HP Operations Manager

Installing HPOM in an HP ServiceGuard Environment

Software Version: 9.10

for the Linux operating system

Manufacturing Part Number: None
May, 2013

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Conventions

The following typographical conventions are used in this manual:

Table 1 Typographical Conventions

Font	Meaning	Example
Italic	Book titles and manual page names	For more information, see the *HPOM Administrator's Reference* and the *opc(1m)* manual page.
	Emphasis	You *must* follow these steps.
	Variable that you must supply when entering a command (in angle brackets)	At the prompt, enter **`rlogin <username>`**.
	Parameters to a function	The *`oper_name`* parameter returns an integer response.
`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	Edit the `itooprc` file... `/opt/OV/bin/OpC/`
	Process names	Check to see if `opcmona` is running.
`Computer Bold`	Text that you enter	At the prompt, enter **`ls -l`**.

Table 1 Typographical Conventions (Continued)

Font	Meaning	Example
Keycap	Keyboard keys	Press **Return**.
	Menu name followed by a colon (:) means that you select the menu, and then the item. When the item is followed by an arrow (->), a cascading menu follows.	From the menu bar, select **Actions: Filtering -> All Active Messages**.
	Buttons in the user interface	Click **OK**.

In This Document

This document describes the following:

- ❏ Installation and configuration of the HP Operations management server in an HP ServiceGuard environment
- ❏ Deinstallation of the HP Operations management server from cluster nodes
- ❏ Upgrade of the HP Operations management server in anHP ServiceGuard environment

NOTE For detailed information about the administration of the HP Operations management server in a cluster environment, see the *HPOM Administrator's Reference*.

Before proceeding with the installation and configuration of the HP Operations management server in an HP ServiceGuard cluster environment, consider the following HP ServiceGuard cluster 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 package in the HP ServiceGuard 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.

The information in this document covers the following topics:

Installing HPOM 9.10 in an HP ServiceGuard 11.20 Environment on RHEL 6.x Linux

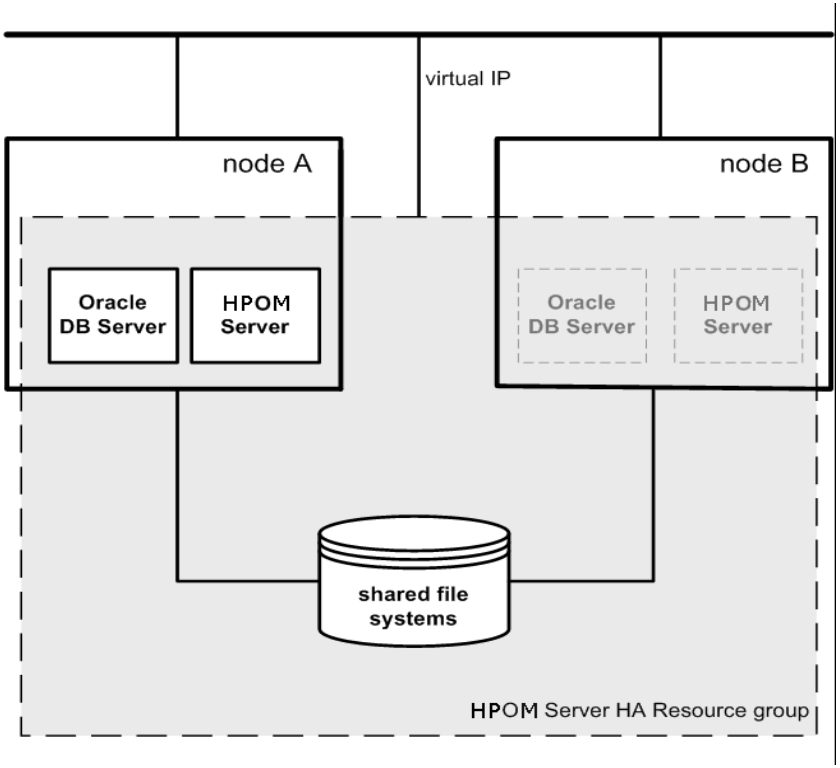
Configuration Scenarios

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.

