Environment	1. Install the HPOM filesets on the first RHEL Cluster node. 2. Install HPOM on any additional RHEL Cluster nodes.	Chapter 9, "Installing HPOM in a Red Hat Cluster Suite Environment," on page 201
4. Install or update HP Operations agent software on the managed nodes.	1. Have HPOM installed on the management server. 2. Add the nodes to the HP Operations management server. 3. Install the HP Operations agent software, assign and distribute the configuration.	*HPOM Administrator's Reference* *HPOM HTTPS Agent Concepts and Configuration Guide*

Figure 1-1 Summary of Standard HPOM Installation Tasks



Verifying the Installation Requirements

The HP Operations management server is the controlling element of the entire HPOM system, so you should carefully select the right system to host the management server. Before selecting a system, calculate how many of the following it will have:

- ❏ Concurrent operators
- ❏ Messages processed
- ❏ Monitored nodes

Migrating the management server to a larger system at a later date requires considerable effort, particularly if your configuration is large and includes hundreds or thousands of managed nodes.

Before installing HPOM, see the following topics:

- ❏ “Hardware Requirements” on page 30
- ❏ “Software Requirements” on page 36

Plan your HPOM installation carefully. If you have never used HPOM before, you may want to install and configure it in an isolated test environment before moving it into your production environment. This isolation enables you to gain experience with HPOM and design a configuration that represents a reasonable test of your use of HPOM.

For more information about the HPOM installation script, see Chapter 2, “Installing HPOM on the Management Server.”

Hardware Requirements

The system you select as the management server *must* meet the following hardware requirements:

- ❏ Red Hat Enterprise Linux 5.0 Advanced Platform
- ❏ Additional disk space
- ❏ Additional RAM
- ❏ Swap space (see Table 1-2 on page 33)
- ❏ DVD-ROM drive (optional and can be mounted remotely)

NOTE It is strongly recommended that you use a multiple-CPU system for the HP Operations management server, with the possibility to add additional CPUs, RAM, and disk space to the system at a later time if needed.

You can install the Oracle Database on a dedicated system. For further information, see “Setting Up HPOM with a Remote/Manual Oracle Database” on page 111.

Required Disk Space

Before selecting a system to host the management server, review the following questions:

1. **How much disk space is available on the system?**

   The total required disk space for the HP Operations management server is approximately 20 GB.

   Review the disk requirements of any other applications, such as HP Performance Manager, that you want to install on the management server in the future.

   If you do not have enough disk space in the file tree, you can use one of the following methods to solve the problem:

   - ❏ Mount a dedicated volume for the directory.
   - ❏ Make the directory a symbolic link to a file system with enough disk space.

   For details about the HPOM directory structure, see Chapter 5, “Directory Structure on the Management Server.”

2. **How fast is the average disk I/O time?**

   The disk I/O time affects the application start-up time and the swapping activities. It is recommended that you distribute the database, the HPOM binaries, and the runtime data over several disks. To maintain optimum performance, do not locate swap space on the same disks as the HPOM binaries and the Oracle Database.

Required RAM and Swap Space

The amount of available RAM and swap space determines whether applications can run, and also how fast they can run. The more RAM you make available, the better application performance is achieved. The application performance improves because increased RAM reduces the swapping and paging activities of the system.

Before selecting a system to serve as your management server, review the following question:

1. **How much memory (RAM) is installed on the system?**

   The HP Operations management server requires at least 2 GB of dedicated RAM. In addition, you will need approximately 16–20 MB of RAM, plus 6 MB per 1000 active messages for every HPOM Java GUI session, including Service Navigator.

   The actual RAM requirements depend heavily on your production environment and mode of use. The factors that affect the RAM requirements include: the number and frequency of HPOM messages, the number of operators working in parallel, and the number of managed nodes.

   Memory consumption of the Java GUI needed on the server and the display station may be approximately computed. For more information, see the *Performance Guide*.

2. **Does the system provide enough swap space?**

   In most cases, you need a total of 4 GB of swap space on the management server system.

NOTE Use device swap space rather than file system swap space for improved system performance.

Individual requirements are listed in Table 1-2 on page 33.

Table 1-2 Minimum Swap Space Required for HPOM Installation on the Management Server

Product	Required Swap Space (MB)
RHEL Operating System	1024
Oracle Database	2048[a]
HP Operations Manager	1024[b]
Approximate Total	**4096**

a. The value recommended by Oracle is equal to the system physical memory (RAM) or 2 GB, whichever is greater.
b. This value depends on the number of GUIs running in parallel, and on the number of active and acknowledged messages. For each additional operating Java GUI and Service Navigator, about 16-20 MB of RAM or swap space is required, plus 6 MB per 1000 active messages.

To check your currently available swap space, run the command:

```
/usr/bin/free
```

To achieve the best performance and to avoid a disk access bottleneck, *do not* locate the database and the swap space on the same physical disk.

3. **How many HPOM users will work at the same time?**

   The number of users influences the number of parallel GUIs running on the management server. For each additional operating Java GUI and Service Navigator, about 16-20 MB of RAM or swap space is required, plus 6 MB per 1000 active messages.

4. **How many background graphics are integrated into Service Navigator?**

   Background graphics can also slow down the system by using excessive amounts of RAM.

Reserve enough physical memory to accommodate all the virtual memory needs of HPOM. This extra memory will eliminate the need for process swapping, and will result in the best possible performance. The performance of HPOM can decrease if swapping becomes necessary.

Performance Requirements

The speed with which HPOM processes messages and the Java GUI performance both depend on the available CPU time as well as the overall CPU power. Therefore, consider the demands of other installed applications on CPU time, disk access, and RAM or swap space usage.

NOTE

It is strongly recommended that you use a multiple-CPU system for the management server system, especially if you plan to run multiple Java GUIs.

Because the throughput of LAN packets can affect the management server performance, you *should not* use the management server system for other purposes, such as NFS, NIS (YP), DNS, and so on. However, configuring the HP Operations management server system as a secondary Domain Name Server (DNS) can help to increase the speed of name lookups.

Table 1-3 Processor Requirements

Processor Model	Required CPU
x86-64 compatible	2 GHz+

Intersystem Connection Requirements

The connection between the managed nodes and the HP Operations management server affects the time HPOM needs to install the HPOM software, the time it takes to configure the software on the managed nodes, and the time needed to respond to problems.

Before setting up the connection between the managed nodes and the HP Operations management server, review the following questions:

1. **Is the system accessible all the time (at least while HPOM operators are working)?**

   The management server should be accessible at least while the managed nodes are operating.

   If it is *not*, the following inconveniences can occur:

   a. Automatic actions that do not run directly on the local managed node cannot be performed while the management server is down.

   b. When the management server is restarted, the managed nodes forward all locally buffered HPOM messages to the management server. If hundreds or thousands of messages need to be processed, this will have a significant effect on the performance of HPOM.

2. **Is the system located centrally as regards network connectivity and network speed?**

   To minimize the HPOM response time, a fast network (LAN) should be available between the management server system and its managed nodes. For example, the management server should not be connected by a serial line or X.25 with all the other systems networked in a LAN.

3. **Are the display stations of the HPOM operators and the management server connected by fast lines?**

   Having fast lines between the management server and the operator workstations is strongly recommended.

Software Requirements

Before you install HPOM, the following software *must* be correctly installed on the management server.

Operating System

Table 1-4 shows on which operating system version the HP Operations management server is supported.

Table 1-4 Supported Operating System Version for the Management Server

Operating System	Platform	Supported Operating System Version
Red Hat Enterprise Linux	Advanced Platform	5.0

NOTE HPOM 9.00 on Red Hat Enterprise Linux is a 64-bit application. It supports integrations with 64-bit applications on the API level.

Kernel Parameters

Several of the kernel parameters must be increased on the HP Operations management server because the operating system default values are too small. The HPOM installation utility `ovoinstall` checks your current settings.

If you want to familiarize yourself upfront, you can run `ovoinstall`.

Table 1-5 Minimum Kernel Settings Required for HPOM Installation on the Management Server

Kernel Parameter	Value
kernel.shmall	2097152
kernel.shmmax	536870912
kernel.shmmni	4096
kernel.sem	250 32000 100 128
fs.file-max	65536
net.ipv4.ip_local_port_range	1024 65000
net.core.rmem_default	4194304
net.core.wmem_default	262144
net.core.rmem_max	4194304
net.core.wmem_max	262144

Operating System and Environment Patches

The HPOM installation script `ovoinstall` checks the operating system patches that are currently installed on the HP Operations management server.

IMPORTANT Before you install any of the required operating system patches, make sure you have read the `README` file supplied with the patch.

Check the latest edition of the *HPOM Software Release Notes* for last-minute documentation about the required patches.

This document is available at the following location:

`http://support.openview.hp.com/selfsolve/manuals`

At the time of installation, the documented patches may be superseded. Use the latest patches from the following location:

`http://www.itrc.hp.com`

IMPORTANT The HP Operations management server has been tested with the patch revisions listed either in the latest *HPOM Software Release Notes*, or on the `http://www.itrc.hp.com` website. Patches with higher revisions should also be suitable but *have not* been tested.

Oracle Database

HPOM 9.00 is certified to work with the Oracle Database 11g Release 1 Enterprise or Standard Edition with 11.1.0.7 Patch Set for the Oracle Database Server for Red Hat Enterprise Linux.

For information about the support of later versions of Oracle, see the latest edition of the *HPOM Software Release Notes*.

If you have an existing Oracle Database and want to verify which Oracle products are installed, use the Oracle Universal Installer to view the installed Oracle products:

1. Switch to the `oracle` user:

   ```
   su - oracle
   ```

2. Run the Oracle Universal Installer:

   ```
   $ORACLE_HOME/oui/bin/runInstaller
   ```

3. In the Oracle Universal Installer Welcome window, click **Installed Products...** to view the installed Oracle products.

Supported Agent Platforms

For a list of platforms and operating systems supported on HP Operations agents and the HP Performance Agent support on the managed nodes, see the *HPOM Software Release Notes*, which is available at the following location:

`http://support.openview.hp.com/selfsolve/manuals`

NOTE HP Operations agents and the HP Performance Agent can also be installed on Storage Area Network (SAN) attached disks.

2 Installing HPOM on the Management Server

In This Chapter

This chapter explains how to do the following:

- ❏ Install HP Operations Manager (HPOM) for the first time on the management server.
- ❏ Set up the Oracle Database for use with HPOM.
- ❏ Reconfigure the HPOM software.

NOTE The Operations HTTPS agent software is automatically installed during the installation of the HPOM software on the HP Operations management server.

Before You Install HPOM

Before installing HPOM, make sure that your system meets the following prerequisites:

- ❏ Red Hat Enterprise Linux operating system *must* be installed.
- ❏ Kernel parameters on the management server *must* be adapted. See “Verifying the Installation Requirements” on page 29.
- ❏ Red Hat Enterprise Linux operating system patches *must* be installed.
- ❏ Sufficient disk space *must* be available in the right partitions of the file system. For more information, see “Required Disk Space” on page 31.
- ❏ `xinetd` *must* be installed.
- ❏ Input and output data for multiple language support *must* be configured if you use any non-ASCII character. For more information, see “Configuring Input/Output for Multiple Language Support” on page 44.

After the prerequisites have been met, you can start with the HPOM installation.

Configuring Input/Output for Multiple Language Support

If you consider using any non-ASCII character, you must configure Input/Output for multiple language support to allow the use of UTF-8. However, this configuration is recommended even if you use only English characters.

To configure Input/Output for multiple language support, follow these steps:

1. Depending on the language, set locales on the management server:

   - ❏ For American English, the following variables can be used:

     ```
     export LANG=en_US.UTF-8
     export LC_ALL=en_US.UTF-8
     ```

   - ❏ For other languages, make sure that you choose a locale that uses the UTF-8 character set, for example:

     ```
     en_US.UTF-8
     es_ES.UTF-8
     ja_JP.UTF-8
     sl_SI.UTF-8
     ```

NOTE

The LANG variable will determine the language of HPOM messages, templates, and uploaded configuration.

If some of the contents are not available for the chosen locale, HPOM will default to the English contents instead.

2. Set locales on the client system:

   - ❏ Windows XP:

     Select **Control Panel: Date, Time, Language, and Regional Options: Regional and Language Options**. The Regional and Language Options window appears.

     Click the **Advanced** tab, and select the **65001 (UTF-8)** check box in Code page conversion tables.

NOTE For a detailed procedure, see the Microsoft documentation.

- ❏ Linux:

  Make sure that you set locales to a UTF-8 version in the same way as for the management server. To find the appropriate UTF-8 suffix, use `locale -a`.

3. Set up the console or the terminal program to accept UTF-8.

   Use only fonts that conform to the Unicode standard (for example, Lucida Console).

Installing HPOM

Before installing HPOM, make sure that your system meets all the prerequisites detailed in Chapter 1, “Installation Requirements for the Management Server.”

To install HPOM, complete these tasks:

- ❏ Task 1: “Installing and Verifying an Oracle Database” on page 47.
- ❏ Task 2: “Installing the HPOM Software on the Management Server System” on page 58
- ❏ Task 3: “Starting HPOM and Verifying the Installation” on page 72

Installing and Verifying an Oracle Database

For operation with HPOM, install and set up the Oracle Database 11g Release 1 Enterprise or Standard Edition with 11.1.0.7 Patch Set for the Oracle Database Server for Red Hat Enterprise Linux.

For more detailed instructions than those provided in this section, or for non-standard installations, see the documentation supplied with the Oracle Database product.

NOTE Oracle 11g is a product of the Oracle Corporation and *cannot* be purchased directly from Hewlett-Packard.

Required Oracle Products

A standalone HPOM system has the database and all the management server processes, including the user interface processes, running on the same system. However, if the database is installed on a different server than the HP Operations management server, you *must* additionally install the Oracle products on the management server as described in “Setting Up HPOM with a Remote/Manual Oracle Database” on page 111. These products enable remote access to the Oracle Database.

Using an Existing Oracle Database

IMPORTANT HPOM can be installed and configured using the existing database, but it requires its own database instance. Although it is possible to configure HPOM with an existing instance, this is *not* supported.

If you want to use an existing Oracle Database, do the following:

1. See the Oracle product documentation to make sure that the database is compatible with Oracle version 11g (11.1.0).
2. Make sure the Oracle environment variables are set as described in “Before You Install an Oracle Database” on page 49.
3. Continue with “Installing the HPOM Software on the Management Server System” on page 58.

Before You Install an Oracle Database

Before installing an Oracle Database on the management server, follow these steps:

1. Make sure that your system meets the hardware and software requirements listed in Chapter 1, “Installation Requirements for the Management Server.”

NOTE The dynamically linked Oracle environments are *not* supported.

2. Run `User Manager` as the `root` user, and create the `oracle` user with the following attributes:
   a. Create a UNIX group named **`dba`**.
      The group ID should be greater than 100.
   b. Create a UNIX group named **`oinstall`**.
      The group ID should be greater than 100.
   c. Create a UNIX user named **`oracle`**.
      The user ID should be greater than 100.
   d. Make the `oracle` user a member of the `oinstall` group as the primary group and `dba` as the secondary group.
   e. As the home directory of the `oracle` user, use:
      `/home/oracle`
3. Set `umask` to allow users to access the Oracle binaries:
   `umask 022`
4. Create the directories required by the Oracle installation:
   a. Create the Oracle home directory `ORACLE_HOME`:
      `mkdir -p /opt/oracle/product/<version>`
      In this instance, *<version>* is the Oracle Database version, 11.1.0.
      You can also choose a different directory for `ORACLE_HOME`, but you *must* use it consistently in all subsequent steps.

b. Create a base directory for the Oracle installation files:

mkdir -p /opt/oracle/oraInventory

You can also choose a different directory. If you do so, use the new directory consistently in all subsequent steps.

Change the ownership and set correct permissions by entering the following commands:

chown -R oracle:oinstall /opt/oracle/oraInventory

chmod -R 770 /opt/oracle/oraInventory

5. Change the ownership of the directories to `oracle:oinstall` by entering:

**chown -R oracle:oinstall /opt/oracle **
/opt/oracle/product /opt/oracle/product/*<version>*

In this instance, *<version>* is the Oracle Database version, 11.1.0.

6. Set the following Oracle environment variables in `/home/oracle/.profile` of the `oracle` user:

- **export ORACLE_BASE=/opt/oracle**

  This variable determines the location of the Oracle installation. The `/opt` subdirectory prefix is just an example. Replace it with the installation path you used for Oracle.

- **export ORACLE_HOME=$ORACLE_BASE/product/*<version>***

  In this instance, *<version>* is the Oracle Database version, 11.1.0.

  This variable determines the location and the version of the Oracle installation. This is the recommended setting. You can choose a different setting, if needed.

NOTE

The `export ORACLE_BASE=/opt/oracle` and `export ORACLE_HOME=$ORACLE_BASE/product/`*<version>* Oracle environment variables are no longer mandatory for the operation with HPOM.

- **export ORACLE_SID=openview**

This variable defines the name of the database you will create. The default setting is `openview`, but you can use a different setting if required.

- **`export ORACLE_TERM=hp`**

  This variable specifies the terminal definition resource file for an `xterm` terminal setting to be used with the Oracle installer and other Oracle tools.

  If you normally use `dtterm`, change the setting to `ORACLE_TERM=ansi`.

- **`export PATH=$PATH:$ORACLE_HOME/bin`**

  This variable sets the directories through which the system searches to find and execute commands.

7. Install the Oracle Database as described in the following section.

Installing an Oracle Database

This section describes how to install the Oracle Database 11g Release 1 with 11.1.0.7 Patch Set for the Oracle Database Server for Red Hat Enterprise Linux to use with HPOM.

The following procedure installs Oracle without creating the `openview` database. After installing the HPOM software, `ovoinstall` creates the `openview` database and configures the HPOM software as described in “Installing the HPOM Software on the Management Server System” on page 58.

NOTE Browse through this section before starting the installation. The order of the system prompts can slightly differ from the example described in “Installing and Verifying an Oracle Database Version 11g” on page 53. These slight variations do not indicate any problems with the installation.

Installing and Verifying an Oracle Database Version 11g

NOTE The Oracle11g Database Release 1 Enterprise Edition (64-bit) for the Red Hat Enterprise Linux is available on a DVD-ROM. This product, as well as all required Patch Sets, can also be downloaded from the Oracle web site.

To install Oracle 11g from the DVD-ROM, follow these steps:

1. During the Oracle installation, you will need to perform some steps as user `root` and some as user `oracle`. Open two terminal windows:

   a. Log on as the `root` user in the first terminal window, and as the `oracle` user in the second.

   b. Make sure that the *ORACLE_TERM* environment variable is set correctly. To check the setting, enter:

   ```
   echo $ORACLE_TERM
   ```

   c. Verify, and if necessary, set the *ORACLE_HOME* variable.

   For example:

   ```
   ORACLE_HOME=/opt/oracle/product/<version>
   ```

   In this instance, *<version>* is the Oracle Database version, 11.1.0.

   ```
   export ORACLE_HOME
   ```

   d. Set the `DISPLAY` environment variable:

   ```
   export DISPLAY=<nodename>:0.0
   ```

   In this instance, *<nodename>* is the name of your system.

NOTE On most RHEL systems, the disk is mounted automatically when you insert it into the disk drive. If the disk is not mounted automatically, follow step 2 to mount it.

2. As the `root` user, insert the appropriate disk into the disk drive, and enter the following command to mount the disk:

   # /bin/mount -o ro -t iso9660 /dev/cdrom /*<mount_point>*

   In this instance, *<mount_point>* is the disk mount point directory.

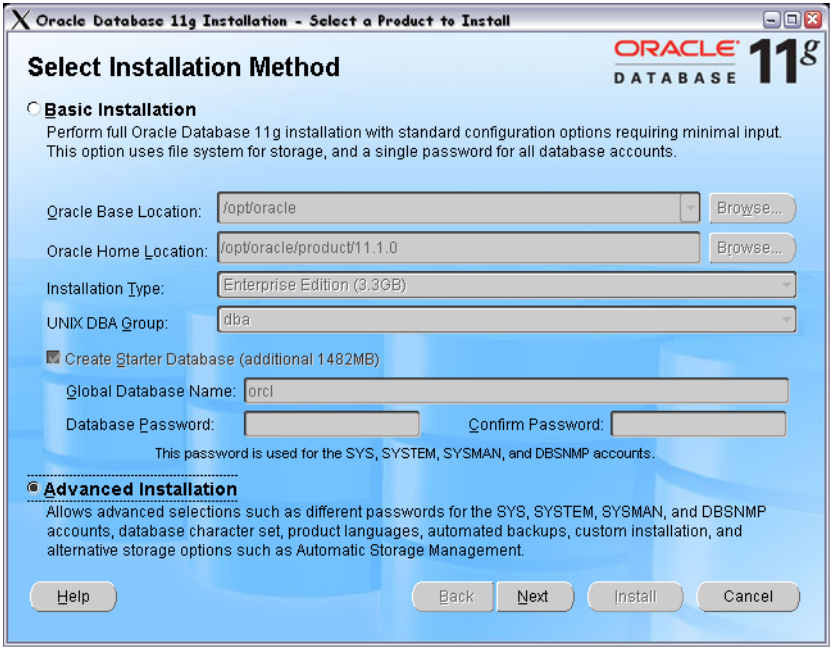
NOTE

It is recommended that you copy the contents of installation media to a hard disk.

3. As the `oracle` user, start the Oracle Universal Installer by entering the full path of the database directory on the installation media, which must be followed by the command:

   ./runInstaller

   When the Oracle Universal Installer is started, the Select Installation Method window opens.



Select the **Advanced Installation** check box, and then click **Next**.

The Specify Inventory directory and credentials window opens.

NOTE If an error message appears indicating that the inventory location could not be created, you can safely ignore it.

4. Make sure that the `/opt/oracle/oraInventory` path is given in the Specify Inventory directory and credentials window, then click **Next**.

   The Select Installation Type window appears.

5. In the Select Installation Type window, select **Enterprise Edition** or **Standard Edition** check box according to your needs or your Oracle licence agreement, and click **Next**.

   The Install Location window opens.

NOTE If you will be running a non-English HP Operations management server, you can add languages by clicking the **Product Languages...** button, and selecting languages from the list. The default language is English.

6. If you have previously set all Oracle variables properly, click **Next** in the Install Location window.

   The Product-Specific Prerequisite Checks window appears.

7. In the Product-Specific Prerequisite Checks window, the result of checking requirements appears. If there were no problems reported, click **Next**.

NOTE If a problem report message appears, check all the requirements and set them accordingly.

   The Select Configuration Option window opens.

8. In the Select Configuration Option window, select the **Install Software Only** check box, and then click **Next**.

   The Privileged Operating System Groups window appears.

9. In the Privileged Operating System Groups window, click **Next**.

   The Summary window opens.

10. In the Summary window, click **Install** to start the installation.

11. When the Execute Configuration scripts window appears, follow these steps:

    a. Open a terminal window.

    b. Log on as the `root` user.

    c. Run the following two scripts:

       `/opt/oracle/product/11.1.0/root.sh`

       `/opt/oracle/oraInventory/orainstRoot.sh`

       The following should be displayed for `/opt/oracle/product/11.1.0/root.sh`:

       ```
       The following environment variables are set as:
       ORACLE_OWNER= oracle
       ORACLE_HOME= /opt/oracle/product/<version>
       ```

       In this instance, `<version>` is the Oracle Database version, 11.1.0.

       Use the default values.

       The following should be displayed for `/opt/oracle/oraInventory/orainstRoot.sh`:

       ```
       Changing permissions of /opt/oracle/oraInventory to 770.
       Changing groupname of /opt/oracle/oraInventory to
       oinstall.
       The execution of the script is complete.
       ```

    d. Return to the Execute Configuration scripts window, and click **OK** to continue.

    The End of Installation window opens.

12. In the End of Installation window, you can verify installed Oracle products.

    Click **Exit** when you finish the verification.

13. Install 11.1.0.7 Patch Set or later for the Oracle Database Server for Red Hat Enterprise Linux. For detailed information about installing the Patch Set for the Oracle Database Server, see the Oracle product documentation.

Installing the HPOM Software on the Management Server System

This section describes how to install the HPOM software on the management server using the HPOM installation program, `ovoinstall`.

NOTE Red Hat Enterprise Linux 5.0 Advanced Platform is supported with HPOM on Linux 9.00.

ovoinstall Tool

The `ovoinstall` tool does the following:

- ❏ Collects all information required for the installation and configuration of the HPOM software. For more details, see “Preparing for the Installation of the HPOM Software Using ovoinstall” on page 59.
- ❏ Checks for installed operating system patches and lists patches that must still be installed.
- ❏ Checks kernel parameters and disk space requirements.
- ❏ Installs HPOM software on your management server system.
- ❏ Installs HTTPS agent software packages on the HP Operations management server system.
- ❏ Creates the `openview` database and configures the HPOM software.
- ❏ Installs the local agent (if enabled) and deploys the agent configuration to the local agent.
- ❏ Starts the HPOM processes.

