

Oracle® VM
Installation and Upgrade Guide for Release 3.3

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Abstract

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Preface

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The Oracle VM Installation and Upgrade Guide provides detailed instructions for installing and upgrading Oracle VM.

1 Audience

The Oracle VM Installation and Upgrade Guide is intended for system administrators and end users who want to install or upgrade Oracle VM.

2 Related Documents

For more information, see the following documents in the Oracle VM documentation set:

- [Oracle VM Release Notes](#)
- [Oracle VM Installation and Upgrade Guide](#)
- [Oracle VM Concepts Guide](#)
- [Oracle VM Manager Getting Started Guide](#)
- [Oracle VM Manager User's Guide](#)
- [Oracle VM Manager Command Line Interface User's Guide](#)
- [Oracle VM Administrator's Guide](#)
- [Oracle VM Windows Paravirtual Drivers Installation Guide](#)
- [Oracle VM Web Services API Developer's Guide](#)
- [Oracle VM Security Guide](#)
- [Oracle VM Licensing Information User Manual](#)

You can also get the latest information on Oracle VM by going to the Oracle VM Web site:

<http://www.oracle.com/us/technologies/virtualization/oraclevm>

3 Command Syntax

Oracle Linux command syntax appears in `monospace` font. The dollar character (\$), number sign (#), or percent character (%) are Oracle Linux command prompts. Do not enter them as part of the command. The following command syntax conventions are used in this guide:

Convention	Description
backslash \	A backslash is the Oracle Linux command continuation character. It is used in command examples that are too long to fit on a single line. Enter the command as displayed (with a backslash) or enter it on a single line without a backslash: <pre>dd if=/dev/rdskc0t1d0s6 of=/dev/rst0 bs=10b \ count=10000</pre>
braces { }	Braces indicate required items: <pre>.DEFINE {macro1}</pre>
brackets []	Brackets indicate optional items: <pre>cvtcrt <i>termname</i> [<i>outfile</i>]</pre>
ellipses ...	Ellipses indicate an arbitrary number of similar items: <pre>CHKVAL fieldname value1 value2 ... valueN</pre>
<i>italics</i>	Italic type indicates a variable. Substitute a value for the variable: <pre><i>library_name</i></pre>
vertical line	A vertical line indicates a choice within braces or brackets: <pre>FILE <i>filesize</i> [K M]</pre>
forward slash /	A forward slash is used to escape special characters within single or double quotes in the Oracle VM Manager Command Line Interface, for example: <pre>create Tag name=MyTag description="HR/'s VMs"</pre>

4 Conventions

The following text conventions are used in this document:

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

Chapter 1 Overview

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This guide is designed to assist you with the installation procedures for both Oracle VM Manager and Oracle VM Server. It discusses the different pre-installation requirements for each component in a deployment and steps through the installation process, for both Oracle VM Manager and Oracle VM Server, to illustrate typical actions that are taken. This guide also describes how to configure an environment to automate the installation of Oracle VM Server.

The following sections summarize the basic steps for installation on the different platforms supported and provide links to more detailed coverage.

1.1 Planning Your Oracle VM Deployment

To install Oracle VM, you must install at least one [Oracle VM Server](#) and one instance of [Oracle VM Manager](#). Your Oracle VM Server can be on either x86 hardware or SPARC hardware. Oracle VM Servers in a [server pool](#) must be of the same type, either x86 or SPARC. You cannot mix x86 and SPARC servers in the same server pool; however Oracle VM Manager can manage server pools of different types.

If you are planning to install Oracle VM in a production environments, the following requirements apply:

- Oracle VM Manager and Oracle VM Server versions should be the same. You can use Oracle VM Manager to manage an Oracle VM Server within the same release but at a different patch level. However, it is recommended that you maintain the same patch level for both Oracle VM Manager and Oracle VM Server.
- A minimum cluster of three Oracle VM Server nodes in each server pool is strongly recommended for [high availability](#) (HA). If one node in the cluster experiences a hardware failure or is shut down for maintenance, failover redundancy is preserved with the other two nodes. Having a third node in the cluster also provides reserve capacity for production load requirements.

1.2 Getting Installation ISOs and Packages

All Oracle VM software can be downloaded from the Oracle Software Delivery Cloud:

<https://edelivery.oracle.com/oraclevm>

You must be a registered user, logged in and have accepted the terms and conditions to download software from the Oracle Software Delivery Cloud.

Software downloads are available as Media Packs, each of which represents a different release of the software. It is recommended that you select the most recent Media Pack to obtain patch updates to the software that you intend to install. Each Media Pack contains a collection of ISOs and Zip archives that are available for download. You can select the components that you require for your deployment and download each of these using your web browser.

Depending on your installation strategy, ISOs and Zip archives may need to be copied to the relevant host or hosts involved in a deployment, or should be placed in shared storage accessible to the systems involved.

1.3 Installation From DVD-ROM or CD-ROM

In some situations, you may need to physically burn a DVD-ROM or CD-ROM to install software directly onto systems. In these cases, you need the ISO image located on storage accessible to the host that you are using to burn the ROM device. There are many different ways to burn ISO images to disc-based media, and you should generally refer to your own operating system's documentation for this. However, the following command may assist Oracle Linux users to burn a physical ROM from the command line:

```
# growisofs -Z /dev/dvd=/tmp/OVMSvr.iso
```

Substitute `/dev/dvd` with the device name of your DVD-ROM or CD-ROM drive. Substitute `/tmp/OVMSvr.iso` with the path to the ISO file. If you are uncertain of the device name for your drive, try running:

```
cat /proc/sys/dev/cdrom/info
```

Take note of the drive name and prepend it with `/dev/`.