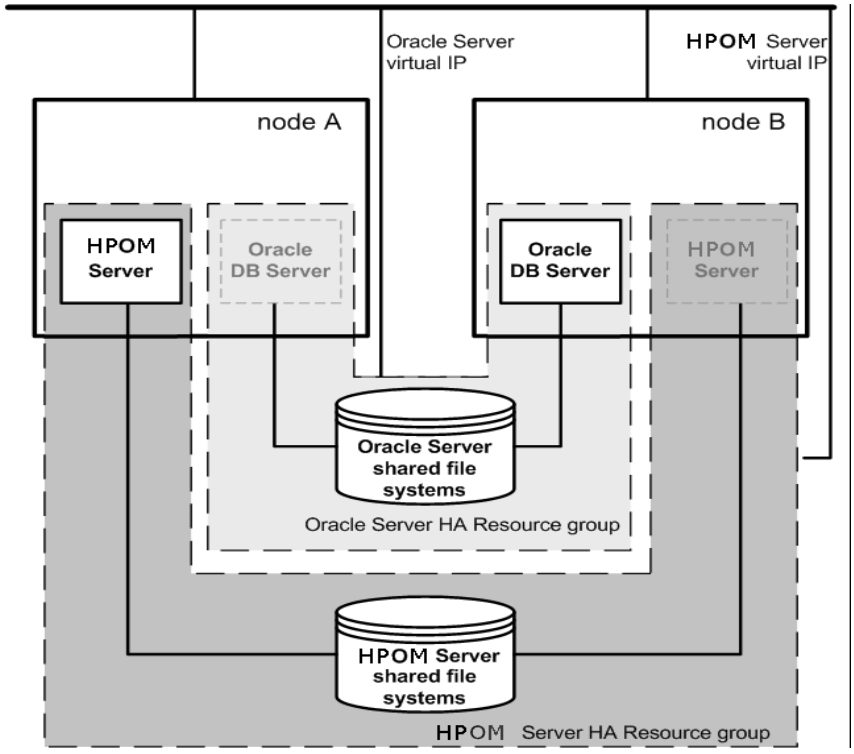
  The HP Operations management server and the Oracle Database server are part of the same HA resource group.



- **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 are 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.

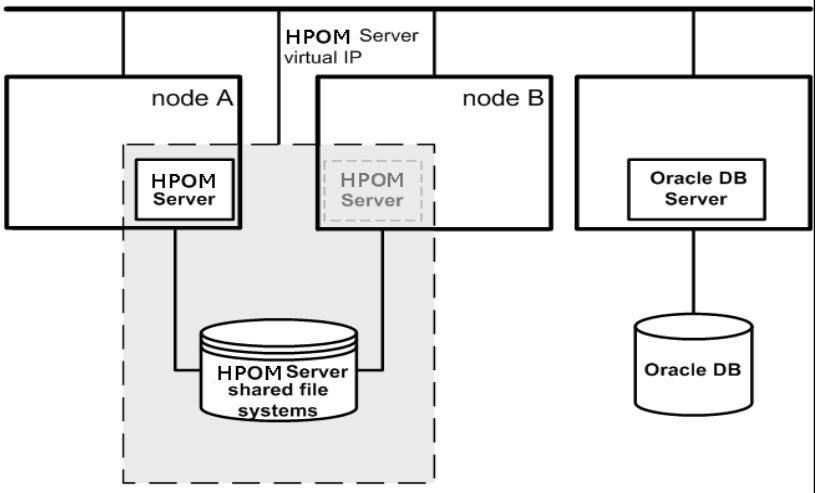


- **Independent database server configuration**

  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 stand-alone server or as an HA resource group on an independent cluster.



Installation Requirements

To run HPOM in an HP ServiceGuard environment, you must meet the following requirements:

- ❏ HP Operations management server 9.10 MR depot for Linux
- ❏ HP Operations management server 09.10.240 server patch for Linux
- ❏ HP Operations management server 09.10.230 core patch for Linux
- ❏ 11.00.044 HP Operations agents
- ❏ 11.04.016 HP Operations agent patch
- ❏ Red Hat Enterprise Linux Advanced Platform version 6.0, 6.1, 6.2, or 6.3
- ❏ HP ServiceGuard version 11.20

For additional requirements about installing HPOM, see the *HPOM Installation Guide for the Management Server*.

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 OVO in a Cluster Environment” on page 26.