IMPORTANT Do not install HPOM product packages directly using `rpm`, use `ovoinstall` for the administration of the HPOM software on the HP Operations management server.

Also, it is *not* possible to install HPOM from the software depot server.

Preparing for the Installation of the HPOM Software Using ovoinstall

To ensure that the HPOM installation goes smoothly, make sure that all the prerequisites are met.

Before running `ovoinstall`, decide whether you want to do the following:

- ❏ Start the database to start automatically every time you restart your system.
- ❏ Overwrite the database.

`ovoinstall` also prompts you for the following pieces of information:

- ❏ `ORACLE_HOME` value
- ❏ `ORACLE_BASE` value
- ❏ Destination for Oracle data files and index files
- ❏ Database language
- ❏ Passwords for the `opc_op` and `opc_report` database users
- ❏ Password for the existing database user `system`
- ❏ Oracle `DBA` user
- ❏ `ORACLE_SID` value
- ❏ Oracle Listener Name
- ❏ Oracle Listener Port
- ❏ Oracle Net Listener Alias

Running ovoinstall

Before running `ovoinstall`, verify whether you are using Network Information Services (NIS) for user or group management. This information is available from the entries for `passwd` and the group in the `/etc/nsswitch.conf` file.

If you are using NIS, keep the following in mind before running the `ovoinstall` installation script:

- Make sure that, if the `opc_op` user already exists in the NIS environment, it belongs to the `opcgrp` group. If it does not exist, the `opc_op` user will be created by the `ovoinstall` script during the HPOM installation.
- Make sure that the home directories of the `opc_op` and `oracle` users are accessible on the HP Operations management server, and that they are the same as on the NIS server.

If you are not using NIS for user or group management, `ovoinstall` automatically sets up both groups and users.

You can install the HPOM software on the management server in one of the following ways:

- **From a DVD-ROM**

  See “Preparing for the HPOM Software Installation from a DVD-ROM” on page 61.

- **Using DVD Images**

  See “Preparing for the HPOM Software Installation Using DVD Images” on page 61.

Preparing for the HPOM Software Installation from a DVD-ROM

To prepare for the HPOM software installation from a DVD-ROM, follow these steps:

1. Insert the HPOM server installation DVD into the DVD-ROM drive.
2. Create a directory to mount the DVD-ROM:

   mkdir /<*mount_point*>

   Example:

   ```
   mkdir /dvdrom
   ```

3. Mount the DVD-ROM:

   mount -r -F cdfs /dev/<*dvdrom_drive_name*> /<*mount_point*>

   For example, for a local DVD-ROM, you can enter:

   mount -r -F cdfs /dev/dsk/c0t2d0 /dvdrom

Preparing for the HPOM Software Installation Using DVD Images

To prepare for the HPOM software installation using DVD images, follow these steps:

1. Create a master directory to serve as a holder for the disk subdirectory. It can be, for example, the `/tmp` directory.
2. Create the `HPOMDVD` directory as a subdirectory of the master directory.
3. Store the content of the HPOM installation DVD in this directory.

Installing and Configuring the HPOM Software on the Management Server

Installing and configuring the HPOM software on the management server is a simple and fast procedure, partly owing to the list of possible options offered after each installation or each configuration step (see Table 2-1).

Table 2-1 Installation Procedure Options

Options	Description
`back`	Enables returning to the previous step.
`exit`	Allows you to stop the procedure.
`y|n`[a]	Offers a possibility to answer in the affirmative or in the negative.
`"default value"`	Allows you to accept the default value.
`?`	Allows you to gain more information.

a. This option is not available with all procedure steps.

To install and configure the HPOM software on the management server, complete the following steps:

1. Log on as the `root` user.
2. Make sure that the `LANG` environment variable is set to a UTF-8 locale. For more information about setting the environment variable, see “Configuring Input/Output for Multiple Language Support” on page 44.

   To check the setting, enter:

   ```
   echo $LANG
   ```

3. Start the HPOM installation:

   - ❏ If you are installing HPOM from a DVD-ROM, enter the following:

     /<*mount_point*>/ovoinstall

     In this instance, *<mount_point>* is a location where the HPOM installation DVD is mounted.

   - ❏ If you are installing HPOM using the DVD images, enter the following:

     /<*master_directory*>/HPOMDVD/ovoinstall

     For example, if you have created the `/tmp` directory as a master directory, you can start `ovoinstall` by entering the following:

     /tmp/HPOMDVD/ovoinstall

   The following text appears:

   ```
   Welcome to the HP Operations Manager for UNIX (HPOM)
   installation
   ```

   Press **Enter** to verify that you want the installation procedure to start.

   You are prompted to enter the HPOM software package repository location where all server packages are located.

4. Do one of the following:

   - ❏ Press **Enter** to accept the default repository location.
   - ❏ Enter the desired location.

   `ovoinstall` checks and installs the server setup package, which contains the server installation infrastructure.

   Press **Enter** to continue with checking the system.

5. `ovoinstall` checks the following during the system check:

   - ❏ `root` user
   - ❏ `LANG`
   - ❏ `NLS_LANG`
   - ❏ `umask`
   - ❏ Language
   - ❏ Kernel parameters

- ❏ RAM and swap space
- ❏ Free disk space
- ❏ Operating system patches
- ❏ Installed software

NOTE

If the system check returns a `FAILED` value, you can enter `back` and repeat the whole process of checking the system, `exit` to cancel the installation, or `?` to gain more information.

In case of a minimum deviation from the requirements, you can continue with the software installation.

After the system check has returned all `OK` values, press **Enter** to continue.

`ovoinstall` then checks the core component packages, server packages, and agent packages before starting the package installation.

6. After all packages are checked, press **Enter** to continue with the package installation.

NOTE

If any of the required packages fails to be installed, enter `back` and reinstall it.

After all packages are installed, `ovoinstall` installs all updates, and finishes the server software installation.

`ovoinstall` then asks you whether you want to automatically continue with the server software configuration.

7. If you decide to continue, press **Enter**. The following text appears:

```
Welcome to the HP Operations Manager for UNIX (HPOM)
configuration
```

Press **Enter** to continue with checking the system. For system check details, see step 5.

NOTE If a specific system check is skipped, it means that it has already been checked and is `OK`.

`ovoconfigure` continues with detecting special environments.

8. When the detection procedure finishes, you must either accept the default settings or customize the following parameters:

   ❏ Certificate backup password

   Determine the password used for certificate backup as well as for certificate restore.

   ❏ Configure HP Performance Manager

   Accept or decline whether the HP Performance Manager is to be configured during the server configuration. The default is `no`.

   If you answer `yes`, the following appears:

   — HP Performance Manager node

   Specify the network node and the port of the HP Performance Manager. The answer format is the following:

   <nodename>:<port>

   If you choose not to configure the HP Performance Manager during the HP Operations server configuration, press **Enter** to continue.

NOTE The HP Performance Manager can also be configured after the server configuration.

The summary of all provided answers appears. To correct any value, type **back**, and set the value to match the required value. After you have checked the data, press **Enter** to continue.

`ovoconfigure` continues as follows:

❏ Adds the `opc_op` user.
❏ Creates the Instant-On license.
❏ Sets the embedded licensing configuration.

9. If adding the `opc_op` user, creating the Instant-On license, or setting the embedded licensing configuration fails to be executed, you can enter `back` and execute it once again, or `exit` to cancel the configuration.

   Press **Enter** to continue.

10. Continue by answering the following questions related to the database configuration:

    - `Configure the database?`

      The default value is `yes`.

    - `Enable the automatic database startup?`

      The default value is `yes`.

    - `Clear and reinitialize the database tables if they already exist?`

      The default value is `yes`.

    - `Set up the database manually?`

      The default value is `no`.

      This question allows you to choose how to create the database, locally or remotely.

      If your answer is `yes`, `ovoconfigure` pauses instead of creating the database, allowing you to manually create the database and configure it by entering `opcdbsetup -p` in another window.

      If your answer is `no`, the following question appears:

      `Configure the database for remote login?`

      The default answer to this question is `yes`. If you choose the default answer, the database installation program creates an Oracle password file and gives proper rights to the `SYSTEM` database user so that the Oracle Remote Manager (RMAN) can access the database during the execution of backup or restore scripts.

      If you answer `no` to this question, you can grant these permissions manually later on.

      For detailed information about backing up data on the management server, see the *HPOM Administrator's Reference*.

After you have answered all the above questions, `ovoconfigure` continues with the Oracle Database-related prompts, which are the following:

- Oracle Base

  The Oracle Database base directory, which is usually the same as the `ORACLE_BASE` variable. The default is `/opt/oracle`.

- Oracle Home

  The Oracle Database home directory, which is usually the same as the `ORACLE_HOME` variable. The default is `/opt/oracle/product/11.1.0`.

- Oracle User

  The Oracle user for the HP Operations server database. The default is `oracle`.

- Oracle `SID`

  The Oracle `SID` of the HP Operations server database. The default is `openview`.

NOTE

`ovoinstall` will use this value also as the database name if it has not been created manually. Therefore, the `SID` value is limited to a maximum length of 8 characters.

- Oracle Data Directory

  The directory where the HP Operations server database files are stored.

- Oracle Index Directory

  The directory where the HP Operations server database index files are stored. By default, it is the same as the Oracle data directory.

- Oracle User `opc_op` Password
- Oracle User `opc_report` Password
- Oracle User `system` Password
- Database Character Set (`NLS_LANG`)

Enter the desired NLS_LANG value in the *<lang>_<region>*.AL32UTF8 form. The default value is american_america.AL32UTF8.

- ❏ Oracle Listener Name

  The default is LISTENER.

- ❏ Oracle Listener Port

  The default is 1521.

- ❏ Oracle Net Listener Alias

  The default is ov_net.

NOTE

The default value, which is one of the possible options, is displayed after each individual prompt. For more information about installation procedure options, see Table 2-1 on page 62.

When the settings are specified, ovoconfigure checks the database configuration data, and the summary of all provided answers appears. To correct any value, enter back, and set the value to match the required value.

Check the data, and press **Enter** to continue. The following output should be displayed:

```
Database configuration . . . . . .
```

The result of the database configuration, which appears after some time, should be OK. If the database configuration has failed, enter back, and repeat the procedure.

NOTE

The whole database configuration procedure is written in the log files, which you can view at any time during the database configuration. For more information, see “Viewing the Installation Log Files” on page 71.

After the database configuration is successfully finished, the server initialization starts.

IMPORTANT

If the database configuration fails, you can reconfigure the database by entering one of the following:

back If you enter `back`, you will be asked all the above questions related to the database configuration once again.

repeat If you enter `repeat`, the answers you have already provided for the database configuration will be reused.

When you enter `back` or `repeat`, you *may be* asked the following two questions:

- `Do you want to clear DB tables?`

  Answer `y` if you want to clear all the tables, but not to drop the whole database, before repeating the database configuration.

- `Do you want to completely drop the DB?`

  Answer `y` if you want to completely drop the database and reconfigure it again.

If you answer `n` to both the above questions, the database is unaffected, and the manual repair is needed.

It is recommended that you answer `n` to the above questions if the database was configured manually or as a remote database. Make sure that you solve the problems manually before starting the database reconfiguration.

During the server initialization, `ovoconfigure` performs the integration into the start-stop sequence and checks the required disk space.

11. Check whether the server add-on packages are ready to be installed, and then press **Enter** to install them.

    After they have been installed, continue with the configuration by pressing **Enter**.

    `ovoconfigure` starts the server final configuration, which consists of the following steps:

- ❏ `opcmsg (1|3)` policy assignment
- ❏ Java GUI configuration
- ❏ Web Server configuration
- ❏ Backup certificates
- ❏ Starting server
- ❏ Installing local agent
- ❏ Distributing configuration to the local agent

12. After installing the HPOM software on the management server, you can check whether the installation was successful. See “Starting HPOM and Verifying the Installation” on page 72 for more information.
13. When the installation and configuration are completed, unmount the DVD-ROM drive by entering:

    `umount /<mount_point>`

14. Make the HPOM manpages available for users.

    Add the `opt/OV/man` directory to the `MANPATH` environment variable by entering:

    ```
    MANPATH=$MANPATH:/opt/OV/man

    export MANPATH
    ```

NOTE

The `MANPATH` environment variable *must* be set either for the current user by the user in `.profile`, or for all users by the system administrator in `/etc/profile`.

Viewing the Installation Log Files

When `ovoinstall` has finished installing the HPOM software, verify that the installation has been successful by checking the end of the `/var/opt/OV/log/OpC/mgmt_sv/ovoinstall.log` log file. Either open the log file using a text editor or enter:

```
more /var/opt/OV/log/OpC/mgmt_sv/installation.log
```

```
more /var/opt/OV/log/OpC/mgmt_sv/installation.log.verbose
```

You can also check for any errors by viewing the analysis and installation log files during the installation. Enter the following in a new terminal window:

```
tail -f /var/adm/sw/swagent.log
```

Starting HPOM and Verifying the Installation

To verify the HPOM installation, follow these steps:

1. Verify that all HP Operations server services are running by entering the following:

   /opt/OV/bin/OpC/opcsv

   An output similar to the following should be displayed:

```
OM Control Management Server status:

-------------------------------------

OMU Action Manager opcactm (13577) is running
OMU BBC Config Adapter opcbbcdist (13960) is running
OMU Cert. Server Adapter opccsad (13944) is running
OMU Display Manager opcdispm (13523) is running
OMU TT & Notify Manager opcttnsm (13908) is running
OMU Forward Manager opcforwm (13926) is running
OMU Message Manager opcmsgm (13886) is running
OMU Message Receiver (HTTPS) opcmsgrb (13557) is running
OMU Service Engine opcsvcm (13995) is running
OMU Request Sender ovoareqsdr (13541) is running
OMU Service Discovery Server opcsvcdisc (14047) is running
OMU HTTPS Communication Proxy opcuihttps (14063) is running


OV Control Core components status:

---------------------------------

OV Control ovcd (13504) is running
OV Communication Broker ovbbccb (13505) is running
OV Certificate Server ovcs (13506) is running
```

   If the HP Operations server services are not running, you can start them with the following command:

   /opt/OV/bin/OpC/opcsv -start

IMPORTANT

You *must* have a local agent installed to perform steps 2 and 3.

2. Verify that all the HP Operations agent services are running on the management server system by entering the following command:

   /opt/OV/bin/OpC/opcagt -status

   An output similar to the following should be displayed:

```
OVO Managed Node status:
opcmsga      OVO Message Agent          AGENT,EA     (18525)   Running
opcacta      OVO Action Agent           AGENT,EA     (18526)   Running
opcmsgi      OVO Message Interceptor    AGENT,EA     (18527)   Running
opcle        OVO Logfile Encapsulator   AGENT,EA     (18528)   Running
opcmona      OVO Monitor Agent          AGENT,EA     (18529)   Running
opctrapi     OVO SNMP Trap Interceptor  AGENT,EA     (18530)   Running
```

NOTE

If the HP Operations agent services are not running, you can start them with the following command:

/opt/OV/bin/OpC/opcagt -start

3. Submit test messages as user `root` by entering:

   /opt/OV/bin/OpC/utils/submit.sh

   This program sends simulated messages to the `Message Browser`. The number of messages received depends on the configuration of your system. Under normal conditions, you will usually receive at least two messages.

4. To be able to test and use an application configured as Window (Input/Output) from the HPOM User's Assigned Applications window, you will probably have to complete one of the following tasks:

   - As the `root` user, set the UNIX password for the default operator `opc_op` for each managed node where you want to use Input/Output applications.

     To do this, enter:

     passwd opc_op

NOTE

By default, the `opc_op` user is not allowed to log on to the system (`*` entry in the password field of `/etc/passwd`).

- Make sure the *`$HOME`*`/.rhosts` file exists on the managed node (*`$HOME`* is the home directory of the executing user `opc_op` on the managed node). If it does not exist, create it.

  Make an entry in `.rhosts` for the `opc_op` user on the managed node. For example:

  <management_server>.<domain> **opc_op**

  It is *not* recommended to keep the `.rhosts` entry in a production environment, as it can represent a security risk.

- Make sure the `/etc/hosts.equiv` file exists on the managed node. If it does not exist, create it.

  Add the hostname of your management server to this file. For example:

  <management_server>.<domain>**.com**

  It is *not* recommended to keep the `/etc/hosts.equiv` entry in a production environment, as it can represent a security risk.

After You Install HPOM

After you have completed the installation of HPOM, decide whether you need to create additional Oracle Database users.

During the initial configuration setup, Oracle creates the default users `sys`, `system`, `outln`, and `dbsnmp`, and gives them default passwords. Depending on the installed Oracle components and the version, you can create additional database users.

These Oracle users are *not* used by HPOM. You can change the password of these Oracle users with the Oracle tool, SQL*Plus.

Example:

```
su - oracle
sqlplus /nolog
connect / as sysdba
alter user system identified by <new_password>
exit
exit
```

Reconfiguring the HPOM Software

If you want to reconfigure the HPOM software, you *must* run the HPOM configuration utility `ovoconfigure` as the `root` user on the management server.

If you want to use a separate system as the database server, first configure the database server system as described in "Setting Up HPOM with a Remote/Manual Oracle Database" on page 111.

To reconfigure the HPOM software, follow these steps:

1. Make sure that the NLS language variable (`NLS_LANG`) is set correctly by entering:

   `export NLS_LANG=american_america.AL32UTF8`

2. Make sure that the `LANG` environment variable is set to a UTF-8 locale.

   For more information, see "Configuring Input/Output for Multiple Language Support" on page 44.

   To check the setting, enter:

   `echo $LANG`

3. Export all Oracle environment variables.

   See "Before You Install an Oracle Database" on page 49 for instructions.

NOTE

Make sure that you have set the same `ORACLE_SID` value as the one you specified before running `ovoinstall`.

4. To start `ovoconfigure`, enter:

   `/opt/OV/bin/OpC/install/ovoconfigure`

   Respond to the questions as they are displayed.

   The configuration utility asks whether you want to configure your database automatically:

- Type **y** (yes) to configure your database automatically. This is the recommended method. You are prompted to enter the Oracle system user password.
- Type **n** (no) if you have already configured your database on an independent database server.

NOTE

If you want to use an independent system as the database server, first configure the database server system as described in "Setting Up HPOM with a Remote/Manual Oracle Database" on page 111.

If you have chosen `y`, the configuration continues with the following prompts:

a. Enter the password of the Oracle Database user `system`.

   Do one of the following:

   - If you do not have a configured database, press **Enter** for HPOM to create the database and the user `system`.
   - If you want HPOM to use an existing database, enter the password of the Oracle Database user `system`.

b. You are asked to enter the password for the Oracle Database user `opc_op`.

NOTE

The `opc_op` database user is independent of the operating system user `opc_op`, and the HPOM user `opc_op`.

Enter a password of your choice.

If you need to change this password at a later date, use the `opcdbpwd` command.

CAUTION

Do not change the password in the database directly. HPOM stores the password in an encrypted file. If the password in the database is different from the password in the encrypted file, HPOM *cannot* connect to the database.

c. You are asked to enter the password for the Oracle Database user `opc_report`.

NOTE

The database user `opc_report` is required for read-only access to the database for report-writing tools.

Enter a password of your choice. This password is not used by HPOM itself. You can change it directly in Oracle at a later time. When changing this password, you also need to change the password in your reporting solution.

d. You are asked whether you require the automatic startup of the database at the system boot time.

Accept the default: **`Yes`**

e. You are asked to choose a data directory for the system table space, the control files, the redo log files, and the HPOM data table spaces.

f. You are asked to choose an index directory for the HPOM index table spaces.

g. The database setup utility uses the answers you give to create and configure the database, which can take some time.

The utility performs the following configuration steps:

- Creates and configures the Oracle Database.
- Creates HPOM table spaces and users.
- Creates HPOM tables.
- Loads the initial HPOM configuration into the database.
- Configures Net and starts the Net listener.

The utility then does the following:

- Configures the agent on the management server.
- Configures the web server.
- Verifies the installed HP Operations platform by starting the HP Operations server processes.

3 Installing the Java Operator GUI

In This Chapter

This chapter describes how to do the following:

- ❏ Install the HP Operations Manager (HPOM) Java operator graphical user interface (GUI).
- ❏ Configure a web server to use customized icons and background graphics.
- ❏ Access the online documentation.

This chapter assumes that you have already installed the HPOM software, and have a supported web server, as described by the vendor of the server.

Supported Platforms

The HPOM Java GUI was tested *only* on the operating system platforms listed in Table 3-1, and is therefore supported *only* on these operating system platforms.

NOTE On all operating system platforms not listed in the following table, you run the HPOM Java GUI at your own risk.

Table 3-1 Supported Platforms of the HPOM Java GUI Client

Supported Platforms	Java Application	Java Applet[a]
HP-UX 11i v3 on HP Integrity	yes	yes
Mac OS 10.4 R6 or higher	yes	yes
Red Hat Linux 9.0	yes	yes
Solaris 10 for Sun SPARC Station	yes	yes
Windows 2000 Windows XP Windows 2003 Windows Vista	yes	yes

a. See “Supported Web Browsers” on page 86 for a list of supported web browsers.

CAUTION Running the HPOM Java GUI on a UNIX platform is *not* recommended because it can lead to performance problems.

Supported Languages

See Table 3-2 for a list of languages into which the HPOM Java operator GUI has been translated.

Table 3-2 Supported Languages of the HPOM Java GUI Client

Supported Platforms	Language
HP-UX 11i v3 on HP Integrity	English Spanish Japanese Korean Simplified Chinese
Mac OS 10.4 R6 or higher	English Spanish Japanese Korean Simplified Chinese
Red Hat Linux 9.0	English Spanish Japanese Korean Simplified Chinese
Solaris 10 for Sun SPARC Station	English Spanish Japanese Korean Simplified Chinese

Table 3-2 Supported Languages of the HPOM Java GUI Client (Continued)

Supported Platforms	Language
Windows 2000 Windows XP Windows 2003 Windows Vista	English Spanish Japanese Korean Simplified Chinese

NOTE

When starting the HPOM Java operator GUI, select the correct locale. The locale influences the sorting, the text display (fonts), and the representation of date and time. It also selects the localized files for your installation.

For example, to start a Spanish Java GUI, select **Spain (Spanish)** in the logon window.

Installation Requirements

This section describes the hardware and software requirements for installing the HPOM Java Operator GUI. It also describes the recommended patches and web browsers supported by the product.

Hardware Requirements

- **UNIX or Linux**

  For more information see Chapter 1, “Installation Requirements for the Management Server.”

- **Windows**

  The best performance is achieved with a Pentium-based personal computer (PC) with at least 500 Mhz, a minimum of 256 MB RAM, and additional 30MB RAM per GUI session.

Software Requirements

In general, Java Runtime Environment (JRE), version 1.6.0.12 or higher *must* be installed on the system where the HPOM Java GUI will be installed and running.

For the platforms listed in Table 3-3, the required versions of JRE are included in the HPOM Java GUI installation directory on the management server:

```
/opt/OV/www/htdocs/ito_op/
```

Table 3-3 Bundled JRE Versions

Platform	JRE Version	File name
Windows 2000/XP/2003/Vista	1.6.0.12	`ITO_JAVA.exe`

NOTE

HPOM delivers JRE 1.6.0.12 only for Windows as a part of the install shield package.

If you want to use the Java GUI on any other operating system, including the HP Operations management server, you must download JRE 1.6.0.12 by yourself. You must also set the `JAVA_DIR` environment variable before using the following script to start the Java GUI:

```
/opt/OV/bin/OpC/ito_op
```

Cockpit View Client Requirements

Make sure your cockpit view client meets the following requirements:

- Microsoft Windows XP
- Microsoft Internet Explorer 7
- Adobe Flash Player 10 with ActiveX
- Sun Java SE Runtime Environment 6 (JRE 1.6.0 or higher)

Supported Web Browsers

If you want to run the HPOM Java GUI as an applet from a web browser, or if you want to use the online documentation supplied with the Java GUI, you should have one of the following web browsers installed:

- ❏ Microsoft Windows:
  - Microsoft Internet Explorer 5.5, 6, or 7
  - Mozilla 1.7
- ❏ HP-UX 11i, Sun Solaris, Red Hat Enterprise Linux, and Mac OS:
  - Mozilla 1.7

NOTE The external browser is the default browser on UNIX, while the default browser on Windows is ActiveX.

Installing the HPOM Java Operator GUI

You can either run the Java operator GUI directly on your management server system, or use HTTP or FTP to transfer the Java GUI binaries from the management server to the system where the GUI will be running.