Solaris users can use the `cdrw` tool to do something similar:

```
# cdrw -i -d /dev/rdsk/cxtxdxs2 /var/tmp/OVMSvr.iso
```

Substitute `/dev/rdsk/cxtxdxs2` with the device name of your DVD-ROM drive. Substitute `/var/tmp/OVMSvr.iso` with the path to the ISO file. If you are uncertain of the device name for your DVD-ROM drive, try using the `rmformat` command to list your removable media devices and take note of the Logical Node that is reported for the device.

When you have burned your media to disc, you can use it to install the software onto your target host. In the case of Oracle VM Server for x86 hardware, the ISO that you have burned is a bootable DVD-ROM or CD-ROM that includes a full operating system install. If you have opted to install your servers using physical media, make sure the DVD-ROM or CD-ROM device is configured as the first boot device in the BIOS for each server where you want to install the software.

For most other installations, such as for Oracle VM Manager or Oracle VM Agent for SPARC, the operating system is already present on the target host. The DVD-ROM or CD-ROM need only be mounted to an accessible place in the existing file system. Typically, this can be achieved by running the following command:

```
# mount -t iso9660 /dev/dvd /mnt/cdrom
```

Substitute `/dev/dvd` with the device name of your DVD-ROM or CD-ROM drive. Substitute `/mnt/cdrom` with a suitable path to an existing mount point. If you are uncertain of the device name for your drive, try running:

```
cat /proc/sys/dev/cdrom/info
```

Take note of the drive name and prepend it with `/dev/`.

**Note**

If you are installing Oracle VM Manager from an ISO file that has been automatically mounted, ensure the permissions to the mounted directory are at least [0755](#).

1.4 Loopback ISO Mounts

For installations that do not replace the entire operating system of the target host, such as the installation of Oracle VM Manager, the most common method of accessing the installation media is to perform a loopback mount on the ISO provided. For this method, the ISO file must be accessible to the target host.

1.4.1 Loopback Mounts on x86

If the target host is an x86-based system running Oracle Linux, run the following command to perform a loopback mount of the ISO:

```
# mount -o loop /tmp/OracleVM-Manager.iso /mnt
```

Substitute `/tmp/OracleVM-Manager.iso` with the full path to the ISO. Substitute `/mnt` with the path to the directory on the file system to use as a mount point. From this point onward, you can access the contents of the ISO at the location of your mount point.

1.4.2 Loopback Mounts on SPARC

If the target host is a SPARC-based system running Oracle Solaris, run the following command to perform a loopback mount of the ISO:

```
# mount -o ro -F hsfs /var/tmp/OracleVM-Manager.iso /mnt
```

Substitute `/var/tmp/OracleVM-Manager.iso` with the full path to the ISO. Substitute `/mnt` with the path to the directory on the file system to use as a mount point. From this point onward, you can access the contents of the ISO at the location of your mount point.

If you have trouble mounting the ISO on a SPARC system, you may need to manually configure the ISO as a loopback device:

```
# lofiadm -a /var/tmp/OracleVM-Manager.iso
```

This command outputs the device name you should use, for example `/dev/lofi/1`. Use the new loopback device to perform the mount, for example:

```
# mount -o ro -F hsfs /dev/lofi/1 /mnt
```

When you have finished installing, remember to unmount the loopback device and remove it:

```
# umount /mnt
# lofiadm -d /dev/lofi/1
```

Refer to the `lofiadm` man page for more details.

1.5 Installing Oracle VM Server on x86

Installing Oracle VM Server on x86 deletes any previous operating system and data on the drive selected for installation. To install Oracle VM Server on an x86 server:

1. Boot the computer on which you want to install Oracle VM Server with your Oracle VM Server CD.

2. At the boot prompt, press **Enter**.
3. Follow the prompts to install Oracle VM Server.

See [Chapter 2, *Installing Oracle VM Server*](#) for detailed information on installing Oracle VM Server.

If you want to use more than one Oracle VM Server, repeat the installation process. Oracle VM Servers can be added to a server pool and managed by Oracle VM Manager.

To automate the install, see [Chapter 4, *Oracle VM Server Automated Installation*](#).

1.6 Installing Oracle VM Server on SPARC

Installing Oracle VM Server on a SPARC server requires you install and configure the following on the SPARC server:

1. Oracle Solaris OS in the [control domain](#).
2. Oracle VM Server for SPARC. This is included in Oracle Solaris 11 OS.
3. Oracle VM Agent for SPARC.

Note that installing Oracle Solaris within the control domain will destroy the data on the disk on which it is installed, however if Oracle Solaris 11 is already installed within the control domain then Oracle VM Server for SPARC is already available and there is no need to reinstall. Setting up Oracle VM Server for SPARC in this environment will not result in any data being destroyed.

See [Section 2.2, “Installing Oracle VM Server on SPARC Hardware”](#) for detailed information on installing Oracle VM Server on SPARC servers.

If you want to use more than one Oracle VM Server, repeat the installation process.

To automate the install, see [Chapter 4, *Oracle VM Server Automated Installation*](#).