Installing and Configuring the HP Operations Management Server on Cluster Nodes

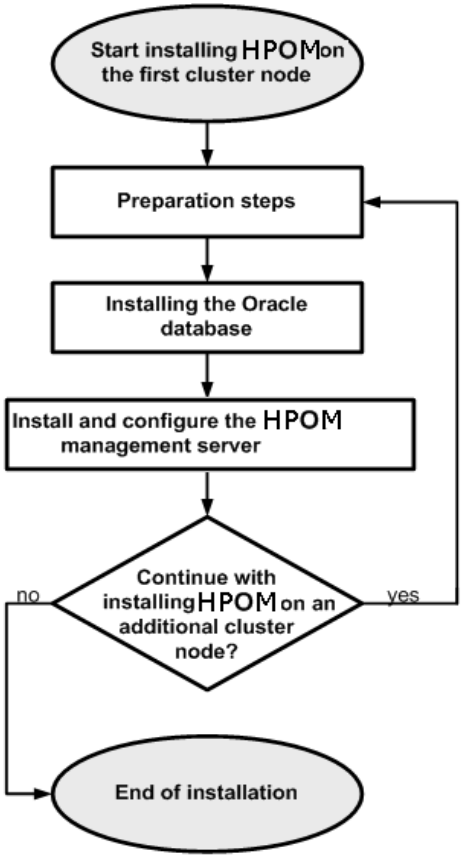
NOTE You must complete the following tasks first on the first cluster node, and then on each additional cluster node.

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 14
- ❏ Task 2: “Before You Install the HP Operations Management Server on Additional Cluster Nodes” on page 24
- ❏ Task 3: “Installing the Oracle Database Server for OVO in a Cluster Environment” on page 26
- ❏ Task 4: “Installing and Configuring the HP Operations Management Server on Cluster Nodes” on page 34

IMPORTANT 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 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 14
- Task 2: “Before You Install the HP Operations Management Server on Additional Cluster Nodes” on page 24

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 15.

- **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 18.

- **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 22.

Preparation Steps for the First Cluster Node in a Basic Environment

Before you install the HP Operations management server in a cluster environment, follow these steps:

1. Define the following:

   a. Define the `ov_vg` volume group consisting of at least one shared disk for the HA resource group.

IMPORTANT

When defining the volume group or any of the volumes within the volume group, you can specify an optional name.

Make sure you do not use the MINUS SIGN (-) sign in the volume group and the logical volume names.

   b. 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 you choose to install Oracle Database server binaries on a shared disk.

   a.

2. Make sure that file systems for the following are 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.

IMPORTANT When choosing a file system type of shared file systems, keep in mind that GFS and GFS2 are not supported with HPOM.

3. 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 the following:

     `/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 1 Disk Space Required for Shared File Systems

Shared File System	Recommended	Initial
`/etc/opt/OV/share`	100 MB	2 MB

Table 1 Disk Space Required for Shared File Systems (Continued)

Shared File System	Recommended	Initial
/var/opt/OV/share	1 GB[a]	600 MB
/var/opt/OV/shared/server	100 MB	1 MB
/u01/oradata/openview	2 GB[b]	900 MB
Oracle Database index directory (*optional*)	100 MB[b]	50 MB
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.

4. Start the ov_vg volume group by typing the following:

   /usr/sbin/vgchange -a e ov_vg

5. Mount the shared file systems on the prepared mount points as follows:

   a. **/bin/mount [-t <*FSType*>] **
      /dev/ov_vg/ov_volume_var /var/opt/OV/share

   b. **/bin/mount [-t <*FSType*>] **
      /dev/ov_vg/ov_volume_etc /etc/opt/OV/share

   c. **/bin/mount [-t <*FSType*>] **
      **/dev/ov_vg/ov_volume_lcore **
      /var/opt/OV/shared/server

   d. **/bin/mount [-t <*FSType*>] **
      **/dev/ov_vg/ov_volume_ora_data **
      /<*oracle_database_mount_point*>

      In this instance, *<oracle_database_mount_point>* is the mount point you chose for the HP Operations server database.

e. *Optional:* If the Oracle Database index directory is different from the Oracle data directory:

```
/bin/mount [-t <FSType>] \
/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:

```
/bin/mount [-t <FSType>] \
/dev/ov_vg/ov_volume_ora_core \
/<oracle_binaries_mount_point>
```

In this instance, <oracle_binaries_mount_point> is the mount point you chose for the Oracle Database server binaries installation (equal to the value of the ORACLE_BASE variable).

6. Start the Virtual Network IP by using the cmmodnet command:

```
/usr/sbin/cmmodnet -a -i <IP> <subnet>
```

In this instance, <IP> is the IP address of the virtual host that you previously selected, and <subnet> is the subnet address of the virtual host you previously selected.

After completing the preparation steps, continue with installing the Oracle Database server. See “Installing the Oracle Database Server for OVO in a Cluster Environment” on page 26.

Preparation Steps for the First Cluster Node in a Decoupled Environment

Before you install the HP Operations management server in a cluster environment, follow these steps:

1. Define the following:

   a. Define the ov_vg volume group consisting of at least one shared disk for the HA resource group.

   b. Define the following volumes within the ov_vg volume group:

      - ov_volume_etc
      - ov_volume_var

- ov_volume_lcore

c. Define the ovoracle_vg volume group consisting of at least one shared disk for the HA resource group.

IMPORTANT

When defining the volume group or any of the volumes within the volume group, you can specify an optional name.

Make sure you do not use the MINUS SIGN (-) sign in the volume group and the logical volume names.

d. 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.

2. Make sure that file systems for the following are 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).

IMPORTANT When choosing a file system type of shared file systems, keep in mind that GFS and GFS2 are not supported with HPOM.

3. 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 2 Disk Space Required for Shared File Systems

Shared File System	Recommended	Initial
`/etc/opt/OV/share`	100 MB	2 MB
`/var/opt/OV/share`	1 GB[a]	600 MB
`/var/opt/OV/shared/server`	100 MB	1 MB
`/u01/oradata/openview`	2 GB[b]	900 MB
Oracle Database index directory (*optional*)	100 MB[b]	50 MB

Table 2 Disk Space Required for Shared File Systems (Continued)

Shared File System	Recommended	Initial
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.

4. Start the `ov_vg` and `ovoracle_vg` volume groups by typing the following:

   ```
   /usr/sbin/vgchange -a e ov_vg
   ```

   ```
   /usr/sbin/vgchange -a e ovoracle_vg
   ```

5. Mount the shared file systems on the prepared mount points as follows:

   a. ```
      /bin/mount [-t <FSType>] \
      /dev/ov_vg/ov_volume_var /var/opt/OV/share
      ```

   b. ```
      /bin/mount [-t <FSType>] \
      /dev/ov_vg/ov_volume_etc /etc/opt/OV/share
      ```

   c. ```
      /bin/mount [-t <FSType>] \
      /dev/ov_vg/ov_volume_lcore \
      /var/opt/OV/shared/server
      ```

   d. ```
      /bin/mount [-t <FSType>] \
      /dev/ovoracle_vg/ov_volume_ora_data \
      /<oracle_database_mount_point>
      ```

      In this instance, *<oracle_database_mount_point>* is the mount point you chose for the HP Operations server database and *<FSType>* is a file system type of shared file systems..

   e. *Optional:* If the Oracle Database index directory is different from the Oracle data directory:

      ```
      /bin/mount [-t <FSType>] \
      /dev/ovoracle_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:

```
/bin/mount [-t <FSType>] \
/dev/ovoracle_vg/ov_volume_ora_core \
/<oracle_binaries_mount_point>
```

In this instance, *<oracle_binaries_mount_point>* is the mount point you chose for the Oracle Database server binaries installation (equal to the value of the ORACLE_BASE variable).

6. Activate the HP Operations server Virtual Network IP by using the cmmodnet command:

```
/usr/sbin/cmmodnet -a -i <IP> <subnet>
```

In this instance, *<IP>* is the IP address of the virtual host that you previously selected, and *<subnet>* is the subnet address of the virtual host you previously selected.

7. Activate the Oracle Virtual Network IP by using the cmmodnet command:

```
/usr/sbin/cmmodnet -a -i <IP> <subnet>
```

In this instance, *<IP>* is the IP address of the virtual host that you previously selected, and *<subnet>* is the subnet address of the virtual host you previously selected.

After completing the preparation steps, continue with installing the Oracle Database server. See “Installing the Oracle Database Server for OVO in a Cluster Environment” on page 26.

Preparation Steps for the First Cluster Node in a Cluster Environment Using an Independent Database Server

Before you install the HP Operations management server in a cluster environment, follow these steps:

1. Define the following:

   a. Define the ov_vg volume group consisting of at least one shared disk for the HA resource group.

IMPORTANT

When defining the volume group or any of the volumes within the volume group, you can specify an optional name.

Make sure you do not use the MINUS SIGN (-) sign in the volume group and the logical volume names.

b. Define the following three volumes within the `ov_vg` volume group:

- `ov_volume_etc`
- `ov_volume_var`
- `ov_volume_lcore`

2. Make sure that file systems for the following are available:

- ❏ `/etc/opt/OV/share`
- ❏ `/var/opt/OV/share`
- ❏ `/var/opt/OV/shared/server`

IMPORTANT

When choosing a file system type of shared file systems, keep in mind that GFS and GFS2 are not supported with HPOM.

3. Prepare mount points for the shared file systems:

- `/etc/opt/OV/share`
- `/var/opt/OV/share`
- `/var/opt/OV/shared/server`

Table 3 Disk Space Required for Shared File Systems

Shared File System	Recommended	Initial
`/etc/opt/OV/share`	100 MB	2 MB
`/var/opt/OV/share`	1 GB[a]	600 MB
`/var/opt/OV/shared/server`	100 MB	1 MB

a. Further disk space will be required when SPIs are installed.

4. Start the ov_vg volume group by typing the following:

   /usr/sbin/vgchange -a e ov_vg

5. Mount the shared file systems on the prepared mount points as follows:

   a. **/bin/mount [-t <*FSType*>] **
      /dev/ov_vg/ov_volume_var /var/opt/OV/share

   b. **/bin/mount [-t <*FSType*>] **
      /dev/ov_vg/ov_volume_etc /etc/opt/OV/share

   c. **/bin/mount [-t <*FSType*>] **
      **/dev/ov_vg/ov_volume_lcore **
      /var/opt/OV/shared/server

6. Start the Virtual Network IP by using the cmmodnet command:

   /usr/sbin/cmmodnet -a -i <*IP*> <*subnet*>

   In this instance, <*IP*> is the IP address of the virtual host that you previously selected, and <*subnet*> is the subnet address of the virtual host you previously selected.

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 OVO 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 choose the decoupled scenario for installing HPOM, a separate Oracle client installation is also needed.

Table 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 28.	See "Oracle Database Server on a Shared Disk (Exceptional)": "Basic HP Operations management server installation" on page 29.	
Decoupled	See "Oracle Database Server on a Local Disk": "Decoupled HP Operations management server database installation" on page 28.	See "Oracle Database Server on a Shared Disk (Exceptional)": "Decoupled HP Operations management server database installation" on page 30.	
Independent	See "Oracle Database Server on a Local Disk": "Independent database server installation" on page 28.		See "Oracle Database Server on a Remote File System": "Independent database server installation" on page 32.

Oracle Database Server on a Local Disk

❑ **Basic HP Operations management server installation**

Install the Oracle Database software as described in the *HPOM Installation Guide for the Management Server*.

After installing the Oracle Database server, continue with "Installing and Configuring the HP Operations Management Server on Cluster Nodes" on page 34.

❑ **Decoupled HP Operations management server database installation**

Install the Oracle Database software as described in the *HPOM Installation Guide for the Management Server*.

After installing the Oracle Database server, continue with "Installing and Configuring the HP Operations Management Server on Cluster Nodes" on page 34.

❑ **Independent database server installation**

- *First cluster node*

  Install the Oracle Database software as described in the *HPOM Installation Guide for the Management Server*.

- *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.

NOTE

After the Oracle server installation, make sure to create a script or a binary named as follows:

```
/opt/OV/bin/OpC/utils/ha/ha_check_oracle
```

The exit code of this script or binary must be 0 if the Oracle Database server runs, or other than 0 if it does not run. This script or binary, with which the HP Operations management server checks the status of the Oracle Database, must be present on all HP Operations management server cluster nodes.

After installing the Oracle Database server, continue with “Installing and Configuring the HP Operations Management Server on Cluster Nodes” on page 34.

IMPORTANT

When the following questions appear during the independent database server configuration, make sure that you answer as follows:

- `Separate Oracle from Server?`

  Press **y**.

- `Configure Server and Oracle DB running as separate HA resource groups?`

  Press **n**.

- `Set up the database manually (local/remote)?`

  Press **y**.

- `Is the manually configured database already set up?`

  Press **n**.

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 the *HPOM Installation Guide for the Management Server*.

After installing the Oracle Database server, continue with “Installing and Configuring the HP Operations Management Server on Cluster Nodes” on page 34.

❑ **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 the *HPOM Installation Guide for the Management Server*.

  When installing and configuring the HP Operations server, the ORACLE_BASE and ORACLE_HOME variables must be set to the Oracle Database server location.

NOTE

Do not use the Instant Client, but the full Oracle Client (the Runtime installation type).

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. To contain the location of the Oracle client software, modify the ORACLE_HOME variable in the following location:

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

3. Stop the HP Operations management server as an HA resource group by using the following command:

   ```
   /opt/OV/bin/ovharg_config ov-server -stop \
   <local_hostname>
   ```

4. Add the following lines to the `/etc/sysconfig/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 by 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 "Installing and Configuring the HP Operations Management Server on Cluster Nodes" on page 34.

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 the *HPOM Installation Guide for the Management Server*.

- *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.

NOTE

After the Oracle server installation, make sure to create a script or a binary named as follows:

```
/opt/OV/bin/OpC/utils/ha/ha_check_oracle
```

The exit code of this script or binary must be 0 if the Oracle Database server runs, or other than 0 if it does not run. This script or binary, with which the HP Operations management server checks the status of the Oracle Database, must be present on all HP Operations management server cluster nodes.

After installing the Oracle Database server, continue with "Installing and Configuring the HP Operations Management Server on Cluster Nodes" on page 34.

IMPORTANT

When the following questions appear during the independent database server configuration, make sure that you answer as follows:

- `Separate Oracle from Server?`

  Press **y**.

- `Configure Server and Oracle DB running as separate HA resource groups?`

  Press **n**.

- `Set up the database manually (local/remote)?`

  Press **y**.

- `Is the manually configured database already set up?`

  Press **n**.

Installing and Configuring the HP Operations Management Server on Cluster Nodes

Install the HP Operations management server as described in the *HPOM Installation Guide for the Management Server*.

When installing HPOM in a cluster environment, you must provide responses to some questions and specify some values differently than in the stand-alone 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 34
- "Installing and Configuring the HP Operations Management Server on the Additional Cluster Node" on page 39

IMPORTANT Make sure that cluster node names are the same as hostnames. Otherwise, the configuration fails.

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. Install the 11.00.044 HP Operations agent by running the following command:

   ```
   oainstall.sh -i -a -minprecheck
   ```

2. Install the 11.04.016 HP Operations agent patch by running the following command:

   ```
   oainstall.sh -i -a -minprecheck
   ```

3. Install the HP Operations management server 9.10 MR software by running the `ovoinstall` command.

IMPORTANT

Make sure you press **n** when the following question appears:

```
Do you want to automatically continue with Server
configuration?
```

By doing so, you stop the HP Operations management server installation and do not continue with the configuration.

4. Install the HP Operations management server 09.10.240 server patch for Linux.
5. Install the HP Operations management server 09.10.230 core patch for Linux.
6. Install other required patches.
7. Continue with the HP Operations management server configuration as follows:

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

8. After the `ovoconfigure` script detects 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 already created the cluster services manually, remove them before starting the installation of HPOM.

IMPORTANT

The entered HA resource group name may 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?`

  To separate Oracle from the HP Operations management server, press **y**. The following question appears:

  `Configure Server and Oracle DB running as separate HA resource groups?`

  To configure Oracle as a separate HA resource group, press **ENTER** to accept the default answer. Otherwise, press **n** and continue with the HP Operations management server installation where Oracle is an independent database server.

  If you chose to configure Oracle as a separate HA resource group, the following two questions appear:

  - `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.

IMPORTANT

The entered HA resource group name may 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 checking shared file systems.

An output similar to the following appears:

```
Mount point               Volume group Volume              FS type
-------------------------------------------------------------------
/var/opt/OV/share         ov_vg        ov_volume_var       ext3
/var/opt/OV/shared/server ov_vg        ov_volume_lcore     ext3
/etc/opt/OV/share         ov_vg        ov_volume_etc       ext3
/u01/oradata/openview     ov_vg        ov_volume_ora_data ext3
```

You can add a new shared file system at this point.

9. *Optional:* To add a new shared file system, follow these steps:

   a. Press **y** when the following question appears:

      ```
      Add a new shared file system [exit,back,?,y|n,"n"] ?
      ```

      You are prompted to enter the shared file system mount point:

      ```
      Shared file system mount point [exit,back,?,""] ?
      ```

   b. Type the desired shared file system mount point (for example, /opt/OV/OMU/adminUI).

   c. Press **Enter** to finish adding the new shared file system.

   The ovoconfigure script continues with checking virtual hosts.

   The following output appears:

   ```
   Hostname IP Address  Netmask     Interface
   -----------------------------------------
   virtip   10.17.1.120 255.255.0.0 eth0
   ```

   You can add a new virtual host at this point.

10. *Optional:* To add a new virtual host, follow these steps:

    a. Press **y** when the following question appears:

       ```
       Add a new virtual host [exit,back,?,y|n,"n"] ?
       ```

You are prompted to add the virtual hostname:

```
Virtual hostname [exit,back,?,""] ?
```

b. Type the desired virtual hostname (for example, `virtip3`).

c. Press **Enter** to finish adding the virtual host.

The summary of all shared file systems and virtual hosts appears, after which the `ovoconfigure` script asks you whether you want to continue.

11. Press **Enter**. The following output should appear:

```
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 appear:

```
 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
```

12. Press **Enter** to continue.

The server final configuration starts. It consists of the following:

- ❏ Management server policy group assignment
- ❏ Subagents configuration
- ❏ Java GUI configuration
- ❏ Web server configuration
- ❏ Certificates backup

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
```

13. Press **Enter** to continue with the following:

    - ❏ Starting the server as an HA resource group
    - ❏ Installing the local agent
    - ❏ Distributing configuration to the local agent
    - ❏ Installing server add-ons

    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. Install the 11.00.044 HP Operations agent by running the following command:

   ```
   oainstall.sh -i -a -minprecheck
   ```

2. Install the 11.04.016 HP Operations agent patch by running the following command:

   ```
   oainstall.sh -i -a -minprecheck
   ```

3. Install the HP Operations management server 9.10 MR software by running the `ovoinstall` command.

IMPORTANT

Make sure you press **n** when the following question appears:

```
Do you want to automatically continue with Server
configuration?
```

By doing so, you stop the HP Operations management server installation and do not continue with the configuration.

4. Install the HP Operations management server 09.10.240 server patch for Linux.
5. Install the HP Operations management server 09.10.230 core patch for Linux.
6. Install other required patches.
7. Continue with the HP Operations management server configuration as follows:

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

8. After the `ovoconfigure` script detects 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.

IMPORTANT

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 appear:

```
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"]?
```

9. Press **Enter** to continue. The following output should appear:

```
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 appear:

```
 Cluster configuration on ADDITIONAL cluster node

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

 OVHARG configuration . . . . . OK

 Configure Server cluster configuration . . . . . OK

 Configure Oracle cluster configuration . . . . . OK

 Server cluster postconfiguration . . . . . OK

 Adding local node to Server HARG . . . . . OK

 Cluster successfully configured
```

10. Press **Enter** to continue.

The server final configuration starts and it 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
- ❏ Installing server add-ons

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 44.

  2. When the HP Operations management server software is 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 44.

- **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 44.

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 the *HPOM Installation Guide for 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 the *HPOM Installation Guide for the Management Server*.

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 by 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 by 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.

Upgrading HPOM from Version 9.01 to Version 9.10 in a Cluster Environment

To upgrade the HP Operations management server running in a cluster environment to version 9.10, you must first perform the upgrade procedure on the active cluster node, and then on all passive cluster nodes.

When upgrading HPOM from version 9.01 to version 9.10, follow the procedure described in the *HPOM Installation Guide for the Management Server*.