The HP Operations management server installation automatically installs the HPOM Java GUI binaries into the `/opt/OV/www/htdocs/ito_op/` directory on the management server.

Installation Requirements

Before installing the HPOM Java operator GUI, make sure the following prerequisites are met:

- ❏ Management server system meets all hardware and software requirements described in Chapter 1, “Installation Requirements for the Management Server.”

  Note that the `maxfiles` kernel parameter needs to be adjusted to ensure good performance.

- ❏ HPOM software for the management server is installed.

- ❏ JRE 1.6.0.12 *must* be installed on the system where the HPOM Java GUI will be installed and running. See also Table 3-3 on page 85.

The HPOM installation automatically installs and configures a Tomcat Web server on the management server.

Installing HPOM Java GUI through HTTP

To install HPOM through HyperText Transfer Protocol (HTTP), follow these steps:

1. Make sure that all the prerequisites are met as described in “Installation Requirements” on page 84.
2. Make sure that an HTTP server is installed and running.

   If you are using the HPOM Tomcat server, make sure the `ovtomcatB` process is running. To check whether the `ovtomcatB` process is running, enter the following:

   ```
   /opt/OV/bin/ovc -status WEB
   ```

   If the `ovtomcatB` process is not running, you can start it by running the following command:

   ```
   /opt/OV/bin/ovc -start WEB
   ```

3. On the system where the Java GUI will be running, open the following URL in a web browser:

   http://<*management_server*>:3443/ITO_OP

   In this instance, <*management_server*> is the fully qualified hostname of your management server.

4. Follow the instructions given on the web page:

   - If you are running the Java GUI on a PC running Microsoft Windows, download and execute the `ITO_JAVA.exe` file.
   - If you are running the Java GUI on a UNIX-based system, download and untar the `ito_op_install.tar` file. Make sure that you have JRE for your platform installed. The recommended version of JRE is 1.6.0.12 or higher.

Installing HPOM Java GUI through FTP

To install HPOM through File Transfer Protocol (FTP), follow these steps:

1. Make sure that all the prerequisites are met as described in “Installation Requirements” on page 84.

   The HP Operations management server installation automatically installs the GUI client binaries in the following directory on the management server:

   `/opt/OV/www/htdocs/ito_op/`

2. Transferring the files through FTP:

   a. Start the MS-DOS command prompt or a terminal window on the system where the GUI will be installed.

   b. Open an FTP connection to the HP Operations management server by entering:

      `ftp <management_server>`

      In this instance, <*management_server*> is the hostname of your management server.

   c. Make sure that the binary mode is used by entering:

      `bin`

   d. Change to the directory where the GUI software is located by entering:

      `cd /opt/OV/www/htdocs/ito_op`

      Retrieve the Java GUI executable.

      - For a PC-based system, enter:

        `get ITO_JAVA.exe`

      - For a UNIX-based system, enter:

        `get ito_op_install.tar`

        For UNIX-based systems, you *must* download platform-specific JREs from their websites. The recommended version of JRE is 1.6.0.12 or higher.

Close the FTP connection when the files are transferred successfully.

3. Extract the software from the files, enter:

   - PC-based system:

     <*drive_letter*>:ITO_JAVA.exe

     This starts the installation wizard that guides you through the installation.

   - UNIX-based system:

     tar xvf ito_op_install.tar

Installing HPOM Java GUI on Linux Systems Other than HP Operations Management Servers

On Linux systems other than HP Operations management servers, use the `rpm` utility to install the Java GUI client. The `rpm` utility is supplied with the Linux operating system.

To install HPOM Java GUI on Linux systems with `rpm`, follow these steps:

1. Ensure that all the prerequisites are met as described in "Installation Requirements" on page 84.
2. Enter the commands as stated below for the following languages:

   - *English*

     ```
     rpm -i --nodeps \
     /<mount_point>/packages/HPOvOUWwwGui.rpm

     rpm -i --nodeps \
     /<mount_point>/packages/HPOvOUWwwEng.rpm
     ```

   - *Spanish*

     ```
     rpm -i --nodeps \
     /<mount_point>/packages/HPOvOUWwwSpa.rpm
     ```

   - *Japanese*

     ```
     rpm -i --nodeps \
     /<mount_point>/packages/HPOvOUWwwJpn.rpm
     ```

   - *Korean*

     ```
     rpm -i --nodeps \
     /<mount_point>/packages/HPOvOUWwwKor.rpm
     ```

   - *Simplified Chinese*

     ```
     rpm -i --nodeps \
     /<mount_point>/packages/HPOvOUWwwSch.rpm
     ```

     In these instances, *<mount_point>* is a location where the HPOM installation DVD is mounted.

Starting the HPOM Java GUI

This section describes how to start the HPOM Java GUI on a PC, on a UNIX-based system, and from a web browser.

NOTE

To log on to the HPOM GUI for the first time, use default users and passwords. The default logon passwords are the following:

- For administrators: **`OpC_adm`**
- For operators: **`OpC_op`**

The next time you log on, you should change your default password for security reasons. You can change your password again at a later time, but you will not be allowed to set the password back to the default.

If you want to access web pages that start Java 2 applets in a workspace, the Java GUI itself *must* be running as an applet. See “Starting the Java GUI from a Web Browser” on page 94 for more information about starting the Java GUI as an applet.

Make sure you use the proper `LANG` variable when starting the HPOM Java GUI in languages other than English. Starting the Java GUI by using the English locale `C` and then switching to the other language may result in incorrectly displayed accentuated characters in some dialog boxes and in displaying garbage characters in the window title.

ito_op Startup Script

The `ito_op` startup script first reads the environment variables, then evaluates the command line options, and finally the preferences listed in the `itooprc` file.

For more information about the `ito_op` script, see the *ito_op(1M)* manpage (UNIX), the *ito_op.bat* script (Windows), and the *HPOM Administrator's Reference*.

Starting the Java GUI on a PC

The install shield of the HPOM Java GUI client software installs a desktop shortcut for the GUI.

To start the HPOM Java operator GUI on a PC, follow these steps:

1. Do one of the following:
   - Use the installed desktop shortcut.
   - Enter the following:

     ***<drive_letter>*:*<install_directory>*\ito_op.bat**

   The HPOM Java GUI starts and displays a logon screen.
2. Enter the HPOM username and password.
3. Enter the management server hostname.

Starting the Java GUI on a UNIX-based System

To start the HPOM Java operator GUI on a UNIX system, follow these steps:

1. Export the `DISPLAY` environment variable if needed.
2. Enter the following:

   /opt/OV/www/htdocs/ito_op/ito_op &

   The HPOM Java GUI is now started and displays a logon screen.
3. Enter the HPOM username and password.

Starting the Java GUI from a Web Browser

NOTE You do *not* need to install the GUI if you want to start the HPOM Java GUI from a web browser. Simply download the Java applet provided with the GUI client software.

To start the HPOM Java GUI from a web browser, follow these steps:

1. Make sure that all the prerequisites are met as described in “Installation Requirements” on page 84.
2. On the system where the Java GUI will be running, open the following URL in a web browser:

   http://<*management_server*>:3443/ITO_OP

   In this instance, <*management_server*> is the fully qualified hostname of your management server.
3. Follow the instructions given on this web page for downloading the Java applet.

Starting the Online Documentation

The HTML-based online documentation supplied with the Java GUI is automatically installed on the HP Operations management server. However, before you can access the online help from within HPOM, you *must* configure the HPOM Java GUI to open a web browser at the corresponding URL of the management server.

NOTE

It is recommended that you view the online documentation with Microsoft Internet Explorer (Windows) or Mozilla (UNIX).

You can change your web browser preferences by selecting **Edit->Preferences...** from the menu bar, then clicking the **Web Browser** tab in the Preferences dialog box. For details, see the *HPOM Java GUI Operator's Guide*.

To start the HPOM online documentation, in the HPOM Java GUI, select **Help->Contents** from the menu bar.

The URL for the online documentation is the following:

```
http://<management_server>:3443/ITO_OP/help/\
<lang>/ovo/html/index.htm
```

For example, in this URL, `<lang>` is `en` for English.

The online documentation for the Java GUI is displayed. Use the navigation tree in the left pane to find the topics that interest you, or use the index to search for a specific term.

NOTE

You can change the URL for the online documentation in the Preferences dialog box of the HPOM Java GUI. Select **Preferences** from the Edit menu to open this dialog box.

Connecting Through a Firewall

If you want to access the HP Operations management server with the HPOM Java GUI from outside a firewall, open port `35211`. Port `35211` is the socket used by the Java GUI to connect to the management server.

Configuring the HTTP Server

Install your web server as described in the vendor's documentation and verify that the web server is running properly.

If you want to install and access the HPOM Java GUI, you need to configure your HTTP server. The configuration varies depending on the type of HTTP server.

The following web servers are supported:

- Apache Tomcat (automatically installed and configured with the HPOM installation)
- Netscape
- W3C Jigsaw

This section describes how to configure these web servers for use with the HPOM Java GUI.

Configuring a Netscape Server

To configure Netscape for installing and accessing the HPOM Java GUI, complete the following steps:

1. Select the Netscape server that you want to configure.
2. From Netscape Enterprise Configuration, do the following:
   a. Click the **Content mgmt** button at the top of the window.
   b. Select **Additional Document Directories** from the left side of the window.
   c. For `URL prefix` enter:

      `ITO_OP/`

   d. For `Map To Directory` enter:

      `/opt/OV/www/htdocs/ito_op`

   e. Click **OK**.
   f. Click **Save and Apply**.

   Restart your web server and open the following URL:

   `http://<server_hostname>:3443/ITO_OP/`

   In this instance, *<server_hostname>* is the hostname of your web server, including the domain.

NOTE If you set the port to a different value than `3443`, change the above URL accordingly.

3. Make sure the `.exe` extension is defined in the following file:

   ```
   /opt/ns-fasttrack/httdp-<server_hostname>/config/\
   mime.types
   ```

4. Add the following line to the file:

   ```
   type=application/octet-stream exts=exe
   ```

Configuring a W3C Jigsaw Server

To configure a W3C Jigsaw web server for installing and accessing the HPOM Java GUI, complete the following steps:

1. Add the following line to the `httpd.conf` file:

   `Pass /ITO_OP/* /opt/OV/www/htdocs/ito_op/*`

2. Restart the web server.

3. Open the following URL:

   `http://<server_hostname>/ITO_OP/`

   In this instance, *<server_hostname>* is the hostname of your web server, including the domain.

4 Service Management and Manual Database Configuration

In This Chapter

This chapter describes how to do the following:

- ❏ Set up startup and shutdown operations for the HP Operations management server services.
- ❏ Start and stop an Oracle Database automatically.
- ❏ Start and stop an Oracle Database manually.
- ❏ Set up HPOM with a remote/manual Oracle Database.

Starting and Stopping HPOM

When you configure HPOM, the startup of the HPOM processes is automatically integrated into the system boot sequence.

You can, however, start the HP Operations management server services by using the `opcsv -start` command. Similarly, you can stop the HP Operations management server services by using the `opcsv -stop` command.

The `opcsv` command is located in the `/opt/OV/bin/OpC` directory and has the following functions:

`opcsv -start`	Starts the HP Operations management server processes.
`opcsv -stop`	Stops the HP Operations management server processes.
`opcsv -status`	Displays detailed status information on the HP Operations management server processes.

The `opcsv` command *does not* start and stop the subagent processes. Subagent communication processes are handled by the `ovc` command, which is located at `/opt/OV/bin`. If you want to stop the HP Operations agent processes, use **`ovc -stop AGENT`**. If you want to start the HP Operations agent processes, use **`ovc -start AGENT`**.

For more information about the `opcsv` and `ovc` commands, see the *opcsv(1)* and *ovc(1M)* manpages.

TIP

If you experience communication problems between the HP Operations server and agents, or if the server processes are not correctly informed about configuration changes, restart both the HP Operations management server and HP Operations agent processes:

```
/opt/OV/bin/ovc -stop SERVER AGENT
/opt/OV/bin/ovc -start SERVER AGENT
```

Starting and Stopping an Oracle Database Automatically

You can use the HPOM shell script `/etc/init.d/ovoracle` to ensure a clean, automatic startup and shutdown of the Oracle Database whenever you start or shut down the HP Operations management server. If you choose to start the HP Operations management server processes automatically at the system startup, the Oracle Database *must* be running before HPOM.

The following are linked to the `ovoracle` script:

- Startup

```
/etc/rc3.d/S94ovoracle
/etc/rc4.d/S94ovoracle
/etc/rc5.d/S94ovoracle
```

- Shutdown

```
/etc/rc0.d/K01ovoracle
/etc/rc1.d/K01ovoracle
/etc/rc2.d/K01ovoracle
/etc/rc6.d/K01ovoracle
```

The option for the automatic startup and shutdown of the database is set in the following file:

```
/etc/rc.config.d/ovoracle
```

You can enable the automatic startup and shutdown of the database by editing the following file:

```
/etc/rc.config.d/ovoracle
```

Change both the `OVORACLE` and `OVORALISTENER` variable to `1`, as shown in the following extract from the file:

```
# configure if oracle database should be started
# 0 - do not start
# 1 - start
# default is 0. This may be changed here manually
```

```
#
OVORACLE=1
OVORALISTENER=1
```

Starting and Stopping an Oracle Database Manually

If you choose not to incorporate the Oracle `startup` and `shutdown` commands in the system boot sequence, you must start and stop the database manually as described in "Starting an Oracle Database Manually" and "Stopping an Oracle Database Manually". Make sure to start the database before starting HPOM and stop the database after stopping HPOM.

Starting an Oracle Database Manually

To start an Oracle Database manually, follow these steps:

1. Switch to the `oracle` user:

   `su - oracle`

2. Set the *`ORACLE_HOME`* environment variable.

   The default is as follows:

   `export ORACLE_HOME=/opt/oracle/product/<version>`

   In this instance, *`<version>`* is the Oracle Database version 11g (11.1.0).

3. Set the *`ORACLE_SID`* environment variable.

   The default is as follows:

   `export ORACLE_SID=openview`

4. Run the SQL*Plus tool to administrate the database:

   `<ORACLE_HOME>/bin/sqlplus /nolog`

5. Enter the following commands at the prompt to start the Oracle Database:

   ```
   connect / as sysdba
   startup
   exit
   ```

6. Switch back to the `root` user:

   `exit`

Stopping an Oracle Database Manually

To shut down an Oracle Database manually, follow these steps:

1. Switch to the `oracle` user:

   `su - oracle`

2. Set the *`ORACLE_HOME`* environment variable.

   The default is as follows:

   `export ORACLE_HOME=/opt/oracle/product/<version>`

   In this instance, *`<version>`* is the Oracle Database version 11g (11.1.0).

3. Set the *`ORACLE_SID`* environment variable.

   The default is as follows:

   `export ORACLE_SID=openview`

4. Run the SQL*Plus tool:

   `<ORACLE_HOME>/bin/sqlplus /nolog`

5. Enter the following to stop the Oracle Database:

   ```
   connect / as sysdba
   shutdown
   exit
   ```

6. Switch back to the `root` user:

   `exit`

Native Language Support in an Oracle Database

This section summarizes the Native Language Support (NLS) rules followed by an installed Oracle Database.

NOTE

The same character set *must* be used for both the Oracle Database and the environment of the HPOM user interface and server processes. This helps to avoid unnecessary conversions taking place in the Oracle Database. After you install an Oracle Database, you can no longer change the character set.

The character set of the database is determined by the `CHARACTER SET` option of the `CREATE DATABASE` command. HPOM uses the `AL32UTF8` character set for all languages.

The NLS parameters are controlled by the Oracle environment variable *`NLS_LANG`* that has the following format:

`<language>_<territory>.<character_set>`

HPOM uses the following *`NLS_LANG`* setting:

English language: `american_america.AL32UTF8`

By default, HPOM uses the value of *`NLS_LANG`* set in the environment.

If *`NLS_LANG`* is *not* set in the environment, HPOM uses the value specified in the following file:

`/etc/opt/OV/share/conf/ovdbconf`

If *`NLS_LANG`* is not present there, HPOM uses the *`LANG`* value to determine the value of *`NLS_LANG`*.

HPOM checks the character set of the Oracle Database, and stores this information as part of its configuration. Oracle provides a dynamic database table `v$nls_parameters` that contains the settings for the language and character set parameters.

Environment Variables in an Oracle Database

When starting the HPOM process with a database connection, the following steps are taken to determine the database variables:

1. *ORACLE_HOME* variable is determined.

   If *ORACLE_HOME* is set in the environment, this value is used.

   If not, HPOM uses the value from the following configuration file:

   `/etc/opt/OV/share/conf/ovdbconf`

2. *ORACLE_SID* variable is determined.

   If *ORACLE_SID* is set in the environment, this value is used.

   If not, HPOM uses the value from the following configuration file:

   `/etc/opt/OV/share/conf/ovdbconf`

3. *NLS_LANG* variable is determined.

   If *NLS_LANG* is set in the environment, this value is used.

   If not, HPOM uses the value from the following configuration file:

   `/etc/opt/OV/share/conf/ovdbconf`

4. It is determined whether the `DATABASE <database>` parameter is set by using the `ovconfchg` command line tool.

   This parameter is used to establish a connection. If set, the *ORACLE_SID* variable is ignored.

   For example, if the `DATABASE ov_net` line is set by using `ovconfchg`, the `opc_op/<password>@ov_net` string is used to connect to the `ov_net` identifier.

5. Connection to the database is established, as described in “Starting and Stopping an Oracle Database Automatically” on page 104.

   If `DATABASE` is not used, the `opc_op/<passwd>` connect string is used.

Alternative Database Locations

The following table shows several alternative database installations, describes the location of associated processes, and lists the entries used in the foundation config component (FCC).

Table 4-1 Alternative Database Locations

Database Scenario	Entries used in the FCC	Location of Processes
Local Database	`DATABASE ov_net`	All database processes, HP Operations management server processes, and GUI processes run on the management server. They connect to the database server.
Remote/Manual Oracle Database (See “Setting Up HPOM with a Remote/Manual Oracle Database” on page 111.)	`DATABASE ov_net`	On the database server: • Oracle processes On the HP Operations management server: • HP Operations server processes • GUI processes

Setting Up HPOM with a Remote/Manual Oracle Database

This section describes how to set up HPOM on Linux with a remote/manual Oracle Database. It contains the following information:

- System requirements for Oracle and HPOM

  See “Requirements” on page 112.

- HPOM system limitations

  See “Limitations During the HPOM Runtime” on page 113.

- Instructions for creating and configuring the database for HPOM

  See “Creating and Configuring the HPOM Database” on page 114.

- Instructions for installing and configuring HPOM with a remote/manual Oracle Database

  See “Installing and Configuring HPOM with a Remote/Manual Oracle Database” on page 128.

Requirements

The system requirements are the following:

- **Oracle Requirements**

  Only Oracle 11g is supported at this time. The Oracle Database server and Oracle Database client (on the HP Operations management server) must be of the same version.

  The Oracle Database server can be installed and used with HPOM on any platform supported by the HP Operations management server.

- **HPOM Requirements**

  HPOM requirements are the following:

  - Uses a previously created Oracle Database for HPOM.
  - Access to the HPOM database should be configured (Oracle Net Services).

Limitations During the HPOM Runtime

During the HPOM runtime, the following limitations apply:

- For a previously created Oracle Database setup, the same limitations apply as for a remote/manual Oracle Database setup.
- Removing the database or dropping the tablespaces by using `opcdbsetup` is not supported. You can remove the database or drop tablespaces manually.

  When removing the database manually, remove also the following files from the HP Operations management server when the database is removed:

  - `/etc/opt/OV/share/conf/ovdbconf`
  - `/etc/opt/OV/share/conf/OpC/mgmt_sv/.opcdbpwd.sec`
  - `/etc/opt/OV/share/conf/OpC/mgmt_sv/.opcdbrem.sec`
- The `mondbfile` policy can only run on the database server. Unassign the `mondbfile` policy from the HP Operations management server policy group and, if an HP Operations agent is running on the database server system, assign the `mondbfile` policy there.
- The `opcadddbf` tool is not supported.

Creating and Configuring the HPOM Database

Before approaching the HPOM software installation, you must complete the following pre-installation tasks to be able to use a manual/remote Oracle Database:

- ❏ Task 1: “Creating the HPOM Database” on page 114
- ❏ Task 2: “Configuring the Access to the HPOM Database” on page 125

Creating the HPOM Database

Creating the HPOM database on the remote database server involves the processes of installing the Oracle Database on the database server as well as the processes of creating and configuring the HPOM database.

NOTE

Before proceeding, verify that your system meets the following Oracle 11g requirements:

- ❏ Oracle 11g (with Patch Set 11.1.0.7.0 or higher)
- ❏ Oracle Net Services 11.1.0.7.0
- ❏ SQL * Plus 11.1.0.7.0

Creating and Configuring the HPOM Database on the Database Server

To create and configure the HPOM database on the database server, follow these steps:

1. Log on to the database server as the `oracle` user, and start the Database Configuration Assistant. Enter the following command:

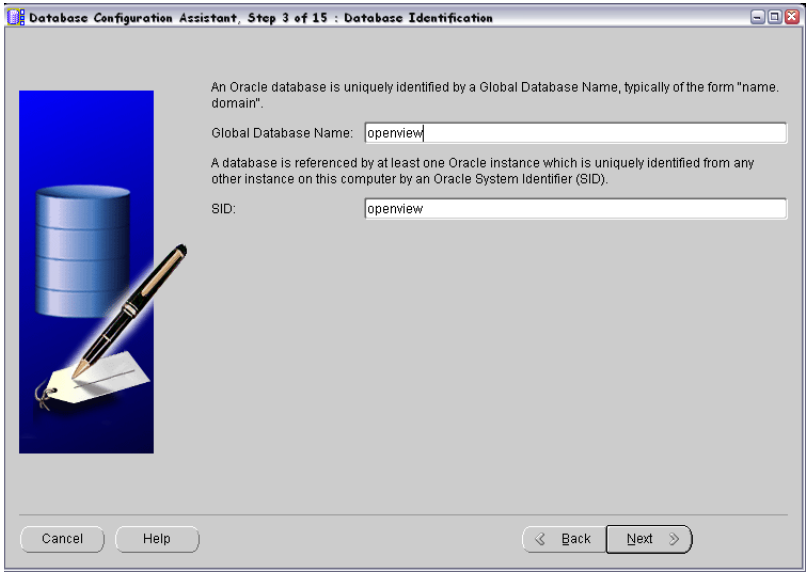
   ```
   $ $ORACLE_HOME/bin/dbca
   ```

   The Welcome window opens.

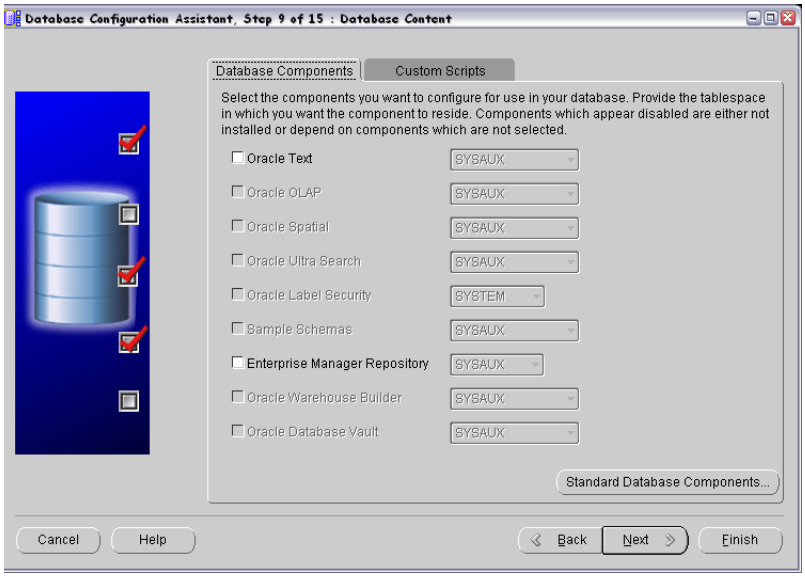
NOTE

In the process of creating the database by using the Oracle Database Creation Assistant, follow the wizard. Not all steps in the wizard are described in this procedure. In all steps, not described below, leave default values or make custom selections that suit your needs.