1.7 Installing Oracle VM Manager

To install Oracle VM Manager:

1. Start up the operating system on the computer on which you want to install Oracle VM Manager.
2. Insert and mount the Oracle VM Manager DVD.
3. As the *root* user, start the Oracle VM Manager installation script:

```
# ./runInstaller.sh
```

4. Follow the prompts to install Oracle VM Manager.

See [Chapter 3, *Installing Oracle VM Manager*](#) for detailed information on installing Oracle VM Manager.

1.8 Upgrading Oracle VM

You cannot upgrade Oracle VM 2.x to Oracle VM 3.x. A full reinstall of your Oracle VM environment is required. You can however upgrade an Oracle VM 3.x environment. See [Chapter 5, *Upgrading Oracle VM*](#) for information on performing an upgrade.

Chapter 2 Installing Oracle VM Server

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This chapter discusses the installation requirements and procedures for the installation of [Oracle VM Server](#). Since the deployment of Oracle VM Server is significantly different on x86 hardware to deployment on SPARC hardware, this chapter is divided into two primary sections, to discuss the requirements and procedure specific to each hardware platform.

Before performing an installation of Oracle VM Server it is highly recommended that you review the preinstallation tasks and requirements for your chosen platform. Failure to meet requirements may result in install failure, or could render an installation unusable.

You may also consider referring to [Chapter 4, Oracle VM Server Automated Installation](#) for information on performing automated installs of Oracle VM Server.

2.1 Installing Oracle VM Server on x86 Hardware

This section is intended for system administrators who want to install [Oracle VM Server](#) on x86 hardware. For smaller deployments installation from DVD-ROM using the provided ISO is common, while for larger deployments administrators may consider deployment via network installation using PXE boot.

To install Oracle VM Server using the CD-ROM or PXE boot method, you need to visit the Oracle eDelivery/Linux site to select the Oracle VM Server ISO file from the Oracle VM Media Pack. The Oracle VM Server ISO file can be burned as a bootable disk and used to install Oracle VM Server from a DVD-ROM or CD-ROM drive.

A PXE boot installation requires several additional steps to configure a DHCP/PXE boot server. Furthermore, if automated installation is required, a Kickstart configuration file must be created to guide the Anaconda installation wizard through each of the installation steps. The DHCP/PXE boot server allows a bare-metal system to automatically receive an IP address via DHCP, load a kernel via TFTP, and then boot without an installed operating system. Once the bare-metal server boots, you can install Oracle VM Server from the installation media or use a Kickstart file to automate the Oracle VM Server installation.

In this section we describe preinstallation tasks and requirements. These apply to all deployments of Oracle VM Server, regardless of your installation strategy. We also provide detailed coverage of a manual attended installation performed from DVD-ROM or CD-ROM. It is recommended that you perform at least one fully attended installation of Oracle VM Server from DVD-ROM or CD-ROM, even if you intend to

perform a network-based install using PXE boot. Once you have completed this, refer to [Section 4.1, "Installation From PXE Boot"](#) for more information on how to prepare for a network-based installation.

2.1.1 Preinstallation Tasks and Requirements

Before you start the [Oracle VM Server](#) installation, make sure your computer meets the minimum hardware and software requirements and that your network is configured appropriately.

2.1.1.1 Hardware Requirements

This release of Oracle VM Server supports x86_64 host hardware only. Oracle VM Server requires a 64-bit processor with at least an i686-class processor on the host computer. This includes all Intel Pentium Pro or newer, and all AMD Athlon/Duron processors or newer. At least a Pentium 4 or Athlon CPU is recommended.

For [hardware virtualized](#) (unmodified) [guest](#) operating systems (for example, Microsoft Windows), a CPU with hardware virtualization support is required. This includes some Intel Pentium D, Core, Core2 and Xeon models, and some AMD Athlon and Opteron models. This feature may also need to be enabled in the BIOS. Please refer to your processor documentation for information on whether your processor supports hardware virtualization and how to enable it in the BIOS.

A dual core CPU or multiple CPUs are recommended to run multiple guests.

The minimum memory requirement is 1 GB RAM, although it is recommended you have a computer with at least 2 GB RAM. Guest memory requirements vary for each guest operating system. You should perform your own memory sizing for guest operating systems.

It is also worth noting that if you intend to connect to SAN-based physical disks, memory consumption increases on the server for each LUN or target by around 1 MB per LUN or target. If hundreds of LUNs are to be attached to the server, you must scale memory requirements appropriately.

Table 2.1 Minimum Hardware Requirements for Oracle VM Server

Items	Minimum Value
Memory	1.0 GB
Processor Type	64 bit i686 P4
Processor Speed	1.3 GHz*2
Available Hard Disk Space	4 GB

2.1.1.2 Software Requirements

There are no prerequisite software requirements. Oracle VM Server includes a small Linux-based management operating system. All previous operating systems and data on the disk selected for installation are lost during the installation of Oracle VM Server.

Migration from any operating system, or previous alternate virtualization environment, is not supported in this release.

2.1.1.3 Network Requirements

Oracle VM Server requires at least one stable and static IP address that does not change over server reboots. If you use DHCP within your environment, you should configure your DHCP server to assign static DHCP addresses to the systems on which you will be installing Oracle VM Server. This ensures that your

host always receives the same IP address. The behavior of the Oracle VM Server host is undefined if used in an environment where your IP address may change due to DHCP lease expiry.

If your DHCP server is configured to provide a default gateway, this could impact on the behavior of Oracle VM Server as the gateway provided over DHCP would override any statically defined gateway set on Oracle VM Server. Therefore, Oracle recommends that you ensure that your DHCP server is not configured to provide a default gateway unless you are certain that the default route is the one that you want your Oracle VM Server instances to make use of.

Many actions performed within [Oracle VM Manager](#) require that server hostnames are properly resolved. It is highly recommended that a DNS server is configured on your network and that the hostnames for each Oracle VM Server can be resolved by all of the systems within your Oracle VM environment. If this is not feasible, you may need to add host entries to `/etc/hosts` on each Oracle VM Server after you have finished your installation. Since it is easy for these entries to become outdated, resulting in difficulty when troubleshooting, this approach should be avoided.

Technically, it is possible to run Oracle VM Server with a single network interface per physical server. During the installation of each Oracle VM Server the management interface is configured, and during discovery by Oracle VM Manager the server management interfaces are included in the default management network. Since the management network is capable of providing all network functions in Oracle VM, including storage and [virtual machine](#) traffic, there is no functional need for additional networks. Even if you wish to separate different types of network traffic, a single interface is enough: the management network can be run on a [VLAN](#) and additional network connections can be made via VLAN interfaces configured on top of the single physical network interface.

The main reasons to opt for multiple physical network interfaces are:

- **Security.** You may wish to keep internal and inter-server traffic separated from networks with a route to the internet. Or you may need to guarantee that network traffic from different virtual environments, or different types of network traffic, are physically separated.
- **Redundancy.** You do not want your environment to stop working if one network interface fails. A good way to avoid this is to aggregate two interfaces in a bond interface. A bond port, as it is called in Oracle VM, can work in active-backup mode, but also increases performance when used as an aggregation of two active links with twice the bandwidth and load balancing.
- **Performance.** If you have multiple physical network interfaces, link aggregation is a good way to add bandwidth for a given network function. In addition, or as an alternative, you can create multiple physical networks and use them for dedicated functions; for example a separate storage network or a network for virtual machine traffic only.



Note

Oracle VM Ethernet network functionality can be applied to standard 10/100/1000Mbit Ethernet interfaces as well as 10Gbit Ethernet interfaces.

2.1.1.4 Oracle VM Server Memory Settings

Installation allocates memory to [dom0](#) using the following calculation:

$$(768 + 0.0205 * \text{Physical memory (MB)}) \text{ round to } 8$$

You can use this calculation to determine memory allocation for the Oracle VM Server installation. However, you should not make the memory allocation for dom0 smaller than the calculated value.

2.1.1.5 Getting the Software

If you do not already have the Oracle VM Server software, download the Oracle VM Server ISO file from the Oracle Software Delivery Cloud:

<http://edelivery.oracle.com/oraclevm>

See [Section 1.2, “Getting Installation ISOs and Packages”](#), in the appendix, for more information.

Depending on your installation strategy, you may need to perform some additional steps before you begin the installation. If you intend to install from DVD-ROM, you should burn a DVD-ROM disc with the ISO image. See [Section 1.3, “Installation From DVD-ROM or CD-ROM”](#) in the appendix for some information on how you can do this. If you intend to perform a network installation using PXE boot, you need to ensure that you DHCP/PXE boot server is properly set up and configured for this, that the kernel on the ISO is available via TFTP and that the entire ISO is accessible via NFS or HTTP. See [Section 4.1, “Installation From PXE Boot”](#) for further information. Finally, if you wish to perform an unattended installation, you must create a Kickstart configuration file. This is discussed in [Section 4.2, “Using Kickstart to Automate Installation Options”](#).

2.1.2 Installing Oracle VM Server From a DVD-ROM or CD-ROM

If you have not installed [Oracle VM Server](#) before, you should perform at least one installation directly from DVD-ROM or CD-ROM. Even if you intend to perform the majority of your installations over the network using PXE boot, a successful fully attended installation of Oracle VM Server can be useful if you need to obtain a template Kickstart configuration file to use for you unattended network-based installations.

A log of the install is located in `/root/install.log`. If the install fails to complete successfully, you may be able to review this log file for help identifying the cause.

To install Oracle VM Server from a DVD-ROM or CD-ROM:

1. Make sure that the server BIOS is set to boot from the DVD-ROM or CD-ROM device.
2. Insert the Oracle VM Server DVD or CD, that you have burned, into your ROM drive.
3. Boot the server with the Oracle VM Server DVD or CD.
4. The **Oracle VM Server** screen is displayed. Press **Enter** to begin the installation. If you do not press a key for one minute, the installer automatically starts. The installer is only available in text mode.
5. The **CD Found** screen is displayed. If you want to make sure the DVD or CD has been created correctly you can have the installer test it for errors. To test the DVD or CD, select **OK** and press **Enter**. The DVD or CD is tested and any errors are reported.



Warning

Testing the installation media requires a server reboot to continue the installation. If you do not have physical access to the server itself, it is not recommended that you perform this test.

To skip media testing and continue with the install, select **Skip** and press **Enter**.

6. The **Language Selection** screen is displayed. Select the language that should be used for the operating system (for example English).

Select **OK** and press **Enter**

7. The **Keyboard Selection** screen is displayed. Select the keyboard layout type (for example, **us** for U.S. English) from the list of available options. The keyboard you select becomes the default keyboard for the operating system.

Select **OK** and press **Enter**.

8. The Oracle VM Server 3.x **End User License Agreement** screen is displayed. Read the License Agreement text and click **Accept** to accept the terms of the agreement and continue the installation.
9. The **Oracle VM Management Interface** screen is displayed. Select the network interface to use for management of the computer.