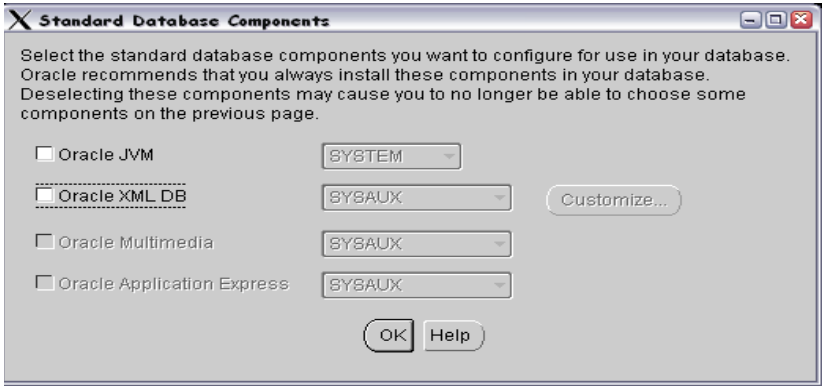
2. In the Database Templates window, select the **Custom Database** template in the list, and click **Next**.
3. In the Database Identification window, enter the global database name and the Oracle System Identifier (for example, enter **`openview`** for the global database name). Click **Next**.



4. In the Database Components window, clear all the components.



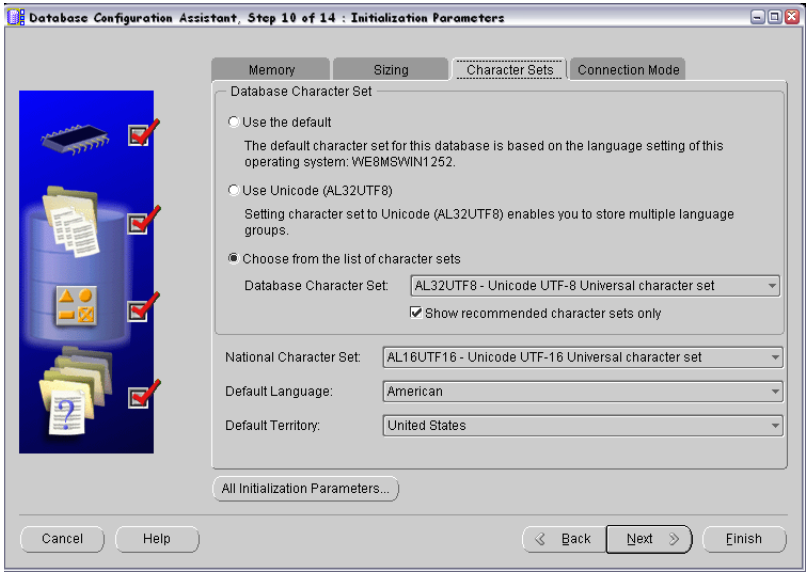
5. Click **Standard Database Components** in the Database Components window, and then clear all the features. Click **OK**.



6. In the Connection Mode tab of the Initialization Parameters window, select **Dedicated Server Mode**.

7. In the Character Sets tab of the Initialization Parameters window, select a supported character set and NLS_LANG values.

   For example, select **AL32UTF8** for the English database.



NOTE

For more information about supported character sets and NLS_LANG values, see the *HPOM Administrator's Reference*.

8. Click **All Initialization Parameters**, and then set initialization parameters according to your needs.

Parameter	Value
db_block_size	16384
diagnostic_dest	/opt/oracle
db_files	80
db_file_multiblock_read_count	16
memory_target[a]	500M

Parameter	Value
log_checkpoint_interval	99999
processes	200
dml_locks	100
log_buffer	1572864
max_dump_file_size	10240
open_cursors	1024
sort_area_size	262144
compatible	11.1.0.0.0

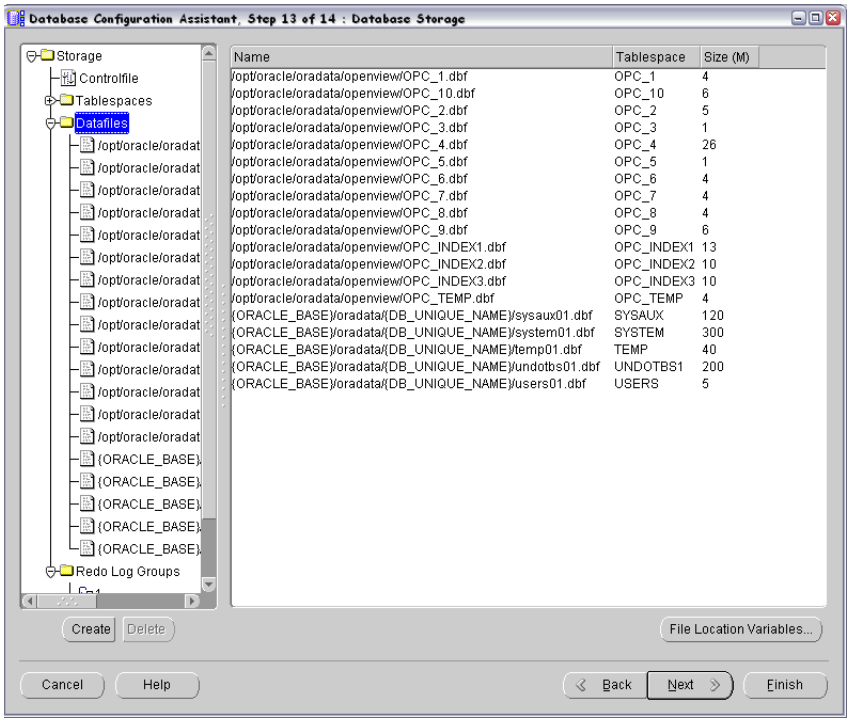
a. The variable that controls the global memory usage of the HPOM instance. The other variable, memory_max_target, allows you to dynamically increase the value of memory_target. By default, the memory_max_target parameter takes the same value as memory_target. If you want to adjust the memory_target value without restarting the instance, manually specify a greater value for memory_max_target.

9. Create tablespaces and their datafiles by using the recommended initial sizes. Create the datafiles as autoextend files, so that the datafiles can grow as needed.

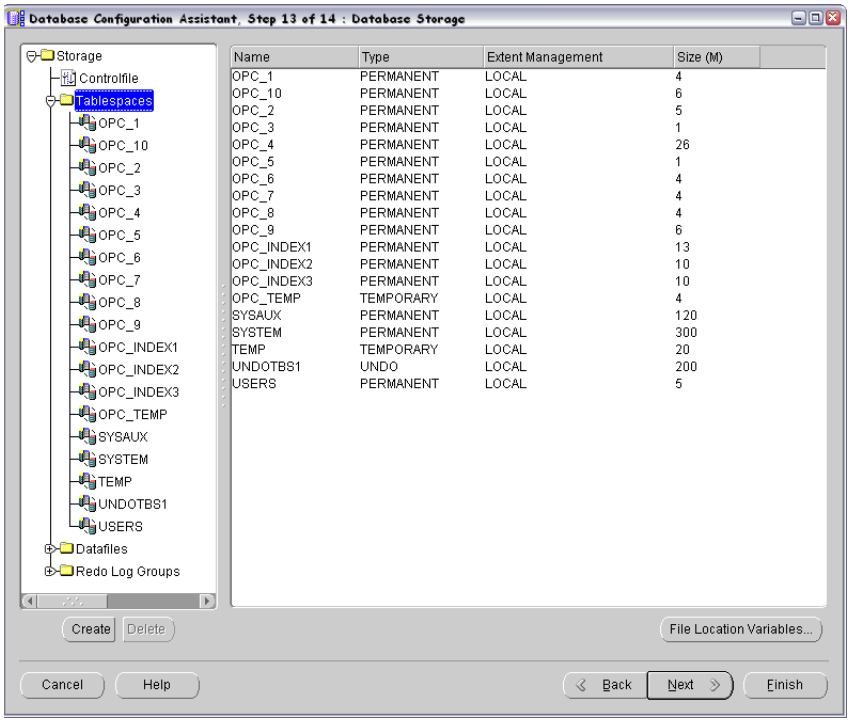
Tablespace Name	Tablespace Type	Datafile	
		Size	Next
SYSTEM	Locally managed/permanent	300M	1M
TEMP	Locally managed/permanent (not temporary)	20M	5M
OPC_1	Locally managed/permanent	7M	6M
OPC_2	Locally managed/permanent	7M	6M
OPC_3	Locally managed/permanent	2M	1M
OPC_4	Locally managed/permanent	26M	2M

Tablespace Name	Tablespace Type	Datafile	
		Size	Next
OPC_5	Locally managed/permanent	2M	1M
OPC_6	Locally managed/permanent	4M	2M
OPC_7	Locally managed/permanent	4M	2M
OPC_8	Locally managed/permanent	4M	2M
OPC_9	Locally managed/permanent	6M	2M
OPC_10	Locally managed/permanent	7M	6M
OPC_INDEX1	Locally managed/permanent	13M	1M
OPC_INDEX2	Locally managed/permanent	10M	1M
OPC_INDEX3	Locally managed/permanent	10M	1M
OPC_TEMP	Locally managed/temporary	4M	1M

Autoextend can be enabled in the Datafiles list under the Storage tab.



Change the `TEMP` tablespace type to permanent, and set `OPC_TEMP` as a default temporary tablespace.



HPOM requires at least three redo logs with the size of 20M each. Having more and bigger redo logs may increase the performance. It is recommended that you create mirrored copies of the redo logs on another disk. For more information, see the *HPOM Administrator's Reference*.

10. Click **Next** to create the database. Select the **Create Database** option, and then click **Finish**.
11. When the database is created, define the passwords for the `system` and `sys` users.

IMPORTANT Do not forget the passwords you defined. You will need these passwords for HPOM configuration later on for database administration.

Configuring Users, Passwords, and Rights Manually

After you have successfully created the HPOM database by using the Database Creation Assistant, manually configure users, passwords, and user rights on the database server. Follow these steps:

1. Log on as the `oracle` user, and connect as `sysdba`.
2. Enter the following commands:

   ```
   su - oracle

   sqlplus "system as sysdba"
   ```

3. Enter the password for the `system` user.

   This is the password you set when creating the database.

4. Enter the following command to create the `opc_op` user:

   ```
   create user opc_op identified by <password>
   default tablespace OPC_5 temporary tablespace OPC_TEMP;
   ```

   For example:

   ```
   create user opc_op identified by pwd123
   default tablespace OPC_5 temporary tablespace OPC_TEMP;
   ```

5. Enter the following command to create the `opc_report` user:

   ```
   create user opc_report identified by <password>
   default tablespace OPC_5 temporary tablespace OPC_TEMP;
   ```

6. Configure user rights for the users you created.

   Enter the following commands:

```
create role opc_report_role;

grant create session to opc_report_role;
grant opc_report_role to opc_report;

grant connect,
      resource,
      create public synonym,
      drop public synonym,
      alter tablespace
      to opc_op;

grant create table , create view to opc_op;
```

IMPORTANT The `opc_report_role` is required and must be created.

7. *Optional:* Configure additional user rights on the database server.

   If you want to use the `mondbfile` policy (template) and the `opc_odc` tool, enter the following:

```
create role opc_monitorer;

grant select on v_$datafile to opc_monitorer;
grant select on v_$log to opc_monitorer;
grant select on v_$logfile to opc_monitorer;

grant select on dba_free_space to opc_monitorer;
```

```
grant select on dba_data_files to opc_monitorer;
grant select on dba_extents to opc_monitorer;
grant select on dba_tablespaces to opc_monitorer;
grant select on dba_tables to opc_monitorer;

grant select on dba_indexes to opc_op;
grant select on dba_ind_columns to opc_op;
grant select on dba_cons_columns to opc_op;
grant select on dba_constraints to opc_op;

grant select on v_$parameter to opc_op;
grant select on v_$sga to opc_op;

grant opc_monitorer to opc_op;
```

IMPORTANT

The `mondbfile` policy can only run on the database server. If the HP Operations agent is running on the database server, you can assign the `mondbfile` policy there.

8. To close `sqlplus`, enter **`exit`**.

NOTE

During database creation, a window may pop up with the following error displayed:

```
ORA-29807: Specified operator does not exist
```

In that case, click `Ignore`, and continue with the database configuration.

Configuring the Access to the HPOM Database

To configure the access to the HPOM database, you must set up Net Services on the database server. You can either use Oracle tools to configure the Net Services, or create the Net Services manually. You can choose an Oracle Net alias (HPOM default is `ov_net`). You can specify the used Net Services alias when configuring the HP Operations management server.

Creating Net Services Manually

To create the Net Services files manually, follow these steps:

1. Configure Net Services that are needed on the database server.

   The `tnsnames.ora` and `listener.ora` Net files are required. Optionally, you can also configure the `tnsnav.ora` and `sqlnet.ora` files. These files are located in the `$ORACLE_HOME/network/admin` directory. You can find syntax examples for the `.ora` files in “Syntax Examples for the .ora Files” on page 126.

NOTE

The example files described in “Syntax Examples for the .ora Files” on page 126 must be thoroughly followed with new lines, spaces, and tabs.

In all example files, change the hostname and directory path information according to your system settings.

2. Start the listener. As the `oracle` user, enter the following command:

   ```
   lsnrctl start
   ```

3. After creating the Net Services files, enter the following:

   ```
   su - oracle
   sqlplus /nolog
   connect /as sysdba
   alter system set local_listener = ov_net scope = both;
   shutdown immediate
   startup
   ```

Syntax Examples for the .ora Files

When configuring Net Services, consider the following example files:

Example 4-1 Example contents of the `tnsnames.ora` file

```
ov_net =
      (DESCRIPTION=
        (ADDRESS_LIST=
          (ADDRESS =
           (COMMUNITY=OPENVIEW_COMMUNITY)
           (PROTOCOL=TCP)
           (HOST=hrabal)
           (PORT=1521)
          )
        )
        (CONNECT_DATA=
           (SID=openview)
        )

  )
```

Example 4-2 Example contents of the `listener.ora` file

```
STARTUP_WAIT_TIME_LISTENER = 0

LOG_DIRECTORY_LISTENER = /opt/oracle/product/11.1.0/network/log

LISTENER =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = hrabal)(PORT = 1521))
    )
  )

SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (SID_NAME=openview)
      (ORACLE_HOME=/opt/oracle/product/11.1.0)
    )
  )
```

```
CONNECT_TIMEOUT_LISTENER = 10
TRACE_LEVEL_LISTENER = OFF
LOG_FILE_LISTENER = listener
```

Example 4-3 Example contents of the `tnsnav.ora` file

```
LOCAL_COMMUNITIES =
      (COMMUNITY_LIST =
        (COMMUNITY = OPENVIEW_COMMUNITY)
  )
```

Example 4-4 Example contents of the `sqlnet.ora` file

```
TRACE_LEVEL_CLIENT = OFF
    TRACE_DIRECTORY_CLIENT = /opt/oracle/product/11.1.0/network/log
    LOG_DIRECTORY_CLIENT = /opt/oracle/product/11.1.0/network/log
```

Installing and Configuring HPOM with a Remote/Manual Oracle Database

To install and configure HPOM with a remote/manual Oracle Database, follow these steps:

1. Install the HP Operations management server software as described in "Installing and Configuring the HPOM Software on the Management Server" on page 62.

IMPORTANT

During the installation procedure, enter **y** when the following question appears:

```
Do you want to set up the database manually
(local/remote) (y|n):
```

The following text is displayed:

```
NOTE: Before continuing, perform manual (local/remote) DB
configuration
```

Leave the `ovoconfigure` window open.

2. In another window, as the `root` user, perform the following procedure:

   a. Install the latest HP Operations management server patch.

   b. Export `ORACLE_HOME`, `ORACLE_SID`, and `LANG` (for an appropriate `LANG` value, see the *HPOM Administrator's Reference*).

   c. Copy the following Net files from the Oracle Database server to the HP Operations management server:

      - `$ORACLE_HOME/network/admin/sqlnet.ora`
      - `$ORACLE_HOME/network/admin/tnsnames.ora`
      - `$ORACLE_HOME/network/admin/tnsnav.ora`

      These files are required on the database server and the HP Operations management server. When you copy the files to the HP Operations management server, check that the directory paths point to the correct locations, and modify them if necessary.

NOTE

The `tnsnav.ora` and `sqlnet.ora` files are optional. If you have configured these files on the database server, you should also configure them on the HP Operations management server.

3. Return to the `ovoconfigure` window, and press **Enter** to configure the database.

NOTE

This step can be done manually by using `opcdbsetup -p`.

4. *Optional:* If you have configured additional user rights on the database server during the process of configuring users, passwords, and rights manually, you can run `/opt/OV/contrib/OpC/opc_odc` to verify the database setup (the log file is in `/tmp/opc_odc.log`).

5 Directory Structure on the Management Server

In This Chapter

This chapter provides file trees showing the hierarchy of the HP Operations Manager (HPOM) directories on the management server.

HPOM File Tree on the Management Server

The layout of the 11.x file system conforms to the standard structure of UNIX system.

The major HPOM directories contain the following:

`/opt/OV`	All HPOM binaries
`/etc/opt/OV`	Configuration data
`/var/opt/OV`	Run-time data

NOTE The file tree can include additional subdirectories if HP Operations agent software or other HP Operations software is installed. For more information on agent file trees, see the *HPOM HTTPS Agent Concepts and Configuration Guide*.

Figure 5-1 File Tree on the Management Server (/opt/OV Branch)

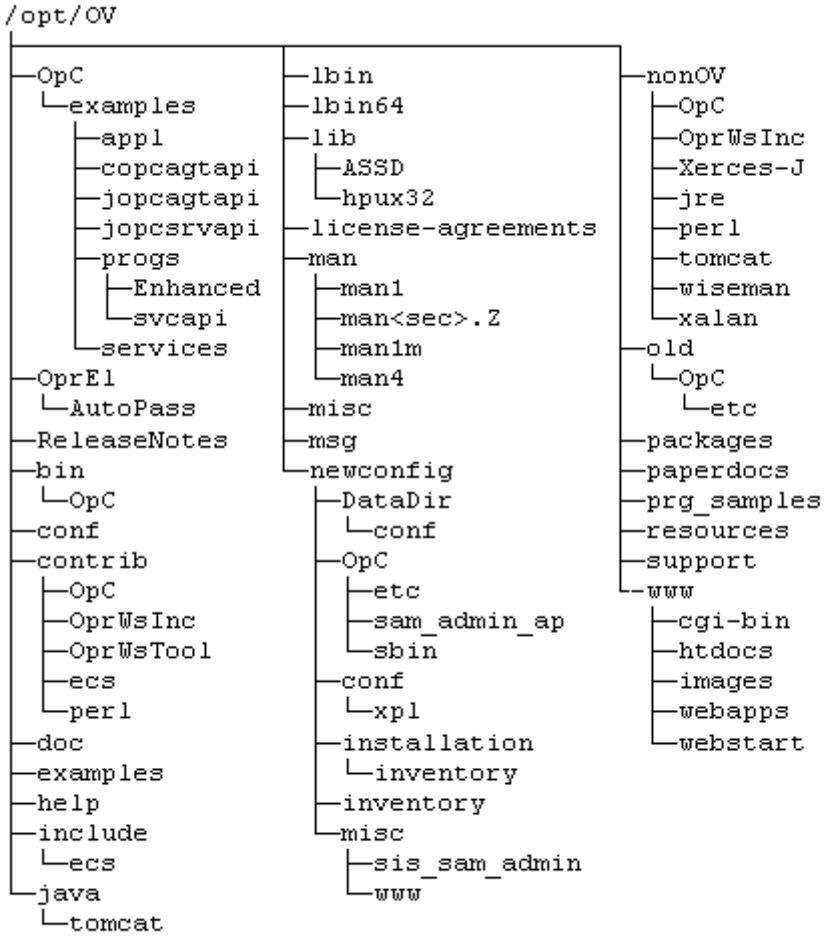
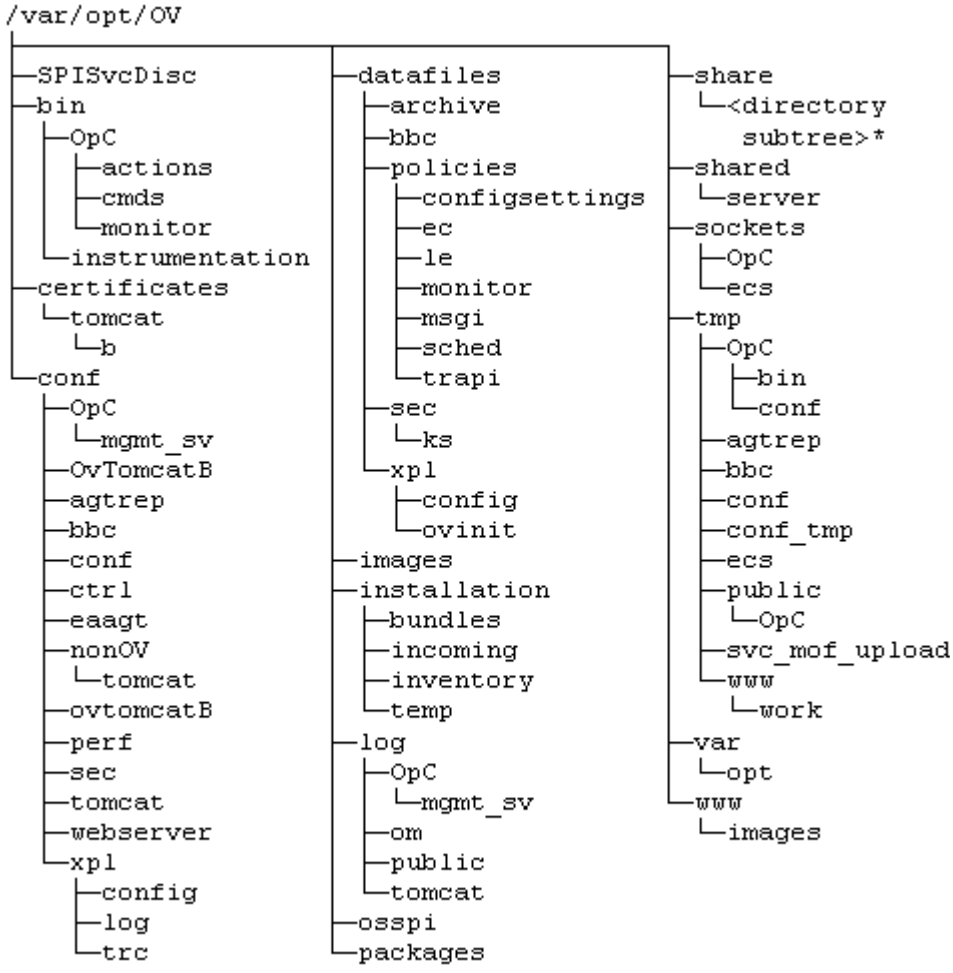
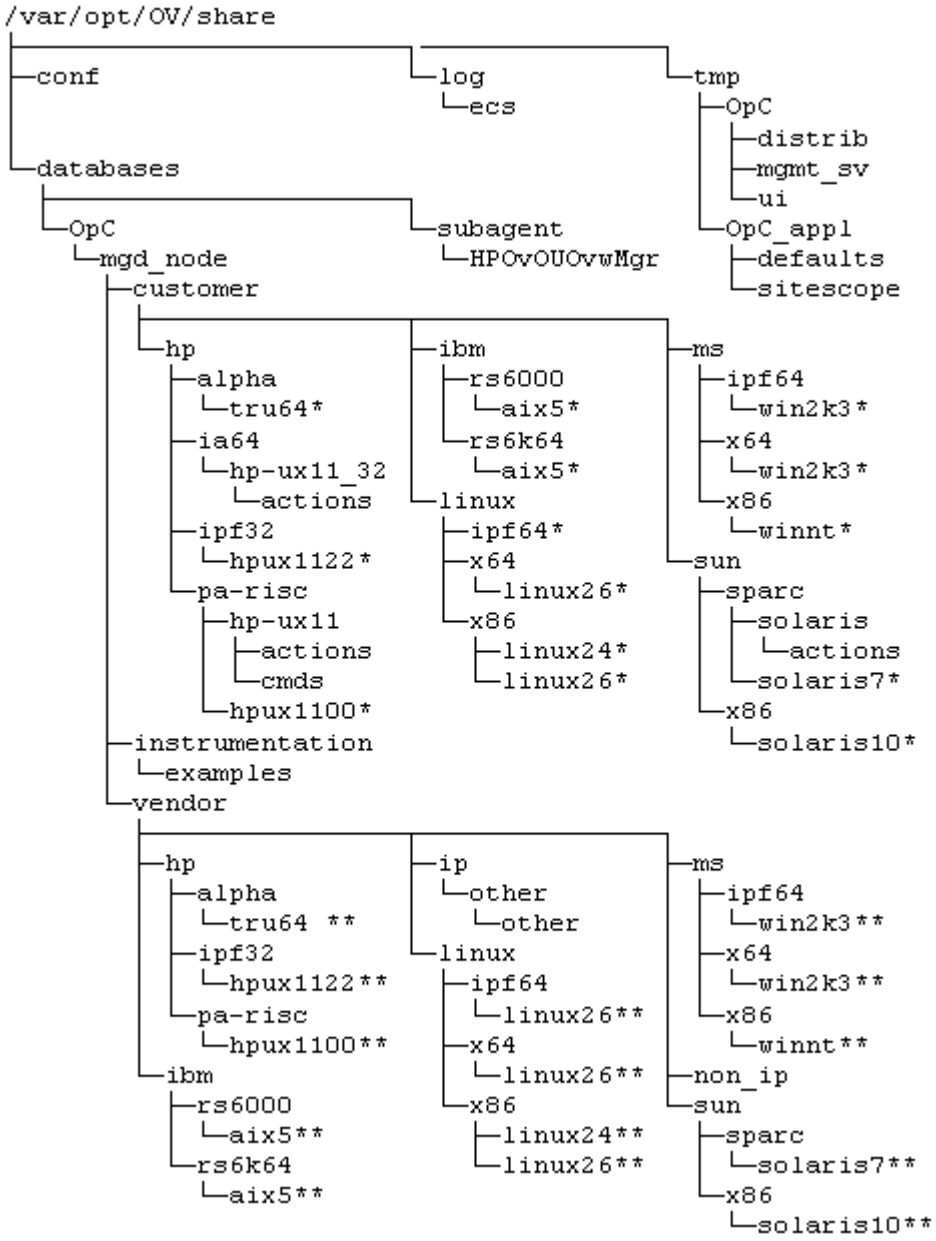


Figure 5-2 File Tree on the Management Server (/var/opt/OV Branch)

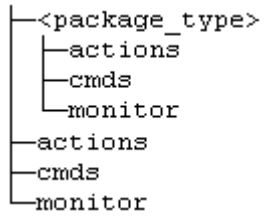


* For the directory subtree of the `/var/opt/OV/share` directory, see Figure 5-3 on page 136.