Choose one of these options:

- Select **OK** to connect the interface to a regular network.
- Select **Add to VLAN** to connect the interface to a [VLAN](#)-type network.

Press **Enter**.

10. For non-VLAN installation, proceed to the next step.

If you selected Add to VLAN, the **Oracle VM Management VLAN** screen is displayed. If your Oracle VM Management network is on a VLAN, enter the applicable VLAN tag. Note that 0 is reserved and that 1 corresponds with "untagged".

Select **OK** and press **Enter**.

11. The **Network Interface Configuration** screen is displayed. If your computer uses a static IP address, enter the IP address and prefix (netmask) for your computer.

If your computer uses DHCP to assign its IP address, select **Dynamic IP configuration (DHCP)**. See [Section 2.1.1.3, "Network Requirements"](#) for more information on using DHCP with Oracle VM.

Select **OK** and press **Enter**.

12. The **Miscellaneous Network Settings** screen is displayed. Enter the Gateway, Primary DNS and optional Secondary DNS in the respective fields.

Select **OK** and press **Enter**.

13. The **Hostname Configuration** screen is displayed. If your machine has its own hostname, select **manually** and enter the hostname or IP address. You should use a fully qualified hostname, for example, myserver.example.com.

If your machine uses DHCP to assign its hostname, select **automatically via DHCP**. See [Section 2.1.1.3, "Network Requirements"](#) for more information on using DHCP with Oracle VM.

Select **OK** and press **Enter**.

14. The **Time Zone Selection** screen is displayed. If your operating system uses Coordinated Universal Time (UTC), select **System clock uses UTC**.

Select your time zone by selecting the city closest to your computer's physical location.

Select **OK** and press **Enter**.

15. The **Oracle VM Agent password** screen is displayed. Enter a password to be used for the [Oracle VM Agent](#) in the **Password** field. This password is used by Oracle VM Manager to take ownership of the Oracle VM Server. This is the password you use when discovering Oracle VM Servers in Oracle VM Manager.

Re-enter the password in the **Password (confirm)** field.

The password characters are not echoed to the screen.

Select **OK** and press **Enter**. If the two passwords do not match, the installer prompts you to enter them again.

16. The **Root Password** screen is displayed. Enter a password for the *root* user in the **Password** field. The *root* password must be at least six characters long.

Re-enter the password in the **Password (confirm)** field.

The password characters are not echoed to the screen.

Select **OK** and press **Enter**. If the two passwords do not match, the installer prompts you to enter them again.

17. If an existing Oracle VM Server installation is found on the computer, the **System to Upgrade** screen is displayed. Select **Reinstall System** to overwrite the existing installation. Select **Oracle VM Server 3.x (disk)** to upgrade the existing installation. Upgrade instructions are described in [Section 5.4.4](#), “[Upgrading Oracle VM Server Using the CD](#)”. Upgrading an Oracle VM Server from Release 2.x is not supported; you must perform a fresh install.

Select **OK** and press **Enter**.

18. The **Partitioning Type** screen is displayed. Select whether you want to:

- Use the entire drive for the installation target
- Replace the existing Linux system (if any)
- Use the free space on selected drives to create a new default partition layout

Select which drive(s) you want to use for the installation.

Select **OK** and press **Enter**.



Note

Partitioning is performed automatically by the installer, and you do not have the option to define how partitions should be created on the drive during the installation process. Partitions are created in such a way that only the maximum amount of disk space required to run Oracle VM Server is attributed to the partition where it runs. A separate partition is created for any remaining disk space to be used as a discoverable local disk that can be used to host a repository or assigned to any virtual machine that runs on the Oracle VM Server. This approach to partitioning ensures the best possible use of local storage resources. If it is critical that you specify your own partition layout, you must use a Kickstart configuration file as described in [Section 4.2](#), “[Using Kickstart to Automate Installation Options](#)”.



Important

If you have attached USB storage to the server, it may appear as a listed disk where you are able to install Oracle VM Server. Running Oracle VM Server from a USB disk is possible but is not supported for production environments. If you

are testing an installation and decide to install to a USB disk, the disk must be at least 32 GB in size. In the case where you select to install to a USB disk, the entire disk is used for the Oracle VM Server installation. Partitioning does not make excess disk space available for use as a discoverable local disk.

19. The **Writing storage configuration to disk** screen is displayed to confirm that you want to write the partitioning information to disk, proceeding past this step will erase any data contained on the partition that you opted for in the previous step.

Select **Write changes to disk** and press **Enter**.

20. The **Installation to begin** screen is displayed. Select **OK** and press **Enter**. The installer installs and configures Oracle VM Server. You can follow the progress of the package installation on-screen.

21. When all files are installed and configuration is complete, the **Complete** screen is displayed. Remove the Oracle VM DVD or CD.

Select **Reboot** and press **Enter**. The computer reboots.

The Oracle VM Server installation is complete. The Oracle VM Agent is started automatically and restarts each time the computer is rebooted.