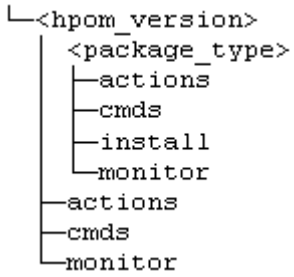
Figure 5-3 File Tree on the Management Server (/var/opt/OV/share Branch)



* Includes the following customer specific operating system directory subtree:



** Includes the following vendor specific operating system directory subtree:



Where:

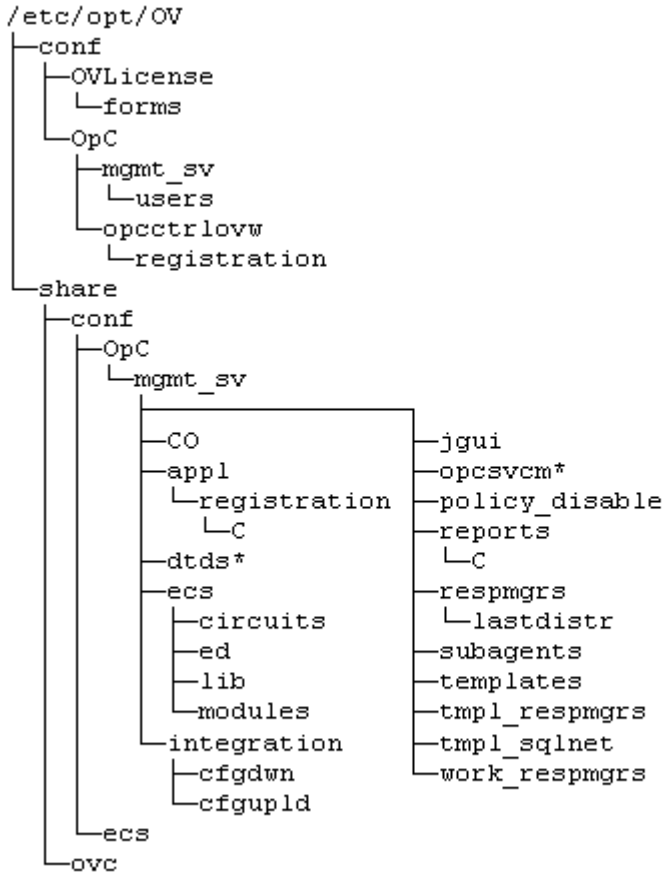
<*hpom_version*> Version of HPOM that supports a particular agent platform.

HPOM can manage several different HPOM versions for each agent platform.

<*package_type*> Communication type used by the remote procedure calls (RPC) of a particular agent platform, for example, RPC_BBC.

The customer sub-tree is similar to the vendor subtree, without the HPOM version. You can integrate your additional scripts, including individual scripts and binaries in the **monitor**, **cmds**, and **actions** subdirectories. These files are automatically distributed to the managed node by HPOM.

Figure 5-4 File Tree on the Management Server (/etc/opt/OV Branch)



* Only if Service Navigator is installed.

System Resources Adapted by HPOM

HPOM makes changes in the following system resource files:

- `/etc/passwd`

  Contains the entry for the default HPOM operator.

- `/etc/group`

  Contains the entry for the default HPOM operator.

- `/etc/services`

  Adds the `ito-e-gui` service for the Java GUI.

- `/etc/xinetd.d/ito-e-gui`

  Starts the `/opt/OV/bin/OpC/opcuiwww` process when requested.

6 Software Administration on the Management Server

In This Chapter

This chapter describes how to do the following:

- ❏ Deinstall HPOM from the management server.
- ❏ Deinstall the HPOM Java GUI.
- ❏ Reinstall HPOM on the management server.

Deinstalling the Entire HPOM Installation

To deinstall the entire HPOM installation, follow these steps:

1. Log on to the management server as the `root` user.
2. Stop all managed node services by entering the following command:

   `/opt/OV/bin/OpC/opcragt -stop -all`

3. Deinstall the HPOM software from all the managed nodes, excluding the management server, by using the `inst.sh` script.

   Enter the following:

   `/opt/OV/bin/OpC/agtinstall/inst.sh -r`

4. Check whether any HPOM GUIs are connected to the management server by entering the following command:

   `/opt/OV/contrib/OpC/listguis`

   If there are HPOM GUIs connected to the management server, stop them by selecting **File->Exit**. Alternatively, you can use the `kill(1)` command.

5. To start the HPOM deinstallation, start the `ovoremove` script by entering:

   `/opt/OV/bin/OpC/install/ovoremove`

NOTE

After you have run the `ovoremove` script, make sure that you refer to the latest edition of the *HPOM Software Release Notes* for the information about the additional steps that you might need to perform.

The following text appears:

```
Welcome to the HP Operations Manager for UNIX removal
```

Press **Enter** to verify that you want the removal procedure to start.

NOTE

The whole removal procedure is written in the log files, which you can view at any time during the removal procedure.

Check the following log files for problems you may encounter during the deinstallation:

- /var/opt/OV/log/OpC/mgmt_sv/installation.log
- /var/opt/OV/log/OpC/mgmt_sv/installation.log.error
- /var/opt/OV/log/OpC/mgmt_sv/installation.log.verbose

The ovoremove script first detects whether the management server is running as HARG, removes the local agent, stops the management server, and then detects which server add-on packages are installed.

After ovoremove has detected which server add-on packages are installed, it asks you whether you want to continue with the removal of server add-on packages.

6. Press **Enter** to accept the default answer (for example, "y"), or choose one of the answers, which are displayed after each individual removal procedure step.

   The ovoremove script continues with the removal of the following:

   - Server add-on packages
   - Web server configuration
   - Java GUI configuration
   - Database
   - Other server configuration
   - opc_op user
   - Deintegration from the start-stop sequence

7. Press **Enter** to continue.

   After the ovoremove script has detected the installed software (that is, the HP Operations management server), it informs you about the packages and components that will be removed. These are the following:

- ❏ ECS composer packages
- ❏ Agent packages
- ❏ Localization packages
- ❏ Server packages
- ❏ Core components

The `ovoremove` script then asks you whether you want to continue with the software removal, during which the HP Operations management server is removed.

8. Press **y** to finish the HPOM deinstallation procedure.

To deinstall the Oracle Database, see the documentation supplied by the database vendor.

Deinstalling the HPOM Java GUI

If you no longer need the HPOM Java GUI, you can easily deinstall it.

Deinstalling the Java GUI from a PC Client

To deinstall the HPOM Java GUI from a PC client, follow these steps:

1. Close all running GUIs on the client.
2. Select **Start->Settings->Control Panel**. The Windows Control Panel opens.
3. In the Windows Control Panel, double-click the Add/Remove Programs icon.

   The Add/Remove Programs Properties dialog box opens.
4. In the Add/Remove Programs Properties dialog box, select **HP Operations for UNIX Java Console**, and then click **Add/Remove...**.

Deinstalling the Java GUI from a Linux Client

To deinstall the HPOM Java GUI from a Linux client, follow these steps:

1. Close all running GUIs on the client.
2. Deinstall the HPOM Java GUI interactively by using the `rpm` utility. Enter the following:

   `/bin/rpm -e HPOvOUWwwGui`

Deinstalling the Java GUI from Other UNIX-based Systems

To deinstall the HPOM Java GUI from other UNIX-based systems, follow these steps:

1. Close all running GUIs on the client.
2. Remove the `/opt/OV/www/htdocs/ito_op/` directory and its contents.

Reinstalling the HPOM Software

To reinstall the HPOM software, follow these steps:

1. Make a copy of old management server certificates.

   Run the following command:

   ```
   /opt/OV/bin/OpC/opcsvcertbackup -backup \
   -passwd <passwd> -file <old_certs>
   ```

   In this instance, *<passwd>* is the user's password and *<old_certs>* is the file with the old management server certificates.

   If you have omitted the `-file` option, a `.tar` archive file is created at the following default location:

   `/tmp/opcsvcertbackup.`*<date_time>*`.tar`

2. Make a copy of the old management server `OvCoreId`.

   Run the following command:

   ```
   /opt/OV/bin/ovcoreid -ovrg server > /tmp/mgmtsv_coreid
   ```

NOTE

Make sure that the old management server `OvCoreId` and certificates are reused after the HP Operations management server installation. If the old management server certificates and the `OvCoreId` are not reused, the managed nodes cannot communicate with the management server.

3. Download all configuration data:

   a. Create an empty download specification file:

   ```
   mkdir /tmp/cfgdwn
   ```

   ```
   echo "* ;" > /tmp/cfgdwn/download.dsf
   ```

   b. Download the configuration:

   ```
   /opt/OV/bin/OpC/opccfgdwn /tmp/cfgdwn/download.dsf \
   /tmp/cfgdwn
   ```

4. *Optional:* To download all messages, follow these steps:

   a. Perform a history download by entering:

      ```
      /opt/OV/bin/OpC/opchistdwn -older 0s -file \
      /tmp/history
      ```

   b. Acknowledge all active messages by running `opcack`:

      ```
      /opt/OV/bin/OpC/opcack -u <user_for_all_msg_grps> \
      -a -f
      ```

   c. Perform a second history download by entering:

      ```
      /opt/OV/bin/OpC/opchistdwn -older 0s -file /tmp/active
      ```

5. Deinstall the current HPOM software by using the `ovoremove` script:

   ```
   /opt/OV/bin/OpC/install/ovoremove
   ```

NOTE

After you have run the `ovoremove` script, make sure that you refer to the latest edition of the *HPOM Software Release Notes* for the information about the additional steps that you might need to perform.

6. Install the HPOM software as described in “Installing the HPOM Software on the Management Server System” on page 58.
7. Update the `OvCoreId` and certificates on the new management server:

   a. Stop all the processes:

      ```
      ovc -kill
      ```

   b. Install the certificate backup from the old HP Operations management server:

      ```
      /opt/OV/bin/OpC/opcsvcertbackup -restore \
      -passwd <passwd> -file <old_certs> -force
      ```

      In this instance, *<passwd>* is the user’s password and *<old_certs>* is the file with the old management server certificates.

IMPORTANT

Do not forget to use the `-force` option when installing the certificate backup from the old HP Operations management server.

c. Update the local agent `OvCoreId` in the database:

```
/opt/OV/bin/OpC/utils/opcnode -chg_id \
node_name=<local_agent_hostname> \
id=`cat /tmp/mgmtsv_coreid`
```

To verify that the `OvCoreId` has been correctly updated in the database, run the following command:

```
/opt/OV/bin/OpC/utils/opcnode -list_id \
node_list=<local_agent_hostname>
```

In this instance, *<local_agent_hostname>* is the hostname of the local agent.

8. Upload configuration data:

```
opccfgupld -replace /tmp/cfgdwn
```

9. If you have downloaded all messages, upload them now:

a. Upload the active messages from your download:

```
/opt/OV/bin/OpC/opchistupl /tmp/active
```

b. Unacknowledge the active messages in the History Message Browser and disown them in the Message Browser by using the Java GUI.

For detailed information, see the *HPOM Java GUI Operator's Guide*.

c. Upload the history messages:

```
/opt/OV/bin/OpC/opchistupl /tmp/history
```

10. Restart the HPOM processes:

```
ovc -start
```

11. Check the agent connectivity by entering the following command:

```
opcragt <remote_agent>
```

In this instance, *<remote_agent>* is the hostname of the remote agent.

Reinitializing the HPOM Database and Configuration

If required, you can reinitialize the HPOM database and configuration on the management server after reinstalling the HPOM software.

To reinitialize the database and configuration, follow these steps:

1. If required, deinstall the HPOM software from all the managed nodes as described in the *HPOM Administrator's Reference*.

CAUTION

After you have reinitialized the HPOM database, all the node configuration will be lost. You *must* then reconfigure the nodes.

2. As user `root`, export the Oracle variables as follows:

   ```
   export ORACLE_HOME=/opt/oracle/product/<version>
   ```

   ```
   export ORACLE_BASE=/opt/oracle
   ```

3. If the software has been deinstalled, reinstall it as described in "Reinstalling the HPOM Software" on page 148.

4. Stop the HP Operations server and agent processes:

   ```
   /opt/OV/bin/OpC/opcsv -stop
   ```

   ```
   /opt/OV/bin/ovc -stop AGENT
   ```

5. Clean up the database, including the configuration for operators and nodes, and all active and history messages.

   Enter:

   ```
   su - root
   ```

   ```
   /opt/OV/bin/OpC/opcdbinit -c [-v]
   ```

   ```
   exit
   ```

   The `opcdbinit` command uses the following modes:

`-c`	Clean mode. Cleans up tables and loads the default configuration.
`-v`	Verbose mode. Used to show the detailed processing progress.

6. Restart all the HP Operations management server and agent processes by entering:

   ```
   /opt/OV/bin/OpC/opcsv -start
   ```

   ```
   /opt/OV/bin/ovc -start AGENT
   ```

7 Migrating HPOM

In This Chapter

This chapter describes the migration process from one system to another, for example, the migration from HPOM 9.00 running on HP-UX on HP Integrity or HPOM 8.xx running on Sun Solaris to HPOM 9.01 on Red Hat Enterprise Linux.

Before starting with the migration, consider the following terms used in this chapter:

Old server The source management server from which you migrate HPOM.

New server The target management server on which you migrate HPOM.

Verifying the Installation Requirements for the Management Server

Make sure that the new management server meets at least the minimum system requirements as described in Chapter 1, “Installation Requirements for the Management Server.”

As a general rule, you must perform migrations in the following order:

1. Hardware
2. Operating system (including operating system patches)
3. Database
4. HPOM software

HPOM places no restrictions on the number of managed nodes with the 60-day Instant-On license. Ensure that you acquire the correct license for your requirements before the Instant-On license expires.

If you have a product installed that is integrated with the old HP Operations management server (for example, HP Performance Manager), make sure this product is compatible with a newer version of HPOM before starting the HPOM migration process.

For information about how to perform the HPOM migration in this situation, see the documentation of the integrated product.

Installing the Oracle Database

To install the Oracle Database on the new management server, follow these steps:

1. Prepare the system for the Oracle Database installation.

   For detailed prerequisites and installation steps for the Oracle Database, see “Installing and Verifying an Oracle Database” on page 47.

2. Install and set up the Oracle Database for Red Hat Enterprise Linux.

   For instructions, see the documentation supplied with the Oracle product.

Migration Scenarios

When migrating from one system to another, you can choose one of the following scenarios:

- ❏ Migration to a System with a Different IP Address and a Hostname
- ❏ Upgrade of the Systems in a MoM Setup by Reusing the IP Addresses and Hostnames

NOTE

You can migrate to a system with the different IP address and the hostname. Alternately, you can upgrade the systems in the MoM setup by reusing the IP addresses and hostnames. Unlike the simple upgrade procedure described in Chapter 8, “Upgrading HPOM to Version 9.01,” these scenarios require almost no operational downtime.

Migration to a System with a Different IP Address and a Hostname

If the hostname and IP address of the new server are different from those of the old server, it is recommended that you configure the new server as a backup server. If you do so, you can migrate to the new server by using the MoM setup. The basics of this scenario are the following:

- ❏ New hardware with a new IP address and a hostname is used for the new server.
- ❏ Can be applied on all HPOM 8.xx setups: the standalone server setup, the MoM setup, and the hardware cluster setup.
- ❏ Depending on the setup, you can switch to the standalone server setup after the migration process is finished, and shut down the HPOM 8.xx management server.
- ❏ If the old server is to be switched off after the migration process, you can request a new server's permanent license in exchange for the old license (contact the HP Password Delivery Center). In the meantime, you can work on the new server with the 60-day Instant-On license.
- ❏ After setting up the new HPOM 9.01 management server, you can also upgrade the old server to HPOM 9.01 (for example, if a hardware cluster shall be reused).
- ❏ Migration process can almost be performed without operational downtime.
- ❏ Messages can be synchronized in both directions, from the HPOM 8.xx management server to the HPOM 9.01 management server, and vice versa, while the configuration data exchange is only possible from the HPOM 8.xx management server to the HPOM 9.01 management server.
- ❏ Because HPOM 9.01 no longer supports DCE communication, message forwarding between the HPOM 8.xx management server and the HPOM 9.01 management server must be switched to HTTPS.
- ❏ All managed nodes must be updated with the root certificate of the new server.

- ❏ Can also be used for the hardware upgrades of the same HPOM version.

To migrate to the system with the different IP address and hostname, complete these tasks:

- ❏ Task 1: “Downloading the Current HPOM 8.xx Configuration” on page 162
- ❏ Task 2: “Setting Up a New HPOM 9.01 Management Server” on page 164
- ❏ Task 3: “Uploading the Saved HPOM Configuration” on page 166
- ❏ Task 4: “Establishing a Trust Relationship Between the Two Management Servers” on page 168
- ❏ Task 5: “Setting Up Message Forwarding Between the Management Servers” on page 172

NOTE For detailed information about setting up a backup server, see the *HPOM Concepts Guide*.

Downloading the Current HPOM 8.xx Configuration

NOTE

With HPOM 9.01, templates have been converted to policies. The conversion takes place automatically during the template upload. The version of all newly created policies is set to 1.0, while the version of all HPOM 9.01 delivered default policies is 9.0.

For detailed information about the HPOM policies, see the *HPOM Administrator's Reference* and the *HPOM Concepts Guide*. See also "Converting Templates to Policies" on page 187 for more information about the conversion of templates to policies.

To download the current HPOM 8.xx configuration, follow these steps:

1. Include the service data into the download by entering the following command:

   ```
   /opt/OV/bin/ovconfchg -ovrg server -ns opc -set \
   OPC_OPCCFGDWN_ALL_INCLUDE_SELDIST_SERVICES TRUE
   ```

2. Create a download specification file for all configuration data:

   ```
   echo "* ;" > /tmp/download.dsf
   ```

3. Download the configuration:

   ```
   /opt/OV/bin/OpC/opccfgdwn -force -backup \
   /tmp/download.dsf /tmp/cfgdwn
   ```

4. If you want to migrate your server configuration settings, store the output of `ovconfget -ovrg server` into a file, and then transfer it to the new server.

The process of downloading the current HPOM 8.xx configuration may be repeated several times during the migration. This is because the configuration changes (for example, adding the new managed nodes) take place in the productive 8.xx environment, and therefore must be synchronized to the new server occasionally.

NOTE

The audit records cannot be migrated from HPOM 8.xx to HPOM 9.01. Download the audit data before migrating HPOM if you want to keep a copy of all audit entries.

NOTE For detailed information about the message transfer from HPOM 8.xx to HPOM 9.01, see “Setting Up Message Forwarding Between the Management Servers” on page 172.

Setting Up a New HPOM 9.01 Management Server

NOTE The pure installation of the new server can be done independently of any activities in the productive 8.xx environment.

To set up the new server, follow these steps:

1. Install the HP Operations management server software as described in Chapter 2, “Installing HPOM on the Management Server.”

IMPORTANT Make sure your system meets the hardware and software requirements for the HPOM 9.01 software installation. For information about the installation requirements, see Chapter 1, “Installation Requirements for the Management Server.”

2. After the new server has been installed, perform the following steps on the old server:

   a. Add the new server (the backup server) as a managed node on your old server, for example, by using the `opcnode` command line utility:

   ```
   /opt/OV/bin/OpC/utils/opcnode -add_node \
   node_name=<new_server> group_name=<nodegrp_name> \
   net_type=<network_type> mach_type=<machine_type>
   ```

   For example:

   ```
   opcnode -add_node \
   node_name=omu9server net_type=NETWORK_IP \
   group_name=hp_ux mach_type=MACH_BBC_HPUX_IPF32 \
   node_label=omu9server
   ```

   For more information, see the *opcnode (1M)* man page.

   b. The new server must be added to the node bank of the old server including its `OvCoreID`.

   On the new server, enter the following command:

   ```
   /opt/OV/bin/OpC/utils/opcnode -list_id \
   node_list=<new_server_hostname>
   ```

On the old server, enter the following command:

```
/opt/OV/bin/OpC/utils/opcnode -chg_id \
node_name=<new_server_hostname> \
id=<new_server_OvCoreId>
```

NOTE

You can verify that the `OvCoreId` has been correctly updated in the database of the HPOM 8.xx management server by running the following command:

```
opt/OV/bin/OpC/utils/opcnode -list_id \
node_list=<new_server_hostname>
```

Uploading the Saved HPOM Configuration

To upload the previously saved HPOM 8.xx configuration with `opccfgupld` on the new server, perform as follows:

1. Transfer the saved configuration files to the new server.
2. Stop the HP Operations management server processes:

   `/opt/OV/bin/ovc -stop SERVER`

   In a cluster environment: First disable the HA resource group monitoring by using the following command:

   `/opt/OV/lbin/ovharg -monitor ov-server disable`

NOTE Make sure that in the cluster environment the upload is performed on the active node.

3. If you have stored the output of `ovconfget -ovrg server` into a file and transferred it to the new server, perform the following:

   a. Run the following command:

      `/opt/OV/bin/ovconfchg -ovrg server -edit`

   b. In the editor, merge the configuration.

      Make sure that you add only the variables that you have modified, and not all internal HPOM variables. Failing to do so may cause problems with the HP Operations management server installation.

      To determine which variables have been modified, enter the following command on the old server:

      `/opt/OV/bin/ovconfchg -ovrg server -edit`

      Then compare this output with the output from the new server.

4. Upload the configuration on the new server:

   `/opt/OV/bin/OpC/opccfgupld -replace -subentity \`
   `-configured <`*`download_directory`*`>`

   For example:

```
opt/OV/bin/OpC/opccfgupld -replace -subentity \
-configured /tmp/cfgdwn
```

NOTE

With HPOM 9.01, templates have been migrated to policies. The conversion takes place automatically during the template upload. The version of all newly created policies is set to 1.0, while the version of all HPOM 9.01 delivered default policies is 9.0.

5. Verify that the old server is configured on the new server by running the following command:

   ```
   /opt/OV/bin/OpC/utils/opcnode -list_nodes
   ```

   If the old server is not listed, enter the following:

   ```
   /opt/OV/bin/OpC/utils/opcnode -add_node \
   node_name=<old_server> group_name=<nodegrp_name> \
   net_type=<network_type> mach_type=<machine_type> \
   id=<old_server_OvCoreId>
   ```

   To get the `OvCoreId`, enter the following command on the old server:

   ```
   /opt/OV/bin/OpC/utils/opcnode -list_id \
   node_list=<old_server_hostname>
   ```

6. If the old server is running in an HA cluster and the new server is a standalone server, run the following command on the new server:

   ```
   /opt/OV/bin/OpC/utils/opcnode -list_virtual \
   node_name=<new_server>
   ```

   If a line similar to `cluster_package=ov-server` appears, run the following commands:

   ```
   /opt/OV/bin/OpC/utils/opcnode \
   -set_physical node name=<new_server>
   ```

   ```
   /opt/OV/bin/OpC/utils/opcnode -list_virtual
   ```

   An output similar to the following should appear:

   ```
   node '<new_server>' is not a virtual one
   ```

7. Start the HP Operations management server processes:

   ```
   /opt/OV/bin/ovc -start SERVER
   ```

In a cluster environment: Enable the HA resource group monitoring by using the following command:

```
/opt/OV/lbin/ovharg -monitor ov-server enable
```

Establishing a Trust Relationship Between the Two Management Servers

To establish a trust relationship between the old server and the new server, perform as follows:

1. If the old server has a Certification Authority, which is the default, share the server certificates by exporting the local CA trusted certificates:

   ```
   /opt/OV/bin/ovcert -exporttrusted -file \
   /tmp/<hostname>.cert -ovrg server
   ```

   For detailed information about establishing a shared CA in the MoM environments, see the *HPOM HTTPS Agent Concepts and Configuration Guide*.

2. Copy the file to the new server, and then import certificates:

   a. Copy the certificate file to the new server.

   b. Import the certificates from the old server to the new server by entering the following command on the new server:

   ```
   /opt/OV/bin/ovcert -importtrusted -file \
   /tmp/<hostname>.cert -ovrg server
   ```

NOTE

You can view the current certificates before importing the certificates from the old server to the new server. Enter the following command on the new server:

```
/opt/OV/bin/ovcert -list
```

   c. On the new server, propagate the old server's trusted certificates to the local agent. Enter the following command on the new server:

   ```
   /opt/OV/bin/ovcert -updatetrusted
   ```

To check whether the additional CA trusted certificate is installed, list the installed certificates by using the following command:

```
/opt/OV/bin/ovcert -list
```

3. Repeat steps 1 and 2 to import the new server's CA trusted certificate to the old server. Perform as follows:

   a. On the new server, enter the following:

   ```
   /opt/OV/bin/ovcert -exporttrusted -file \
   /tmp/<hostname>.cert -ovrg server
   ```

   b. Copy the file to the old server, and import the certificates there:

   ```
   /opt/OV/bin/ovcert -importtrusted -file \
   /tmp/<hostname>.cert -ovrg server
   ```

NOTE Because the file contains all the trusted certificates from the old server, you will receive a warning that the certificate is already installed.

   c. On the old server, propagate the new server's trusted certificates to the local agent. On the old server, enter the following:

   ```
   /opt/OV/bin/ovcert -updatetrusted
   ```

   To check whether the additional CA trusted certificate is installed, list the installed certificates by using the following command:

   ```
   /opt/OV/bin/ovcert -list
   ```

4. Configure the flexible management policy on the old server:

   - *If you already have the MoM setup:* Add the new server to the `/etc/opt/OV/share/conf/OpC/mgmt_sv/respmgrs/allnodes` file, and then verify the syntax:

     ```
     /opt/OV/bin/OpC/opcmomchk allnodes
     ```

   - *If you do not have the MoM setup yet:* The system contains several example files, which are located in the following directory:

     `/etc/opt/OV/share/conf/OpC/mgmt_sv/tmpl_respmgrs`

Create a copy of the backup server example policy, and modify it to reflect your own configuration. To confirm that the file syntax is configured correctly in the new policy file, run the following command:

/opt/OV/bin/OpC/opcmomchk policy-filename

Name the file `allnodes`, and copy it to the following directory:

`/etc/opt/OV/share/conf/OpC/mgmt_sv/respmgrs`

5. Deploy the flexible management policy to all nodes. On the old server, enter the following command:

   /opt/OV/bin/OpC/opcragt -distrib -templates -all

   Make sure that you update the trusted certificates on the remote agents. In the Java GUI, mark all the managed nodes, and then start the `Update Trusts` application in the `Certificate Tools` application group.

6. On the new server, check whether the agents can be contacted:

   /opt/OV/bin/OpC/opcragt -status -all

   Run the command on the old server as well, and then compare its output with the output of the new server.

NOTE

On the old server, you can switch on multiple threading for the `opcragt` command by entering:

/opt/OV/bin/ovconfchg -ovrg server -ns opc -set \ OPCRAGT_USE_THREADS TRUE

On the new server, `opcragt` is multiple-threaded by default.

NOTE

The agents, which could not be contacted, are also listed in the following file:

`/var/opt/OV/share/tmp/OpC/mgmt_sv/opcragt-status-failed`

7. Copy the `allnodes` file from the old server to the new server. The file location is the following:

```
/etc/opt/OV/share/conf/OpC/mgmt_sv/respmgrs/allnodes
```

8. *Ignore this step at this point.*

   Perform this step later if you plan to shut down the old server when the new server is up and running, and the old server is still referenced in the settings.

   Change the following configuration variables on all affected agents:

   ```
   sec.core.auth:MANAGER
   sec.core.auth:MANAGER_ID
   sec.cm.client:CERTIFICATE_SERVER
   ```

   On either of the servers, enter the following:

   ```
   /opt/OV/bin/OpC/opcragt -set_config_var \
   sec.cm.client:CERTIFICATE_SERVER= \
   <new_server_hostname> <node_list>
   ```

   ```
   /opt/OV/bin/OpC/opcragt -set_config_var \
   sec.core.auth:MANAGER= \
   <new_server_hostname> <node_list>
   ```

   ```
   /opt/OV/bin/OpC/opcragt -set_config_var \
   sec.core.auth:MANAGER_ID= \
   <new_server_core_id> <node_list>
   ```

   In this instance, *<node_list>* is usually `-all`.

9. *Ignore this step at this point.*

   In the server pooling environments, perform this step when the new server is up and running.

   To configure all managed nodes to use the new server as the primary manager, enter the following command on the new server:

   ```
   /opt/OV/bin/OpC/opcragt -primmgr -all
   ```

10. *Optional:* You can upgrade the managed nodes to the latest version at any time later on. For more information, see “Upgrading Managed Nodes” on page 196.

Setting Up Message Forwarding Between the Management Servers

When the new server is completely functioning, the messages must be synchronized. It is recommended to have a shadow period during which the new server acts as a backup server for the old server. The shadow period can last only several hours, but it can also take days or weeks, depending on the company requirements.

NOTE Only the new incoming messages are synchronized by using message forwarding. All the messages, which had arrived before the shadow period began, must be handled on the old server.

To set up message forwarding between the servers, perform as follows:

1. Make sure that you prepare the following configuration file on the old server:

   `/etc/opt/OV/share/conf/OpC/mgmt_sv/respmgrs/msgforw`

   - ❏ *If you already have the MoM with message forwarding setup:* Add the new server to the existing `msgforw` file, and then verify the syntax by entering the following command:

     `/opt/OV/bin/OpC/opcmomchk`

   - ❏ *If you do not have the MoM with message forwarding setup yet:* The system contains an example file, which is located in the following directory:

     `/etc/opt/OV/share/conf/OpC/mgmt_sv/tmpl_respmgrs`

     Create a copy of the `msgforw` example policy, and modify it to reflect your own configuration. The following is the excerpt for a two server setup:

     ```
     ...
         MSGTARGETRULE
         DESCRIPTION "forward all messages"
           MSGTARGETRULECONDS
           MSGTARGETMANAGERS
             MSGTARGETMANAGER
     ```

```
    TIMETEMPLATE "$OPC_ALWAYS"
    OPCMGR IP 0.0.0.0 "<new_server_hostname>"
    MSGCONTROLLINGMGR
  MSGTARGETMANAGER
    TIMETEMPLATE "$OPC_ALWAYS"
    OPCMGR IP 0.0.0.0 "<old_server_hostname>"
    MSGCONTROLLINGMGR
...
```

IMPORTANT

Both servers must be mentioned in the message target rule, and the `MSGCONTROLLINGMGR` keyword must be used.

For detailed information, see the *opcmom(4)* man page.

To confirm that the file syntax is configured correctly in the new policy file, run the following command:

```
/opt/OV/bin/OpC/opcmomchk policy-filename
```

Name the file `msgforw`, and copy it to the following directory:

`/etc/opt/OV/share/conf/OpC/mgmt_sv/respmgrs`

2. Enable message forwarding on the old server.

   Because the new server can only be contacted by using HTTPS communication, enter the following command:

   ```
   /opt/OV/bin/ovconfchg -ovrg server -ns opc -set \
   OPC_HTTPS_MSG_FORWARD TRUE
   ```

   For detailed information, see the *HPOM HTTPS Agent Concepts and Configuration Guide*.

3. Activate message forwarding on the old server by restarting the server processes:

   ```
   /opt/OV/bin/ovstop ovoacomm
   ```

   ```
   /opt/OV/bin/ovstart opc
   ```

4. Check message forwarding:

a. Create several messages, and check whether they arrive in the GUI connected to the new server.

b. Acknowledge the message on the new server, and check whether it is synchronized to the old server.

5. When the agents send the messages directly to the new server, set up message forwarding on the new server as well.

   You can do this by reusing the `msgforw` file from the old server:

   a. Copy the `msgforw` file from the old server to the new server, and then put it into the following directory:

      `/etc/opt/OV/share/conf/OpC/mgmt_sv/respmgrs`

   b. On the new server, enter the following command:

      `/opt/OV/bin/ovconfchg`

After the shadow period is over, perform as follows:

1. Make sure that the operators start using the new server. For detailed information, see the *HPOM Administrator's Reference*.

2. *Optional:* To download and upload the history messages from the old server to the new server, do the following:

   a. On the old server, enter the following command:

      `/opt/OV/bin/OpC/opchistdwn -until \`
      `<start_of_shadow_period> -file /tmp/history`

      In this instance, *<start_of_shadow_period>* is a timestamp in the `mm/dd/yy` format.

   b. Copy the file to the new server, and enter the following command:

      `/opt/OV/bin/OpC/opchistupl /tmp/history`

Upgrade of the Systems in a MoM Setup by Reusing the IP Addresses and Hostnames

This scenario uses the concept of the MoM backup server. Therefore, this scenario can only be applied in the MoM setups. While upgrading to HPOM 9.01, one server is put into the maintenance mode and the other server completely takes over. The basics of this scenario are the following:

- Server IP addresses, hostnames, and certificates are reused.
- It is not important whether a new hardware is introduced, or the existing hardware is reused - the IP addresses and the hostnames are taken over.
- Existing permanent license of the HPOM 8.xx management server, which is upgraded to HPOM 9.01, can be reused. However, if this is not possible, request a new server's permanent license in exchange for the old license. For details, contact the HP Password Delivery Center.
- Upgrade process can almost be performed without operational downtime.
- Messages can be synchronized in both directions, from the HPOM 8.xx management server to the HPOM 9.01 management server, and vice versa, while the configuration data exchange is only possible from the HPOM 8.xx management server to the HPOM 9.01 management server.
- Because HPOM 9.01 does no longer support DCE communication, message forwarding between the HPOM 8.xx management server and the HPOM 9.01 management server must be switched to HTTPS.
- Agents do not have to be updated because the server's certificates, the private keys, and the `OvCoreId` are reused.
- Can also be used for the hardware upgrades of the same HPOM version.

NOTE Because this scenario basically represents a subcase of the upgrade procedure described in Chapter 8, Upgrading HPOM to Version 9.01, only the specifics of the MoM upgrade are described below.

Upgrading the Systems in the MoM Setup by Reusing the IP Addresses and Hostnames

To upgrade the systems in the MoM setup by reusing the IP addresses and hostnames, assume you have server A and server B, and all agents currently report to server A. Then assume that server A shall be upgraded. Continue with completing the following steps:

1. *Ignore this step in the server pooling environments:*

   Switch all agents to report to server B. On server B, enter the following command:

   ```
   /opt/OV/bin/OpC/opcragt -primmgr -all
   ```

2. Make sure that message forwarding between server A and server B is switched to HTTPS communication.

   If required, perform the following steps on both servers:

   a. Because the new server can only be contacted by using HTTPS communication, enter the following command:

      ```
      /opt/OV/bin/ovconfchg -ovrg server -ns opc -set \
      OPC_HTTPS_MSG_FORWARD TRUE
      ```

   b. Restart the processes on both servers:

      ```
      /opt/OV/bin/ovstop ovoacomm
      ```

      ```
      /opt/OV/bin/ovstart opc
      ```

   c. Verify that HTTPS-based message forwarding works correctly: send several test messages, and then acknowledge them. Check that the message synchronization works correctly.

3. Stop server A.

   From the moment you stop server A, server B starts buffering all messages and message operations. Enter the following command:

   ```
   /opt/OV/bin/ovstop ovoacomm
   ```

NOTE

During the upcoming upgrade installation of server A, it can happen that server B sends the buffered messages as soon as server A is up.

4. If server A is to be replaced by a new hardware, back up its certificates and the `OvCoreId`:

   ```
   /opt/OV/bin/OpC/opcsvcertbackup -backup \
   -passwd <password> -file <my_cert_backup>
   ```

   In this instance, *<my_cert_backup>* is the file where you backed up the certificates.

5. To upgrade the management server, complete these tasks:

   - ❏ Task 1: “Downloading the Current HPOM 8.xx Configuration” on page 187
   - ❏ Task 2: “Upgrading the Old Version of HPOM” on page HIDDEN
   - ❏ Task 3: “Installing and Configuring the HPOM Software on the Management Server” on page 62
   - ❏ Task 4: “Uploading the Saved HPOM Configuration” on page 192

6. *Ignore this step if the old hardware of server A has been reused:*

   If server A has been replaced by a new hardware, the initial installation has generated a new `OvCoreId` and new certificates. Server B cannot forward messages to server A at this point. Therefore, you must reinstall the saved `OvCoreId` and certificates. Enter the following commands:

   ```
   /opt/OV/bin/ovc -kill
   ```

   ```
   /opt/OV/bin/OpC/opcsvcertbackup -restore \
   -passwd <password> -file <my_cert_backup> -force
   ```

   In this instance, *<password>* is the same password as you used for backing up the certificates and the `OvCoreId` of server A in step 4, and *<my_cert_backup>* is the file where you backed up the certificates.

   It may happen that in the meantime certain configuration changes have been done on server B.

7. Make sure that you synchronize the servers:

a. On server B, run the following commands:

```
echo "* :" >/tmp/all.dsf

mkdir /tmp/all

/opt/OV/bin/OpC/opccfgdwn -backup /tmp/all.dsf \
/tmp/all
```

b. On server A, enter the following command:

```
/opt/OV/bin/OpC/opccfgupld -replace -subentity \
<data_from_B>
```

In this instance, *<data_from_B>* is the data downloaded from server B.

8. Start the server processes on server A:

```
/opt/OV/bin/ovc -start
```

NOTE At this point, server B can forward all messages and message operations that have been buffered.

9. *Ignore this step in the server pooling environments:*

Optional: Switch the agents back to server A. On server A, run the following command:

```
/opt/OV/bin/OpC/opcragt -primmgr -all
```

8 Upgrading HPOM to Version 9.01

In This Chapter

This chapter describes additional procedures that you need to perform when migrating from an 8.xx management server on another platform, for example, Sun Solaris, to HPOM 9.01 on RHEL.

Upgrade Overview

To upgrade from HPOM 8.xx to HPOM 9.01 with database customizations, complete these tasks:

- ❏ Task 1: “HPOM Upgrade Restrictions” on page 183
- ❏ Task 2: “Verifying the Installation Requirements for the Management Server” on page 184
- ❏ Task 3: “Backing Up the Current HPOM 8.xx Installation” on page 185
- ❏ Task 4: “Downloading the Current HPOM 8.xx Configuration” on page 187
- ❏ Task 5: “Installing the New Oracle Version” on page 191
- ❏ Task 6: “Installing and Configuring the HPOM Software on the Management Server” on page 62
- ❏ Task 7: “Uploading the Saved HPOM Configuration” on page 192
- ❏ Task 8: “Upgrading the HPOM Java Operator UI” on page 195
- ❏ Task 9: “Upgrading Managed Nodes” on page 196

HPOM Upgrade Considerations

When upgrading from HPOM 8.xx to HPOM 9.01, you must consider that with HPOM 9.01 new concepts are introduced. The following list represents a summary of all configuration changes coming with HPOM 9.01.

NOTE For detailed information about all the below mentioned configuration changes, see the *HPOM Administrator's Reference* and the *HPOM Concepts Guide*.

- All the data that is downloaded from the HPOM 8.xx database and uploaded to the HPOM 9.01 database will be converted to UTF-8. All input data for command line tools and APIs should be in UTF-8, and no conversion takes place. For more information, see the *HPOM Administrator's Reference*.
- HPOM 9.01 uses policies instead of templates. For detailed information, see "Converting Templates to Policies" on page 187.
- Policy groups are used instead of template groups with HPOM 9.01. For more information about policy groups, see the *HPOM Concepts Guide*.

With HPOM 9.01, the following features are no longer supported:

- 8.xx SPIs

  HPOM 8.xx SPIs cannot be installed on HPOM 9.01. To download the configuration on HPOM 8.00 and upload it on HPOM 9.01 is supported. SPI policies and instrumentation can be used as with the previous version.
- Local HPOM integration with NNM on the management server
- DCE
- Motif GUI

During the upgrade, you receive warnings about the obsolete features. For details, see "HPOM Upgrade Restrictions" on page 183.

HPOM Upgrade Restrictions

Make sure that you consider the following restrictions when upgrading to HPOM 9.01:

- If you upgrade HPOM on the same management server system and you have NNM installed on the old system, consider that NNM cannot coexist on the same system with the HP Operations management server. This means that the NNM data relevant to the HPOM 8.xx cannot be used on the HPOM 9.01 management server.

  OV Applications and OV Services

  During the upgrade procedure, you receive the warnings for all OV Applications and OV Services that are not loaded to the database. For example:

  ```
  NNM Admin Tools
  Warning opccfgupld (Configuration Upload)(27187) :
  Application "NNM MIB Appl Builder" of type OV_PLATFORM
  obsoleted. (OpC50-255)
  Warning opccfgupld (Configuration Upload)(27187) :
  Application "NNM MIB Browser" of type OV_PLATFORM
  obsoleted. (OpC50-255)
  ```

  The similar warning is printed to the `System.txt` file.

- All node bank entries for DCE nodes are dropped during the upload on HPOM 9.01 because HPOM 9.01 no longer supports DCE. You receive a warning message for each node during the upload. For example:

  ```
  "0: INF: Mon Apr 6 13:00:28 2009: opccfgupld (9849/1):
  [node_lset.scp:2735]: WARNING -
  Platform missing for node "dsx3.deu.hp.com".
  Node not added to database!!
  ```

- Motif GUI functionality is no longer supported with HPOM 9.01. Because HPOM 9.01 no longer uses the Motif GUI operator, the configuration related to Motif GUI operators is dropped during the upload on HPOM 9.01.

Verifying the Installation Requirements for the Management Server

Make sure that the new management server meets at least the minimum system requirements as described in Chapter 1, “Installation Requirements for the Management Server.”

Note which versions of the operating system and the Oracle Database are required to upgrade the HPOM software. As a general rule, you *must* perform upgrades in the following order:

1. Hardware
2. Operating system (including operating system patches)
3. Database
4. HPOM software

HPOM places no restrictions on the number of managed nodes with the 60-day Instant-On license. Ensure that you acquire the correct license for your requirements before the Instant-On licence expires.

If you have a product installed that is integrated into or certified with HPOM 8.xx (for example, HP Performance Manager), make sure this product is compatible with HPOM 9.01 before starting the HPOM upgrade process.

For information about how to perform the HPOM upgrade in this situation, see the documentation of the integrated product.

Backing Up the Current HPOM 8.xx Installation

To back up the current HPOM installation, follow these steps:

1. Exit all GUIs.
2. Stop all other applications on the system.
3. Make a full backup of the current installation:
   a. Enter the following:

      /opt/OV/bin/OpC/opc_backup

      The system prompts you with the following:

      ```
      Do you want to use the full or configuration backup?
      (f|c) ==>
      ```

   b. Enter **f** for a *full* backup, which includes the HPOM binaries and the configuration data.

      The system prompts you with the following:

      ```
      Do you want to back up another directory, too?
      (y|n) ==>
      ```

   c. Enter **y** (yes) or **n** (no) as required.

      The system prompts you with the following:

      ```
      Please enter the backup destination:
      ```

   d. Enter a filename for the backup data, for example, `/tmp/opc_backup_full_hpom`, or enter a tape device.
   e. Store the backup data on backup media or a separate system. For more information, see the *opc_backup(1M)* man page.

NOTE It is strongly recommended that you save the management server certificates and the `OvCoreId` of the HPOM 8.xx management server.

Backing Up Management Server Certificates

To make a copy of the old management server certificates, run the following command:

```
/opt/OV/bin/OpC/opcsvcertbackup -backup \
-passwd <passwd> -file <old_certs>
```

In this instance, *<passwd>* is the user's password and *<old_certs>* is the file with the old management server certificates.

If you have omitted the `-file` option, a `.tar` archive file is created at the following default location:

`/tmp/opcsvcertbackup.`*`<date_time>`*`.tar`

NOTE Make sure that the old management server `OvCoreId` and certificates are reused after the HP Operations management server installation. If the old management server certificates and the `OvCoreId` are not reused, the managed nodes cannot communicate with the management server.

Downloading the Current HPOM 8.xx Configuration

This section describes the procedure for downloading the current HPOM 8.xx configuration. With HPOM 9.01, a new concept of policy management is introduced, therefore it is very important that you get acquainted with the basics described in “Converting Templates to Policies” on page 187 before continuing with the procedure for downloading the current HPOM 8.xx configuration.

Converting Templates to Policies

Consider the following basics before you download the current HPOM 8.xx configuration:

- With HPOM 9.01, templates have been converted to policies. The conversion takes place automatically during the template upload. The version of all newly created policies is set to 1.0, while the version of all HPOM 9.01 delivered default policies is 9.0.
- All HPOM 8.xx template assignments to nodes, node groups, and template groups will point to 1.0 policy versions after the migration to HPOM 9.01.

  All HPOM 8.xx template assignments are converted into fix version policy assignments. During the migration from HPOM 8.xx to HPOM 9.01, the `LATEST` and `MINOR_TO_LATEST` assignments are not created.
- Managed nodes that are mentioned in policies are no longer resolved to node objects in the HPOM 9.01 database. For example, assume that you have specified an action node with the IP address in the template, and now the IP address has been changed in the database. The HPOM 9.01 policy will point to the old IP address, while the HPOM 8.xx template has been updated automatically. For that reason, it is recommended to use node names in policies. If the IP address is used, make sure that you edit all the policies referencing that IP address if it has been changed.
- All HPOM 8.xx monitor templates are converted into monitor threshold policies during the migration. Although the policies seem to be different in terms of the syntax, they are in fact semantically identical to the templates.

- During the migration, the template group names containing a slash character (/) or a backslash character (\) are converted to use an underscore character (_) instead. For example, the SPI for SAP R/3 template group name is renamed to SPI for SAP R_3.
- All assignments of template groups are migrated as described in the following example:

Example 8-1 Migration of All Assignments of Template Groups

Assume that the G/C HPOM 8.xx template group is assigned to the G/A and G/B groups. Now also assume that the NG node group has G/C assigned, and that the T template is assigned to G/C.

The following take place during the migration:

— G/A is renamed to G_A, G/B to G_B, and G/C to G_C.

— The /G_A, /G_A/G_C, /G_B, and /G_B/G_C policy groups are created.

— The T policy (version 1.0) will be assigned to the /G_A/G_C and /G_B/G_C policy groups.

— The NG node group has an assignment to the /G_A/G_C and /G_B/G_C policy groups.

NOTE For detailed information about the HPOM policies, see the *HPOM Administrator's Reference* and the *HPOM Concepts Guide*.

Procedure for Downloading the Current HPOM 8.xx Configuration

To download the current HPOM 8.xx configuration, follow these steps:

1. Create a new user or modify an existing user in the `User Bank`.

   This user *must* have full responsibility for *all* message groups and node groups. You will need this user later on to acknowledge all active messages. You can use `opc_adm` for this purpose.

2. Verify that all running Java-based GUIs are stopped.

   Enter the following command:

   ```
   ps -eaf | grep opcui
   ```

3. Stop the HP Operations server processes by entering the following command:

   ```
   /opt/OV/bin/ovstop
   ```

4. Stop the local agent on the management server by entering the following command:

   ```
   /opt/OV/bin/OpC/opcagt -kill
   ```

5. *Optional:* To download the service data, enter the following command:

   ```
   ovconfchg -ovrg server -ns opc -set \
   OPC_OPCCFGDWN_ALL_INCLUDE_SELDIST_SERVICES TRUE
   ```

6. Download all the configuration data:

   a. Create an empty download specification file:

      ```
      echo "* ;" > /tmp/download.dsf
      ```

   b. Download the configuration:

      ```
      /opt/OV/bin/OpC/opccfgdwn /tmp/download.dsf \
      /tmp/cfgdwn
      ```

7. *Optional:* To migrate your active messages, do as follows:

   a. Perform a history download by entering the following command:

      ```
      /opt/OV/bin/OpC/opchistdwn -older 0s -file /tmp/history
      ```

b. Acknowledge all active messages by running `opcack` for the user you have previously set up:

```
/opt/OV/bin/OpC/opcack -u <user_for_all_msg_grps> -a -f
```

c. Perform a second history download by entering the following command:

```
/opt/OV/bin/OpC/opchistdwn -older 0s -file /tmp/active
```

8. *Optional:* To migrate your server configuration settings, store the output of `ovconfget -ovrg server` into a file.