2.1.3 Multipath Installation

Oracle VM Server can be installed to a multipathed disk attached to a Fibre Channel adapter. There are a number of points to be aware of when performing an installation to a multipathed disk:

- You must have a Fibre Channel HBA enabled within the target server's boot BIOS. Refer to the documentation provided by your adapter manufacturer to obtain instructions on loading firmware and enabling the adapter.
- Your target server BIOS must be configured to select the HBA and target disk as the primary boot device after the installation is complete.
- The boot Fibre Channel adapter must be connected to an external disk large enough for the install contents and there should be enough free space available on the disk to complete the installation.
- The target disk must be multipathed.
- Run the Oracle VM Server Installer from CDROM or PXE boot. During the installation, you must select the entire disk for installation. Ensure that **only** one multipath disk is selected for installation and that this disk matches the one that you have prepared for the installation. Splitting an install across multiple disks for a boot-from-SAN configuration is not supported. Mixing local disks and multipath disks in an installation is not supported.
- Continue with the installation instructions as set out in [Section 2.1.2, "Installing Oracle VM Server From a DVD-ROM or CD-ROM"](#).
- When you have completed the installation, reboot the server and remove the CDROM or update your PXE configuration to allow the server to boot from the Fibre Channel HBA and target disk defined as the primary boot device in the server's BIOS.
- When the server has rebooted, confirm that it is using the multipathed disk for the root mount point. For example, when running `df`, the output should show something similar to:

```
/dev/mapper/360a98000433468704234747633373175p2 51475068 1222456 47631172 3% /
```

- Remember that if you wish to reinstall or boot from a local disk you must change the boot device order in the server's BIOS setup.

- Unlike a default install to local disk, a multipath install does not use remaining disk space to create an additional partition to be used for locally hosted repositories or virtual machine assignment.

2.2 Installing Oracle VM Server on SPARC Hardware

In addition to x86-based hardware, this release of [Oracle VM Manager](#) can manage SPARC-based host hardware. This chapter discusses installing and configuring the software required to support management of [server pools](#), [Oracle VM Servers](#), and [guest virtual machines](#) on SPARC systems in Oracle VM Manager. This chapter is intended for system administrators who want to install the software required to manage Oracle VM Server for SPARC systems in Oracle VM Manager.

2.2.1 Preinstallation Tasks and Requirements

Your SPARC server must meet the minimum hardware and software requirements listed in this section.

2.2.1.1 Hardware Requirements

To install Oracle VM Server for SPARC, you need a SPARC T-Series server, series T2 or later; or alternatively a SPARC M5, M6 or Fujitsu M10 server. A full list of the supported hardware is available in the *Oracle VM Server for SPARC 3.1 Release Notes*:

http://docs.oracle.com/cd/E38405_01/

2.2.1.2 Software Requirements

The software required to configure your SPARC server so that it is discoverable by [Oracle VM Manager](#) is listed below.

Oracle Solaris 11.1 OS

A [control domain](#) running Oracle Solaris 11.1 OS. Installing Oracle Solaris 11.1 is outside the scope of this guide. For a full list of the Oracle Solaris 11.1 OS requirements see the *Required Software Patches* section in the *Oracle VM Server for SPARC 3.1 Release Notes*:

http://docs.oracle.com/cd/E38405_01/

For information on installing or upgrading the Oracle Solaris OS, see the *Installing and Enabling Software* section in the *Oracle VM Server for SPARC 3.1 Administration Guide*:

http://docs.oracle.com/cd/E38405_01/

SPARC Firmware

The firmware for your SPARC servers must match the required version to support Oracle VM Server for SPARC. The required firmware version numbers are described in the *Required Software to Enable Oracle VM Server for SPARC 3.1 Features* section in the *Oracle VM Server for SPARC 3.1 Release Notes*:

http://docs.oracle.com/cd/E38405_01/

For information on upgrading the system firmware, see the *Upgrading the System Firmware* section in the *Oracle VM Server for SPARC 3.1 Administration Guide*:

http://docs.oracle.com/cd/E38405_01/

Oracle VM Server for SPARC Release 3.1.1

Oracle VM Server for SPARC Release 3.1.1 or later (the [ldomsmanager](#) package). Oracle VM Server for SPARC Release 2.2 is included by default with the Oracle Solaris 11 OS, so you do not need to manually

install this software. You do, however, need to update it to Release 3.1.1 or later. This is usually achieved by upgrading Solaris 11.1 to the most current Stable Release Update (SRU). Upgrading Oracle VM Server for SPARC is outside the scope of this guide. For information on upgrading Oracle VM Server for SPARC to Release 3.1.1 or later, see the *Upgrade LDOMs System* section in the *Oracle VM Server for SPARC 3.1 Administration Guide*:

http://docs.oracle.com/cd/E38405_01/

Oracle VM Agent for SPARC

Oracle VM Agent for SPARC must be installed in the control domain. Oracle VM Agent for SPARC enables systems running Oracle VM Server for SPARC to be discovered and managed by Oracle VM Manager. See [Section 2.2.1.6, “Getting the Oracle VM Agent for SPARC Software”](#) for information on downloading and installing Oracle VM Agent for SPARC.

2.2.1.3 Network Requirements

Oracle VM Server for SPARC has the same basic network requirements as specified for x86 hardware in [Section 2.1.1.3, “Network Requirements”](#).

Oracle VM Server for SPARC has the following additional network requirements:

Network Configuration Profile

The Oracle VM Agent for SPARC requires the control domain to be configured with the DefaultFixed network configuration profile. If this network configuration profile is not enabled on the control domain then, during the installation of the Oracle VM Agent for SPARC software, the Oracle VM Agent for SPARC setup tool offers the opportunity to enable this network configuration profile and to reconfigure the network.