Installing the New Oracle Version

The following table contains the operating system and the Oracle Database version supported by HPOM 9.01.

Table 8-1 Supported Oracle Version

HPOM Version	RHEL Version	Oracle Version
9.01	Red Hat Enterprise Linux 5.3	11.1.0.7

Detailed information about installing the Oracle Database version is available in the “Installing and Verifying an Oracle Database” section and Oracle product documentation.

Uploading the Saved HPOM Configuration

To upload the previously saved configuration on the newly installed HPOM 9.01 management server with `opccfgupld`, follow these steps:

1. *In a cluster environment only:* Disable the HA Resource group monitoring by using the command:

   `/opt/OV/lbin/ovharg -monitor ov-server disable`

2. If you have stored the output of `ovconfget -ovrg server` into a file, perform the following:

   a. Run the command:

      `ovconfchg -ovrg server -edit`

   b. In the editor, merge the configuration.

      Make sure that you add only the variables that you have modified, and not all internal HPOM variables. Failing to do so may cause problems with the server installation.

      To determine which configuration settings have been modified, first call `ovconfget -ovrg server` on the HPOM 9.01 installation, and then compare this output with the `ovconfget -ovrg server` output stored from the HPOM 8.xx installation.

3. Stop the HP Operations server processes by entering:

   `/opt/OV/bin/ovc -stop SERVER`

4. Upload the configuration data:

   `opccfgupld -add -subentity -configured \`
   `-upgrade <language_subfolder> <download_directory>`

   For example:

   `opccfgupld -add -subentity -configured \`
   `-upgrade ja_JP.SJIS /tmp/cfgdwn`

5. After uploading data with `-add -subentity`, you can upload the data with `-replace -subentity` if you exclude the managed nodes:

   a. Copy the index file of the download:

      `download_directory /$LANG/*.idx`

Example:

```
cp /tmp/cfgdwn/C/cfgdwn.idx /tmp/cfgdwn/C/nonodes.idx
```

b. Modify the copied index file.

Remove the node bank section from the index file. This is everything from the line:

```
ENTITY NODE_BANK
```

To the semi colon `(';')` before the node defaults:

```
;
ENTITY NODE_DEFAULTS *
```

Remove the following line if it exists:

```
CONTENTS *;
```

c. Upload your configuration data by using the command:

```
opccfgupld -replace -subentity -configured \
-upgrade <old_locale> -index \
<index_file> <upload_directory>
```

In this instance, *<index_file>* is the copied index file of the download.

For example:

```
opccfgupld -replace -subentity -configured \
-upgrade ja_JP.SJIS -index \
/tmp/cfgdwn/C/nonodes.idx /tmp/cfgdwn
```

HPOM 9.01 requires a UTF-8 locale to be used. Because the downloaded data is stored according to the old HPOM locale, the `opccfgupld` command might not find the data if you do not include the `-upgrade <old_locale>` option.

NOTE

With HPOM 9.01, templates have been converted to policies. The conversion takes place automatically during the template upload. The version of all newly created policies is set to 1.0, while the version of all HPOM 9.01 delivered default policies is 9.0.

6. Start the HP Operations server processes by entering:

```
/opt/OV/bin/ovc -start SERVER
```

7. Upload your active messages.

   If you have downloaded your active messages, upload them now:

   a. Upload the active messages from your download:

      ```
      /opt/OV/bin/OpC/opchistupl /tmp/active
      ```

   b. Unacknowledge the active messages in the History Message Browser and disown them in the Message Browser by using the Java GUI.

      For detailed information, see the *HPOM Java GUI Operator's Guide*.

   c. Upload the history messages:

      ```
      /opt/OV/bin/OpC/opchistupl /tmp/history
      ```

8. *In a cluster environment only:* Enable the HA Resource group monitoring by running the command:

   ```
   /opt/OV/lbin/ovharg -monitor ov-server enable
   ```

NOTE Before enabling the HA Resource group monitoring, make sure that the HP Operations management server is running.

After the upgrade, specific customized configuration files can be restored from the backup, if needed.

Upgrading the HPOM Java Operator UI

To upgrade the HPOM Java GUI, follow these steps:

1. Deinstall any previous version of the HPOM Java GUI from the client system.

   For detailed information about deinstalling the Java GUI, see “Deinstalling the HPOM Java GUI” on page 146.

2. Install the new version of the HPOM Java GUI on the client system.

   For details, see Chapter 3, “Installing the Java Operator GUI.”

Upgrading Managed Nodes

IMPORTANT The major version of your HP Operations agent software may not be higher than the version of your HP Operations management server software.

To upgrade the managed nodes to a newer version, run the `inst.sh` script by entering the following:

```
/opt/OV/bin/OpC/agtinstall/inst.sh
```

At the beginning, you must enter the system(s) for which software maintenance should be done and the managed node platform.

For detailed information, see the *inst.sh(1M)* man page.

License Migration to HPOM 9.01

Some HPOM 8.xx license passwords are compatible with HPOM 9.01 license passwords, making it possible to move and reuse the passwords when migrating from one HPOM 9.01 system to another or when upgrading from HPOM 8.xx to HPOM 9.01.

License passwords for the Desktop Agent, Tier 0 Agent to Tier 4 Agent and the Target Connector can be reused when migrating from a HPOM 8.x system to HPOM 9.01. Other licenses passwords are either unavailable for HPOM 9.01 or must be moved via the HP Password Delivery Center.

The HPOM server license passwords are not compatible and cannot be moved from HPOM 8.xx to HPOM 9.01.

Prerequisite for License Migration

The IP address on the source and target systems must be the same. If this is not the case, the license passwords will not work on the target system and must be moved via the HP Password Delivery Center.

NOTE

It is possible to install license passwords from systems with a different IP address. However, this does not mean that the are valid on the target system. Validity will be checked during runtime and license passwords without matching IP addresses will be ignored.

License Migration from HPOM 8.xx to HPOM 9.01

To migrate license passwords from one HPOM 9.01 system to another or from HPOM 8.xx to HPOM 9.01, follow these steps:

1. On the source system, copy the license passwords from the HPOM 8.xx source system to a safe place on the target system.

   On an HPOM 8.xx system, the license passwords are located in the following file:

   ```
   /var/opt/OV/HPOvLIC/LicFile.txt
   ```

On an HPOM 9.01 system, the license passwords are located in the file:

`/var/opt/OV/shared/server/OprEl/AutoPass/LicFile.txt`

For example, to copy the file, run the following command:

```
# scp /var/opt/OV/HPOvLIC/LicFile.txt \
<target_sys>:<directory>/HPOM8-LicFile-Backup.txt
```

2. On the HPOM 9.01 target system, import the license passwords from the saved file selectively using the GUI, or non-selectively using the `ovolicense` tool.

Selectively Using the AutoPass GUI

a. On the target system, run the following command to open the AutoPass GUI:

```
# ovolicense -gui -a OMU
```

b. In the GUI, select **Install License Key**, and then **Install/Restore License Key from file**.

c. Click **Browse** to select the License File copied from the HPOM 8.xx source system.

d. Click **View file contents**.

e. Select your license passwords from the list, and click **Install**.

Non-Selectively Using the ovolicense Tool

On the HPOM 9.01 target system, call the `ovolicense` tool to import the license passwords from the backup file.

Example:

```
ovolicense -i -a HPOM -f \
<directory>/HPOM8-LicFile-Backup.txt
```

This imports all passwords from the specified files.

Cluster Environment

Since the uploaded configuration does not overwrite the current management server configuration, the part of server configuration for cluster environment will be preserved. No additional server configuration is required.

9 Installing HPOM in a Red Hat Cluster Suite Environment

In This Chapter

This chapter describes the following:

- ❏ Installation and configuration of the HP Operations management server in a Red Hat Cluster Suite environment
- ❏ Deinstallation of the HP Operations management server from cluster nodes
- ❏ Upgrade of the HP Operations management server in a Red Hat Cluster Suite environment

NOTE See the *HPOM Administrator's Reference* for detailed information about the administration of the HP Operations management server in a cluster environment.

Before proceeding with the installation and configuration of the HP Operations management server in a Red Hat Cluster Suite environment, consider the following Red Hat Cluster Suite terms used in this chapter:

HA Resource Group Application running in a cluster environment. A high-availability (HA) resource group can simultaneously be a cluster object that represents an application in a cluster. HA resource group is equivalent to a service in the Red Hat Cluster Suite environment.

Volume Group One or more disk drives that are configured to form a single large storage area.

Logical Volume An arbitrary-size space in a volume group that can be used as a separate file system or as a device swap space.

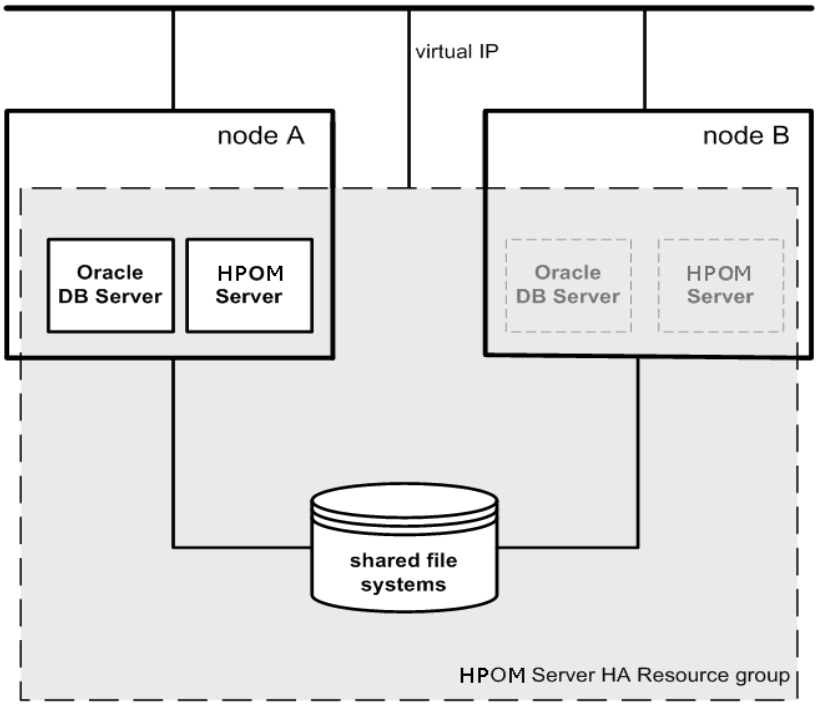
Configuration Scenarios

When installing the HP Operations management server and the Oracle Database server in a cluster environment, you can choose one of the following configuration scenarios:

- **Basic management server configuration**

  This is the simplest cluster configuration. You can use all backup and maintenance commands without restrictions.

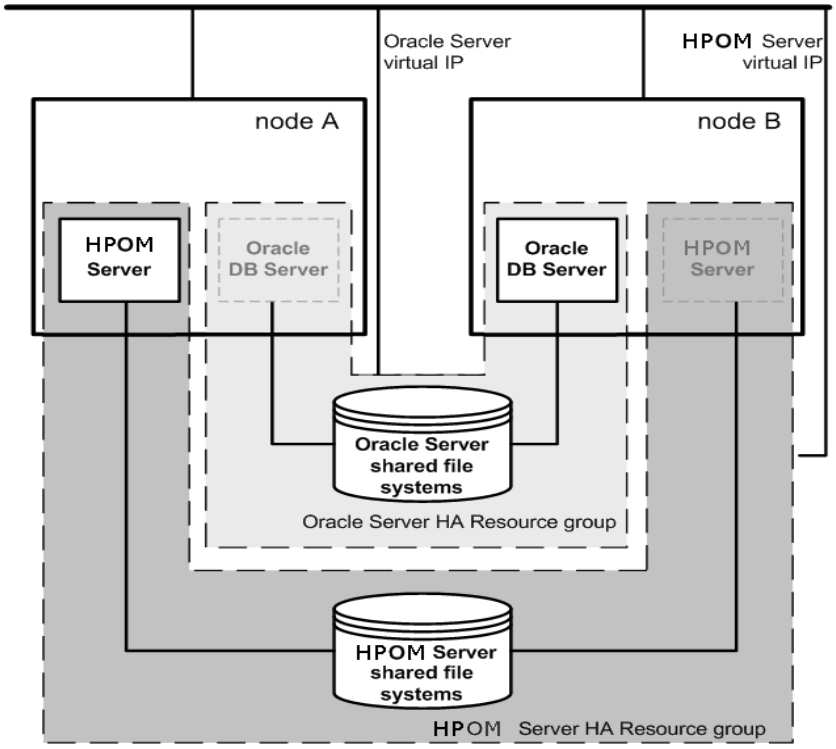
  The HP Operations management server and the Oracle Database server are part of the same HA resource group.



❑ **Decoupled management server configuration**

With this setup, you can use both physical nodes with the HPOM HA resource group running on one node and the Oracle Database server resource group on the other node. The HP Operations management server and the Oracle Database server are configured as separate HA resource groups by the HP Operations management server installation scripts. This configuration scenario is also known as 3Tier HP Operations management server configuration in a cluster environment.

The backup scripts have been adapted to work even if the HPOM and Oracle HA resource groups are running on different nodes. But to restore a backup, the HPOM and Oracle HA resource groups must run on the same node.

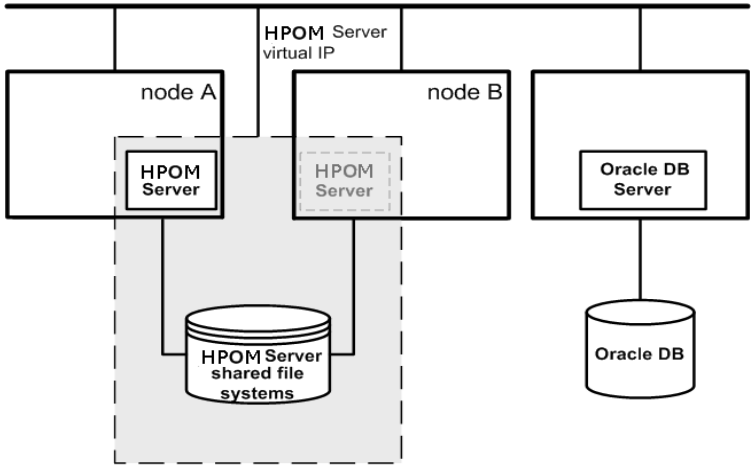


❑ **Independent database server configuration**

Following this scenario, you can use a remote database. The remote database should also run on a cluster. Otherwise the high availability of the HPOM setup is compromised. You may find this scenario useful if you already have a central database server cluster that you also want to use for the HPOM database. With this scenario, on the other hand, you cannot use the HPOM backup scripts.

In exceptional cases, the Oracle Database server can be configured as an independent database server:

Install the Oracle client software on the cluster nodes that are hosting the HP Operations management server. You can install the independent database as a standalone server or as an HA resource group on an independent cluster.



Installation Requirements

To run HPOM in a Red Hat Cluster Suite environment, you *must* meet the following requirements:

- ❏ Red Hat Enterprise Linux 5.3
- ❏ Red Hat Cluster Suite

For additional requirements about installing HPOM, see Chapter 1, “Installation Requirements for the Management Server,” on page 25.

Installation Requirements for an Oracle Database

The Oracle Database (the database binaries) should preferably be installed on a local disk.

In exceptional cases, you can decide to install the Oracle Database server binaries on a shared disk. For the preparation of such an environment, you will need to perform the additional configuration steps that are marked as optional in the configuration procedures.

For more information on installing the Oracle Database server binaries, see “Installing the Oracle Database Server for HPOM in a Cluster Environment” on page 224.

Installing and Configuring the HP Operations Management Server on Cluster Nodes

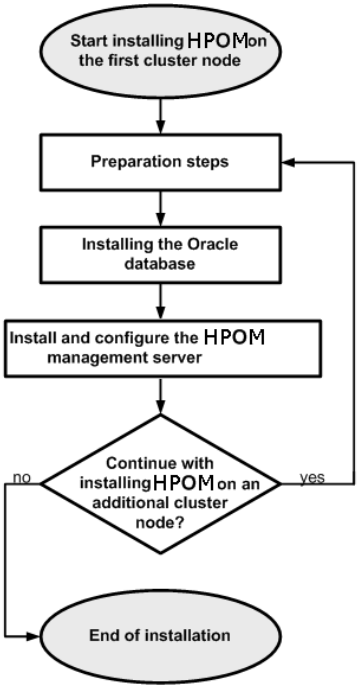
NOTE You must complete the following tasks first on the first cluster node, and then on each additional cluster node.

To install and configure the HP Operations management server in a cluster environment, complete these tasks:

- ❏ Task 1: “Before You Install the HP Operations Management Server on the First Cluster Node” on page 210 and
- ❏ Task 2: “Before You Install the HP Operations Management Server on Additional Cluster Nodes” on page 222
- ❏ Task 3: “Installing the Oracle Database Server for HPOM in a Cluster Environment” on page 224
- ❏ Task 4: “To Install and Configure the HP Operations Management Server on Cluster Nodes” on page 232

CAUTION You cannot install HPOM simultaneously on all cluster nodes. When the installation process is completed on one cluster node, begin the installation on the next node, until HPOM is installed on all the nodes in a cluster environment.

Figure 9-1 Flow of the HP Operations Management Server Installation and Configuration



Preparation Steps

Before you start installing and configuring the HP Operations management server on a cluster node, complete these tasks:

- ❏ Task 1: “Before You Install the HP Operations Management Server on the First Cluster Node” on page 210
- ❏ Task 2: “Before You Install the HP Operations Management Server on Additional Cluster Nodes” on page 222

Before You Install the HP Operations Management Server on the First Cluster Node

Before you install the HP Operations management server on the first cluster node, you must perform appropriate preparation procedures depending on the cluster environment you want to configure. Choose one of the following HP Operations management server scenarios:

- **Basic environment**

  Using this scenario, Oracle and HP Operations server are configured as part of a single HA resource group.

  See “Preparation Steps for the First Cluster Node in a Basic Environment” on page 211.

- **Decoupled environment**

  Using this scenario, Oracle and HP Operations server are separated, Oracle is configured as a separate HA resource group. In this case there are two independent resource groups, one for Oracle and one for the HP Operations management server.

  See “Preparation Steps for the First Cluster Node in a Decoupled Environment” on page 215.

- **Independent database server**

  Using this scenario, the Oracle Database is configured on a node that is not part of the cluster, or on a cluster node independently of the HP Operations management server installation.

  See “Preparation Steps for the First Cluster Node in a Cluster Environment Using an Independent Database Server” on page 220.

Preparation Steps for the First Cluster Node in a Basic Environment

I. **Installation Prerequisites**

Before you install the HP Operations management server in a cluster environment, the following prerequisites must be met:

❏ The following must be defined:

- Define the volume group `ov-vg`, consisting of at least one shared disk for the HA Resource group.
- Define the following volumes within the `ov-vg` volume group:
  - `ov-volume-etc`
  - `ov-volume-var`
  - `ov-volume-lcore`
  - `ov-volume-ora-data`
  - `ov-volume-ora-index`*
  - `ov-volume-ora-core`**

    * If the Oracle Database index directory is different from the Oracle data directory.

    ** If the Oracle Database server binaries will be installed on a shared disk.

NOTE

When defining the volume group or any of the volumes within the volume group, you can specify an optional name.

❏ File systems for the following must be available:

- `/etc/opt/OV/share`
- `/var/opt/OV/share`
- `/var/opt/OV/shared/server`
- HP Operations server database
- HP Operations server database index files*
- Oracle Database server binaries**

* If the Oracle Database index directory is different from the Oracle data directory.

** If you choose to install the Oracle Database server binaries on a shared disk.

II. **Pre-Installation Steps**

You must perform the following preparation steps manually:

1. Prepare mount points for the shared file systems:

   - `/etc/opt/OV/share`
   - `/var/opt/OV/share`
   - `/var/opt/OV/shared/server`
   - Mount point for the HP Operations management server database.

     You may select an alternative mount point. The default is:

     `/u01/oradata/<ORACLE_SID>`

     In this instance, *<ORACLE_SID>* is the value of the `ORACLE_SID` variable used for the configuration of the HP Operations management server database. It is usually set to `openview`.
   - Mount point for the Oracle Database index directory if the Oracle Database index directory is different from the Oracle data directory.
   - Mount point for the Oracle Database server binaries if they will be installed on a shared disk. The mount point is equal to the value of the `ORACLE_BASE` variable.

Table 9-1 Disk Space Required for Shared File Systems

Shared File System	Recommended	Initial
`/etc/opt/OV/share`	150 MB	2 MB
`/var/opt/OV/share`	1 GB	600 MB[a]
`/var/opt/OV/shared/server`	100 MB	30 MB
`/u01/oradata/openview`	2 GB	900 MB[b]
Oracle Database index directory (*optional*)	100 MB	50 MB[b]
Oracle Database server binaries (*optional*)	10 GB	8 GB

a. Further disk space will be required when SPIs are installed.
b. For small- to medium-sized installations. Larger installations and high numbers of messages will result in greater space requirements.

2. Start the Red Hat Cluster Suite services by entering:

```
service cman start
service rgmanager start
service clvmd start
```

3. Mount the shared file systems on the prepared mount points as follows:

   a. **`mount /dev/ov-vg/ov-volume-var \`**
      `/var/opt/OV/share`

   b. **`mount /dev/ov-vg/ov-volume-etc \`**
      `/etc/opt/OV/share`

   c. **`mount /dev/ov-vg/ov-volume-lcore \`**
      `/var/opt/OV/shared/server`

   d. **`mount /dev/ov-vg/ov-volume-ora-data \`**
      `/<oracle_database_mount_point>`

      In this instance, *<oracle_database_mount_point>* is the mount point you have chosen for the HP Operations server database.

e. *Optional:* If the Oracle Database index directory is different from the Oracle data directory:

```
mount /dev/ov-vg/ov-volume-ora-index \
/<oracle_database_index_mount_point>
```

In this instance, <oracle_database_index_mount_point> is the mount point for the Oracle Database index directory.

f. *Optional*: If you choose to install Oracle Database server binaries on a shared disk:

```
mount /dev/ov-vg/ov-volume-ora-core \
/<oracle_binaries_mount_point>
```

In this instance, <oracle_binaries_mount_point> is the mount point you have chosen for the Oracle Database server binaries installation (equal to the value of the ORACLE_BASE variable).

4. Start the Virtual Network IP using the ip command:

```
ip addr add <IP/subnet> dev <iface>
```

In this instance, <IP> is the IP address of the virtual host that you have previously selected, <subnet> is the subnet address of the virtual host you have previously selected, and <iface> is the interface that hosts the new IP address.

NOTE

To configure the IP address, use decimal notation (for example, 255.255.0.0) instead of hexadecimal notation (for example, ffff0000).

After completing the preparation steps, continue with installing the Oracle Database server. See “Installing the Oracle Database Server for HPOM in a Cluster Environment” on page 224.

Preparation Steps for the First Cluster Node in a Decoupled Environment

I. **Installation Prerequisites**

Before you install the HP Operations management server in a cluster environment, the following prerequisites must be met:

❏ The following must be defined:

- Define the `ov-vg` volume group, consisting of at least one shared disk for the HA resource group.
- Define the following volumes within the `ov-vg` volume group:
  - `ov-volume-etc`
  - `ov-volume-var`
  - `ov-volume-lcore`
- Define the `ovoracle-vg` volume group, consisting of at least one shared disk for the HA resource group.
- Define the following volumes within the `ovoracle-vg` volume group:
  - `ov-volume-ora-data`
  - `ov-volume-ora-index`*
  - `ov-volume-ora-core`**

    * If the Oracle Database index directory is different from the Oracle data directory.

    ** If you choose to install the Oracle Database server binaries on a shared disk.

NOTE

When defining the volume group or any of the volumes within the volume group, you can specify an optional name.

- ❑ File systems for the following must be available:
  - `/etc/opt/OV/share`
  - `/var/opt/OV/share`
  - `/var/opt/OV/shared/server`
  - HP Operations server database
  - HP Operations server database index files*
  - Oracle Database server binaries**

    * If the Oracle Database index directory is different from the Oracle data directory.

    ** If you choose to install the Oracle Database server binaries on a shared disk (equal to the value of the `ORACLE_BASE` variable).

II. **Pre-Installation Steps**

You must perform the following preparation steps manually:

1. Prepare mount points for the shared file systems:
   - `/etc/opt/OV/share`
   - `/var/opt/OV/share`
   - `/var/opt/OV/shared/server`
   - Mount point for the HP Operations management server database.

     You may select an alternative mount point. The default is:

     `/u01/oradata/<ORACLE_SID>`

     In this instance, *<ORACLE_SID>* is the value of the `ORACLE_SID` variable used for the configuration of the HP Operations management server database. It is usually set to `openview`.
   - Mount point for the Oracle Database index directory if the Oracle Database index directory is different from the Oracle data directory.
   - Mount point for the Oracle Database server binaries if you choose to install the Oracle Database server binaries on a shared disk (equal to the value of the `ORACLE_BASE` variable).

Table 9-2 Disk Space Required for Shared File Systems

Shared File System	Recommended	Initial
`/etc/opt/OV/share`	150 MB	2 MB
`/var/opt/OV/share`	1 GB	600 MB[a]
`/var/opt/OV/shared/server`	100 MB	30 MB
`/u01/oradata/openview`	2 GB	900 MB[b]
Oracle Database index directory (*optional*)	100 MB	50 MB[b]
Oracle Database server binaries (*optional*)	10 GB	8 GB

a. Further disk space will be required when SPIs are installed.
b. For small- to medium-sized installations. Larger installations and high numbers of messages will result in greater space requirements.

2. Start the Red Hat Cluster Suite services by entering:

```
service cman start
service rgmanager start
service clvmd start
```

3. Mount the shared file systems on the prepared mount points:

   a. **`mount /dev/ov-vg/ov-volume-var \`**
      `/var/opt/OV/share`

   b. **`mount /dev/ov-vg/ov-volume-etc \`**
      `/etc/opt/OV/share`

   c. **`mount /dev/ov-vg/ov-volume-lcore \`**
      `/var/opt/OV/shared/server`

   d. **`mount /dev/ovoracle-vg/ov-volume-ora-data \`**
      `/<oracle_database_mount_point>`

      In this instance, *<oracle_database_mount_point>* is the mount point you have chosen for the HP Operations server database.

e. *Optional:* If the Oracle Database index directory is different from the Oracle data directory:

```
mount /dev/ov-vg/ov-volume-ora-index \
/<oracle_database_index_mount_point>
```

In this instance, <oracle_database_index_mount_point> is the mount point for the HP Operations server database index files.

f. *Optional*: If you choose to install Oracle Database server binaries on a shared disk:

```
mount /dev/ovoracle-vg/ov-volume-ora-core \
/<oracle_binaries_mount_point>
```

In this instance, <oracle_binaries_mount_point> is the mount point you have chosen for the Oracle Database server binaries installation (equal to the value of the ORACLE_BASE variable).

4. Activate the HP Operations server Virtual Network IP using the ip command:

```
ip addr add <IP/subnet> dev <iface>
```

In this instance, <IP> is the IP address of the virtual host that you have previously selected, <subnet> is the subnet address of the virtual host you have previously selected, and <iface> is the interface that hosts the new IP address.

NOTE

To configure the IP address, use decimal notation (for example, 255.255.0.0) instead of hexadecimal notation (for example, ffff0000).

5. Activate the Oracle Virtual Network IP by using the ip command:

```
ip addr add <IP/subnet> dev <iface>
```

In this instance, <IP> is the IP address of the virtual host that you have previously selected, <subnet> is the subnet address of the virtual host you have previously selected, and <iface> is the interface that hosts the new IP address.

NOTE

To configure the IP address, use decimal notation (for example, 255.255.0.0) instead of hexadecimal notation (for example, ffff0000).

After completing the preparation steps, continue with installing the Oracle Database server. See “Installing the Oracle Database Server for HPOM in a Cluster Environment” on page 224.

Preparation Steps for the First Cluster Node in a Cluster Environment Using an Independent Database Server

I. **Installation Prerequisites**

Before you install the HP Operations management server in a cluster environment, the following prerequisites must be met:

❏ The following must be defined:

- Define the volume group `ov-vg`, consisting of at least one shared disk for the HA Resource group.
- Define the following three volumes within the `ov-vg` volume group:
  - `ov-volume-etc`
  - `ov-volume-var`
  - `ov-volume-lcore`

NOTE

When defining the volume group or any of the volumes within the volume group, you can specify an optional name.

❏ File systems for the following must be available:

- `/etc/opt/OV/share`
- `/var/opt/OV/share`
- `/var/opt/OV/shared/server`

II. **Pre-Installation Steps**

You must perform the following preparation steps manually:

1. Prepare mount points for the shared file systems:
   - `/etc/opt/OV/share`
   - `/var/opt/OV/share`
   - `/var/opt/OV/shared/server`

Table 9-3 Disk Space Required for Shared File Systems

Shared File System	Recommended	Initial
/etc/opt/OV/share	150 MB	2 MB
/var/opt/OV/share	1 GB	600 MB[a]
/var/opt/OV/shared/server	100 MB	30 MB

a. Further disk space will be required when SPIs are installed.

2. Start the Red Hat Cluster Suite services by entering:

```
service cman start
service rgmanager start
service clvmd start
```

3. Mount the shared file systems on the prepared mount points:

   a. **mount /dev/ov-vg/ov-volume-var \ /var/opt/OV/share**

   b. **mount /dev/ov-vg/ov-volume-etc \ /etc/opt/OV/share**

   c. **mount /dev/ov-vg/ov-volume-lcore \ /var/opt/OV/shared/server**

4. Start the Virtual Network IP using the `ip` command:

   ip addr add <*IP/subnet*> dev <*iface*>

   In this instance, <*IP*> is the IP address of the virtual host that you previously selected, <*subnet*> is the subnet address of the virtual host you previously selected, and <*iface*> is the interface that hosts the new IP address.

NOTE

To configure the IP address, use decimal notation (for example, 255.255.0.0) instead of hexadecimal notation (for example, ffff0000).

Before You Install the HP Operations Management Server on Additional Cluster Nodes

Before you install the HP Operations management server on additional cluster nodes, you must perform appropriate preparation procedures. The preparation steps are identical for all HP Operations management server installation scenarios.

Preparation Steps for Additional Cluster Nodes

The following preconditions must be met before installing the HP Operations management server on an additional cluster node:

- The HP Operations management server must already be installed and running on one of the cluster nodes. This allows you to add a local node to the HP Operations management server configuration and install and start the HP Operations agent software on the local node.
- On the node where HPOM is running, enable the remote-shell connection for user `root` to the node where you plan to install the HP Operations management server software. You can do this by putting the following line into `/.rhosts`:

  `<node> root`

  You can check if the remote shell is enabled by using the following command:

  `rsh <active_node> -l root -n ls`

  A list of files on the `root` directory from the node where the HP Operations management server is running should be displayed.

  In more secure environments, it is possible to set up a secure shell (SSH) connection between the node where you plan to install an HP Operations server and the node where the HP Operations server is running.

  For the HP Operations server installation, you must enable passwordless SSH access for user `root` between these two nodes. `ssh` and `scp` are the two commands that are used during the installation. Both commands must be accessible from the main path.

You can check if the secure remote shell is enabled by using the following command:

```
ssh <active node> -l root -n ls
```

The type of connection will be automatically detected. A secure connection has a higher priority if both types of connection are enabled.

- ❏ Shared file systems must *not* be mounted on this cluster node. They are already mounted on the cluster node where the HP Operations management server is running.
- ❏ Virtual IP must *not* be activated on this node because it is already used on the node where the HP Operations management server is running.

Installing the Oracle Database Server for HPOM in a Cluster Environment

The Oracle Database server binaries must be installed on a local disk to enable the high availability of the Oracle Database server and consequently of the HP Operations management server. If the Oracle Database server binaries become corrupt, it is very important that the Oracle Database server can be switched to another cluster node with intact Oracle Database server binaries.

In exceptional cases, you may want to install the Oracle Database server binaries on a shared disk. This way only one set of Oracle Database server binaries is installed but there is a greater risk of loosing Oracle availability. If you have chosen the decoupled scenario for installing HPOM, a separate Oracle client installation will be needed also.

Table 9-4 Configuration Scenarios Based on the File System Location

Configuration scenarios	Oracle Database server location: Local File System	Oracle Database server location: Shared File System (Exceptional)	Oracle Database server location: Remote File System
Basic	See “Oracle Database Server on a Local Disk” : “Basic HP Operations management server installation” on page 226.	See “Oracle Database Server on a Shared Disk (Exceptional)” : “Basic HP Operations management server installation” on page 227.	
Decoupled	See “Oracle Database Server on a Local Disk” : “Decoupled HP Operations management server database installation” on page 226.	See “Oracle Database Server on a Shared Disk (Exceptional)” : “Decoupled HP Operations management server database installation” on page 227.	
Independent	See “Oracle Database Server on a Local Disk” : “Independent database server installation” on page 226.		See “Oracle Database Server on a Remote File System” : “Independent database server installation” on page 231.

Oracle Database Server on a Local Disk

❑ **Basic HP Operations management server installation**

Install the Oracle Database software as described in “Installing and Verifying an Oracle Database” on page 47.

After installing the Oracle Database server, continue with “To Install and Configure the HP Operations Management Server on Cluster Nodes” on page 232.

❑ **Decoupled HP Operations management server database installation**

Install the Oracle Database software as described in “Installing and Verifying an Oracle Database” on page 47.

After installing the Oracle Database server, continue with “To Install and Configure the HP Operations Management Server on Cluster Nodes” on page 232.

❑ **Independent database server installation**

- *First cluster node*

  Install the Oracle Database software as described in “Installing and Verifying an Oracle Database” on page 47.

- *Additional cluster node*

  Install the Oracle Net Services and Oracle client software on the local disk, all other Oracle configuration steps will be performed by the HP Operations server installation script.

After installing the Oracle Database server, continue with “To Install and Configure the HP Operations Management Server on Cluster Nodes” on page 232.

Oracle Database Server on a Shared Disk (Exceptional)

The installation script automatically detects if Oracle Database server binaries are located on a shared disk, or if the ORACLE_BASE directory is a mount point for an external file system containing the Oracle Database server binaries (the file system must always be mounted on the ORACLE_BASE mount point).

The installation procedures for Oracle depend on the type of the HP Operations server installation:

❏ **Basic HP Operations management server installation**

Install the Oracle Database software as described in “Installing and Verifying an Oracle Database” on page 47.

After installing the Oracle Database server, continue with “To Install and Configure the HP Operations Management Server on Cluster Nodes” on page 232.

❏ **Decoupled HP Operations management server database installation**

When Oracle is separated from the HP Operations server, and Oracle Database server binaries are installed on a shared disk, install the Oracle client software on the local disk, so that the HP Operations server can connect to the Oracle Database server through the Oracle client. You *must* install the Oracle client software on a location other than ORACLE_BASE. The path to the Oracle client must be the same on all HP Operations management server cluster nodes.

- *First cluster node*

  Install the Oracle client software on the local disk and then the Oracle server software on a shared disk as described in “Installing and Verifying an Oracle Database” on page 47.

NOTE

When installing and configuring the HP Operations server, the ORACLE_BASE and ORACLE_HOME variables must be set to the Oracle Database server location.

After installing the HP Operations management server, follow these steps:

1. Copy the following configuration files from the Oracle Database server location on the shared disk (<*Oracle_server_home*>/network/admin/) to the Oracle client location on the local disk (<*Oracle_client_home*>/network/admin/):
   - listener.ora
   - sqlnet.ora
   - tnsnames.ora
   - tnsnav.ora
2. Stop the HP Operations management server as an HA resource group using the following command:

   **/opt/OV/bin/ovharg_config ov-server -stop **
   <*local_hostname*>
3. To contain the location of the Oracle client software, modify the ORACLE_HOME variable in the following location:

   /etc/opt/OV/share/conf/ovdbconf
4. Add the following lines to the /etc/rc.config.d/ovoracle file:

   ORACLE_HOME=<*Oracle Server Home*>
   ORACLE_SID=<*ORACLE_SID*>
   export ORACLE_HOME ORACLE_SID

   The /etc/sysconfig/ovoracle file is used as a configuration file by the /etc/init.d/ovoracle script, which is used by the Oracle HARG to start the Oracle Database.

NOTE

Make sure that you use the latest version of the /etc/init.d/ovoracle script. Copy the file from newconfig by running the following command:

**cp /opt/OV/newconfig/OpC/etc/init.d/ovoracle **
/etc/init.d/ovoracle

5. Remove the existing links in `/opt/OV/lib64` to the libraries located in the Oracle Database server directory, and replace them with links to Oracle client libraries:

   — **ln -sf <ORACLE_HOME>/lib/libclntsh.so \ /opt/OV/lib64/libclntsh.so**

   — **ln -sf <ORACLE_HOME>/lib/libclntsh.so \ /opt/OV/lib64/libclntsh.so.1.0**

   — **ln -sf <ORACLE_HOME>/lib/libclntsh.so \ /opt/OV/lib64/libclntsh.so.10.1**

   — **ln -sf <ORACLE_HOME>/lib/libclntsh.so \ /opt/OV/lib64/libclntsh.so.11.1**

   — **ln -sf <ORACLE_HOME>/lib/libclntsh.so \ /opt/OV/lib64/libopcora.so**

   — **ln -sf <ORACLE_HOME>/lib/libnnz11.so \ /opt/OV/lib64/libnnz11.so**

6. Start the HP Operations management server as an HA resource group using the following command:

   /opt/OV/bin/ovharg_config ov-server -start \ <*local_hostname*>

   The HP Operations management server will now connect to the Oracle Database server through the Oracle client.

- *Additional cluster node*

  Install the Oracle client software on a local disk, all other Oracle configuration steps will be performed by the HP Operations management server installation script.

NOTE

When installing and configuring the HP Operations server, the `ORACLE_HOME` variable must be set to the Oracle client location.

After installing the Oracle Database server, continue with “To Install and Configure the HP Operations Management Server on Cluster Nodes” on page 232.

Oracle Database Server on a Remote File System

❑ Independent database server installation

If the Oracle Database server will be running on a remote system that is not part of the local node:

- *First cluster node*

  Configure the Oracle Database as described in “Setting Up HPOM with a Remote/Manual Oracle Database” on page 111.

- *Additional cluster node*

  Install the Oracle Net Services and Oracle client software on the local disk, all other Oracle configuration steps will be performed by the HP Operations server installation script.

After installing the Oracle Database server, continue with “To Install and Configure the HP Operations Management Server on Cluster Nodes” on page 232.

To Install and Configure the HP Operations Management Server on Cluster Nodes

Install the HP Operations management server as described in Chapter 2, “Installing HPOM on the Management Server,” on page 41.

When installing HPOM in a cluster environment, you must provide responses to some questions and specify some values differently than in the standalone HPOM installation. These cluster-specific questions differ depending whether you are installing and configuring the HP Operations management server on the first cluster node or on the additional cluster node:

- “Installing and Configuring the HP Operations Management Server on the First Cluster Node” on page 233
- “Installing and Configuring the HP Operations Management Server on the Additional Cluster Node” on page 237

Installing and Configuring the HP Operations Management Server on the First Cluster Node

To install and configure the HP Operations management server on the first cluster node, follow these steps:

1. After the `ovoconfigure` script has detected a special environment, provide answers to the following cluster-specific questions:

   ❑ `Run HPOM Server as an HA resource group [exit, back, ?, y|n, "n"]?`

   Press **y**.

   ❑ `HA Resource Group name? [ov-server]`

   HA Resource Groups (services) are created during the installation of HPOM. `ovoinstall` will build the service control file and the configuration file automatically. Do not create services manually and do not use your own configuration files. If you have already created the cluster services manually, remove them before starting the installation of HPOM.

CAUTION

The entered HA resource group name must not be one of the already existing names.

   Press **Enter** to accept the default answer, or specify an alternative name for the HA resource group.

   ❑ `Server virtual hostname?`

   Enter the short name of the virtual host (for example, `virtip1`).

   ❑ `Separate Oracle from Server?`

   If you would like to separate Oracle from the HP Operations server, choose `y` and answer the following questions. Otherwise press **Enter** to continue with the basic HP Operations management server installation.

- ❏ `Configure Server and Oracle DB running as separate HA resource groups?`

  If you choose to configure Oracle as a separate HA resource group, press **Enter** and answer the following questions, otherwise select `n` and continue with the HP Operations management server installation where Oracle is an independent database server.

- ❏ `Oracle HA resource group name? [ov-oracle]`

  Press **Enter** to accept the default answer, or specify an alternative name for the Oracle HA resource group.

CAUTION

The entered HA resource group name must not be one of the already existing names.

- ❏ `Oracle virtual hostname?`

  Enter the short name of the virtual host (for example, `virtip2`).

- ❏ `Oracle Base?`

  The Oracle Database base directory. The default is `/opt/oracle`.

- ❏ `Oracle Data Directory?`

  The directory where HP Operations server database files are stored. The default is `/u01/oradata/openview`.

- ❏ `Oracle Index Directory?`

  The directory where HP Operations server database index files are stored. By default, it is the same as the Oracle data directory.

The `ovoconfigure` script continues with the cluster configuration, during which shared file systems and virtual hosts are checked.

2. You can add a shared file system or a new virtual host at this point.

   The summary of all shared file systems and virtual hosts appears, and then the `ovoconfigure` script asks you whether you want to continue.

3. Press **Enter**. The following output should be displayed:

   ```
   Cluster preconfiguration . . . . . OK
   ```

The `ovoconfigure` script continues with the database configuration and the server initialization. During the server initialization, `ovoconfigure` performs the integration into the start-stop sequence, installs the add-on packages, and finishes the cluster configuration. An output similar to the following should be displayed:

```
 Cluster configuration on FIRST cluster node

-------------------------------------------

 OVHARG configuration . . . . . . . . . . . . . . OK

 Configure Server cluster configuration . . . . . OK

 Server cluster postconfiguration . . . . . . . . OK

 Server HARG creation . . . . . . . . . . . . . . OK

Cluster successfully configured
```

4. Press **Enter** to continue.

   The server final configuration starts, which consists of the following steps:

   - ❏ Management server policy group assignment
   - ❏ Java GUI configuration
   - ❏ Web server configuration
   - ❏ Backup certificates

   After the server final configuration returns all `OK` values, the following information appears:

   ```
   Server will be started as HARG
   If needed, review HARG configuration before starting
   ```

5. Press **Enter** to continue with the following:

   - ❏ Installing the local agent
   - ❏ Distributing configuration to the local agent

   The agent installation and the policy distribution are performed automatically.

NOTE To limit the server communication to only the virtual IP, run the following command:

```
ovconfchg -ovrg server -ns bbc.http -set CLIENT_BIND_ADDR \
<virtual_IP_of_HPOM_cluster>
```

Installing and Configuring the HP Operations Management Server on the Additional Cluster Node

To install and configure the HP Operations management server on the additional cluster node, follow these steps:

1. After the `ovoconfigure` script has detected a special environment, provide answers to the following cluster-specific questions:

   - `Run HPOM Server as an HA resource group [exit, back, ?, y|n, "n"]?`

     Press **y**.

   - `HA resource group name? [ov-server]`

     Press **Enter** to continue, or specify an alternative name for the HA resource group.

CAUTION

The entered HA resource group must be configured and running on the first cluster node.

`ovoconfigure` checks the remote shell (`remsh`) connection and the secure remote shell (`ssh`) connection. An output similar to the following should be displayed:

```
Checking remote shell (remsh) connection . . . . OK
Checking secure remote shell (ssh) connection  . OK
```

The following question appears:

```
Would you prefer to use REMSH even though SSH is enabled
[exit, back, ?, y|n, "n"]?
```

2. Press **Enter** to continue. The following output should be displayed:

   ```
   Cluster preconfiguration . . . . . OK
   ```

   `ovoconfigure` continues with the server initialization. During the server initialization, `ovoconfigure` performs the integration into the start-stop sequence, installs the add-on packages, and finishes the cluster configuration.

An output similar to the following should be displayed:

```
 Cluster configuration on ADDITIONAL cluster node
-------------------------------------------------
 OVHARG configuration . . . . . . . . . . . . . . OK
 Configure Server cluster configuration . . . . . OK
 Configure Oracle cluster configuration . . . . . OK
 Server cluster postconfiguration . . . . . . . . OK
 Transfering cluster configuration from active node OK
 Adding local node to Server HARG . . . . . . . . OK
 Cluster successfully configured
```

3. Press **Enter** to continue.

   The server final configuration starts, which consists of the following steps:

   - ❏ Management server policy group assignment
   - ❏ Java GUI configuration
   - ❏ Web server configuration
   - ❏ Installing the local agent
   - ❏ Distributing configuration to the local agent

NOTE The agent installation and the policy distribution are performed automatically.

Log Files

For details about the cluster-specific installation, check the following log files:

- `/var/opt/OV/log/OpC/mgmt_sv/installation.log.verbose`

  Contains information about the success and eventual problems during the installation.

- `/var/opt/OV/hacluster/ov-server/trace.log`[1], `/var/opt/OV/hacluster/ov-server/error.log`, and `/var/log/messages`

  Contain information about managing the HA resource group.

NOTE

The HARG `trace.log` file size is limited. When the maximum file size is reached, `trace.log` is moved into `trace.log.old` and the new information is written into a new `trace.log` file.

The maximum size of the `trace.log` file can be changed by editing the `/var/opt/OV/hacluster/<HARG name>/settings` file, and adding the following line:

`TRACING_FILE_MAX_SIZE=<maximum size in kBytes>`

For example:

`TRACING_FILE_MAX_SIZE=7000`

1. Only if previously enabled by entering the following:
   `/opt/OV/lbin/ovharg -tracing ov-server enable`
   The `trace.log` file is automatically updated with the information about starting the HA resource group during the installation on the first cluster node.

Deinstalling the HPOM Software from Cluster Nodes

The HPOM software can be deinstalled in one of two ways:

- **From all cluster nodes**

  When deinstalling the HP Operations management server from a cluster environment, you must perform the deinstallation procedure in the following sequence:

  1. Deinstall the HP Operations management server from the **passive cluster nodes**. These are the systems that are installed and configured to run the HP Operations management server, but are currently *not* running.

     For details on how to deinstall the HP Operations server from the passive cluster nodes, see “Deinstalling HPOM from Passive Cluster Nodes” on page 241.

  2. When the HP Operations management server software has been deinstalled from all passive nodes, deinstall the software from the **active cluster node**. This is the system on which the HP Operations management server is currently up and running as an HA resource group.

     For details on how to deinstall the HP Operations management server from the active cluster node, see “Deinstalling HPOM from the Active Cluster Node” on page 241.

- **From selected cluster nodes**

  After you deinstall the HP Operations management server software from a cluster node, this node will no longer be able to run the HP Operations management server. The cluster environment running the HP Operations server will be reduced by one node.

  To deinstall HP Operations management server software from a cluster node, this node must be in the passive state. For details on how to deinstall HP Operations management server software from passive cluster nodes, see “Deinstalling HPOM from Passive Cluster Nodes” on page 241.

Deinstalling HPOM from Passive Cluster Nodes

Before the HP Operations management server software is deinstalled from a passive cluster node, the following requirements must be met:

1. The HP Operations server HA resource group `ov-server` may not be active on this node.
2. Virtual host must *not* be active.
3. Shared file systems must *not* be mounted.

After ensuring that all these requirements are met, deinstall the HP Operations management server as described in Chapter 6, “Software Administration on the Management Server.”

Deinstalling HPOM from the Active Cluster Node

When the HP Operations management server is deinstalled from all the passive cluster nodes, you can start the deinstallation process from the node on which the HP Operations management server is running.

Deinstall the HP Operations management server software from this node as described in Chapter 6, “Software Administration on the Management Server,” on page 141.

Stopping the HP Operations Management Server in a Cluster Environment for Maintenance

Sometimes, you need to stop the HP Operations management server to install a patch, perform an upgrade, conduct maintenance, and so on.

To stop the HP Operations management server, follow these steps:

1. Disable the HA resource group monitoring using the command:

   `/opt/OV/lbin/ovharg -monitor ov-server disable`

2. Stop the HP Operations management server.

   The HP Operations management server must *not* be stopped by using the cluster-related commands. Only the HPOM commands such as `ovc` and `opcsv` may be used.

CAUTION

Before you run the `opcsv -stop`, `ovc -stop`, or `ovc -kill` command, you must disable the HA resource group monitoring. Failing to do so results in a failover.

3. Perform the intended action (the patch installation, an upgrade, the maintenance, and so on).
4. Start the HP Operations management server.

   The HP Operations management server must *not* be started by using the cluster-related commands. Only the HPOM commands such as `ovc` and `opcsv` may be used.

5. Enable the HA resource group monitoring using the command:

   `/opt/OV/lbin/ovharg -monitor ov-server enable`

NOTE

Before enabling the HA resource group monitoring, make sure that the HP Operations management server is running.