Alternatively, you can manually configure the DefaultFixed network configuration profile and the network on the control domain before installing the Oracle VM Agent for SPARC. For more information about network configuration profiles, see the *Network Configuration Profiles* section in the [Introduction to Oracle Solaris 11 Networking](#) guide available at:

http://docs.oracle.com/cd/E26502_01/html/E28986/index.html

Server Hostname

The server hostname should be different from "localhost" and it should resolve to an IP address different from 127.0.0.1.

You can check the hostname of the server with the `hostname` command:

```
# hostname
foo.example.com
```

If the command returns "localhost" then use the `hostname` command to change the hostname.

You can check that the hostname resolves to an IP address with the `getent` command:

```
# getent hosts `hostname`
192.168.1.1
```

If the command does not return an IP address or returns 127.0.0.1 then update the `/etc/hosts` file or your name service so that the hostname resolves to a valid IP address. For more information about naming services, see the [Working With Naming and Directory Services in Oracle Solaris 11.1](#) documentation at:

http://docs.oracle.com/cd/E26502_01/html/E29002/index.html

2.2.1.4 Storage Requirements

Although not a strict requirement, Solaris I/O Multipathing should be enabled for all storage used on the server (SAS, FC, iSCSI). Solaris I/O Multipathing provides higher availability for storage devices through the use of multipathed connections. On a default Solaris installation, Solaris I/O Multipathing is enabled only for SAS controllers using the `mpt_sas` driver, but it is not enabled for Fibre Channel and iSCSI controller ports. For more information about Solaris I/O Multipathing, refer to [Oracle Solaris 11.1 Configuration: SAN Configuration and Multipathing](#) at:

http://docs.oracle.com/cd/E26502_01/html/E29008/index.html

Enabling Solaris I/O Multipathing

To enable Solaris I/O multipathing on all supported multipath capable controller ports, use the `stmsboot` command:

```
# stmsboot -e
```

Note that device names change once under Solaris I/O multipathing control, and a reboot is required for changes to take effect.

For more information about enabling Solaris I/O Multipathing, refer to section [Enabling and Disabling Multipathing](#) in [Oracle Solaris 11.1 Configuration: SAN Configuration and Multipathing](#) available at:

http://docs.oracle.com/cd/E26502_01/html/E29008/gfpvw.html#gfpws

Third-Party Storage Devices

Using Solaris I/O Multipathing with a third-party storage device may require additional configuration. If you have enabled Solaris I/O multipathing using the `stmsboot` and you are using a third-party storage device and Solaris I/O Multipathing is not effectively enabled for that storage device, then refer to [Configuring Third-Party Storage](#) in [Oracle Solaris 11.1 Configuration: SAN Configuration and Multipathing](#) available at:

http://docs.oracle.com/cd/E26502_01/html/E29008/gfjtx.html#scrolltoc

2.2.1.5 LDoms Configuration Requirements

Before installing the Oracle VM Agent for SPARC, the platform must be in factory default configuration. When installing the Oracle VM Agent for SPARC, the Oracle VM Agent for SPARC setup tool creates and stores an initial LDoms configuration appropriate for using the server with Oracle VM Manager.

Use the following procedure to configure the platform with the factory-default configuration:

1. If there are domains other than the primary [domain](#), then stop and unbind all domains except the primary domain.

```
# ldm stop -a
# ldm unbind <domain>
```

2. Select the factory-default configuration and shutdown the primary domain.

```
# ldm set-config factory-default
# shutdown -i5 -g0 -y
```

3. From the service processor, perform a power cycle of the system to load the factory default configuration.

```
-> stop /SYS
```

```
-> start /SYS
```

For more information about the factory default configuration, see the *Factory Default Configuration and Disable Logical Domains* section in the [Oracle VM Server for SPARC 3.1 Administration Guide](#) available at:

http://docs.oracle.com/cd/E38405_01/html/E38406/index.html

2.2.1.6 Getting the Oracle VM Agent for SPARC Software

If you do not already have the Oracle VM Agent for SPARC software, download Oracle VM Agent for SPARC from the Oracle Software Delivery Cloud:

<https://edelivery.oracle.com/oraclevm>

See [Section 1.2, “Getting Installation ISOs and Packages”](#), in the appendix, for more information.

Use of Oracle VM Agent for SPARC is licensed under the GNU General Public License, version 2 license at:

<http://www.gnu.org/licenses/gpl-2.0.html>

Since SPARC systems already include a hypervisor within the firmware by default, installation of Oracle VM Server for SPARC does not replace the existing operating system. Therefore, it is possible to perform the installation from within the existing control domain. Save the Oracle VM Agent for SPARC archive file in the control domain.

2.2.2 Installing Oracle VM Agent for SPARC



Important

If you intend to make use of the DLM to support clustering in your SPARC environment, it is advisable to install this package before proceeding with the installation of Oracle VM Agent for SPARC. See [Section 6.1, “Installing DLM for SPARC Server Pool Clusters”](#) for more details.

To install Oracle VM Agent for SPARC:

1. On the [control domain](#), unpack the Oracle VM Agent for SPARC archive file:

```
# tar xzf ovs-ldoms-xx.tar.gz
```

2. Run the Oracle VM Agent for SPARC installer:

```
# cd ovs-ldoms-xx
# ./install
Oracle VM Agent Release 3.x.x Installer
```

The installer includes a check to determine whether or not you are running a supported version of Solaris. If the Solaris version is below 11, the installer exits with an error message.

3. The installer installs all required packages

```
- Installing Packages

   Packages to install: 6
   Create boot environment: No
   Create backup boot environment: No
   Services to change: 1
```

```

DOWNLOAD                                PKGS      FILES    XFER (MB)   SPEED
Completed                                6/6       226/226    1.6/1.6     0B/s

PHASE                                    ITEMS
Installing new actions                    353/353
Updating package state database           Done
Updating image state                      Done
Creating fast lookup database             Done
Reading search index                     Done
Updating search index                     6/6
    
```

4. The installer runs the [Oracle VM Agent](#) setup tool, `ovs-agent-setup`. For more information about the Oracle VM Agent setup tool, see [Section 2.2.3, “Configuring Oracle VM Agent for SPARC”](#).

```
- Configuring the OVS Agent
```

5. The installer enables all required SMF services. See [Section 2.2.5, “Using the Oracle VM Agent for SPARC Service”](#) for information on using the Oracle VM Agent for SPARC service.

```
- Enabling Required Services
Installation Completed.
```

The Oracle VM Agent for SPARC is installed in the control domain. Oracle VM Server for SPARC is now configured and ready to be discovered and managed by [Oracle VM Manager](#).

2.2.3 Configuring Oracle VM Agent for SPARC

The Oracle VM Agent for SPARC can be configured using the Oracle VM Agent for SPARC setup command, `ovs-agent-setup`. This command checks that the system is properly configured to run the [Oracle VM Agent](#). If the system is not properly configured then the command attempts to fix the configuration. The `ovs-agent-setup` command is automatically run when installing the Oracle VM Agent.

It is possible to run this command manually to control the configuration of the Oracle VM Agent for SPARC, run the `ovs-agent-setup` command on the [control domain](#):

```
# ovs-agent-setup configure
```

2.2.3.1 Configuring the Network

1. If the server is not configured with the DefaultFixed network configuration profile, then the network profile configuration menu is displayed.

```

Network Configuration
*** ERROR: The DefaultFixed network profile is not enabled.

-----

Network Profile Configuration

The system must be configured with the DefaultFixed network
profile. You can manually configured the DefaultFixed network
or you can use this tool to do the configuration. This tool
will configure a single network interface, all other network
interfaces will be unconfigured.

Do you want to use this tool to configure the network?

  1) Yes, use this tool to configure the network
  2) No, I will configure the network manually
    
```

Choice (1-2) [1]:

To use the tool to enable the DefaultFixed network configuration profile and configure the network, select 1.

To skip the configuration of the network, select 2. In which case, you must manually enable the DefaultFixed network configuration profile and configure the network.

2. When configuring the network, if you are not connected to the system console then a warning is displayed.

```
!!! WARNING !!!

You are not connected to the system console. Reconfiguring
the network can disrupt your remote connection to the server
and you can lose the remote access to the server.

!!! WARNING !!!

Are you sure that you want to continue?

  1) Yes, continue and configure the network
  2) No, cancel the configuration of the network

Choice (1-2):
```

To continue the network configuration, select 1.



Warning

Configuring the network can disrupt current network connections to the server and you can potentially lose your connection to the server. So it is safer to configure the network from the system console.

To cancel the configuration of the network, select 2. Then connect to the system console, and restart the configuration by running the `ovs-agent-setup configure` again.

3. The Oracle VM Management Interface menu is displayed.

```
Collecting information about network interfaces...
-----

Oracle VM Management Interface

Choose the network interface to use for the management of this
machine.

  1) net0: 00:14:4f:e3:0f:12 (nxge0)
  2) net1: 00:14:4f:e3:0f:13 (nxge1)
  3) net2: 00:14:4f:e3:0f:14 (nxge2)
  4) net3: 00:14:4f:e3:0f:15 (nxge3)

Interface (1-4) [1]:
```

Select the network interface to use for the management of the server.

4. The Network Interface Configuration menu is displayed.

```
IPv4 Configuration for net0

  1) Dynamic IP configuration (DHCP)
  2) Manual address configuration
```

```
IPv4 Configuration (1-2) [1]:
```

To configure the network interface with DHCP, select 1. To configure the network interface with a static IP address, select 2.

Configuring the Network with DHCP

- a. If the network interface is to be configured with DHCP, then the Hostname Configuration menu is displayed.

```
Hostname Configuration

If your system is part of a larger network where hostnames
are assigned by DHCP, select automatically via DHCP.
Otherwise, select manually and enter a hostname for your
system.

  1) automatically via DHCP
  2) manually

Hostname Configuration (1-2) [1]:
```

If the server uses DHCP to assign its hostname, select 1. If the server has its own hostname, select 2. Then, at 'Hostname' prompt, enter the hostname to be used.

- b. The Oracle VM management interface configuration is displayed:

```
Oracle VM Management Interface

Interface: net0
IP Address: DHCP
Hostname: DHCP

Are these parameters correct?

  1) Yes, configure the network with these parameters
  2) No, enter new parameters for the network configuration

Choice (1-2):
```

Select 1 to confirm that parameters are correct. The tool then configures the network. Select 2 if you want to enter new parameters, the process to configure the network then restarts from the beginning.

Configuring the Network With a Static IP

- a. If the network interface is to be configured with a static IP configuration, then the tool requests to enter IP configuration information.

```
IP Address [192.168.1.10]:
Prefix (Netmask) [255.255.255.0]:
Gateway [192.168.1.1]:
Primary DNS [192.168.168.168]:
Secondary DNS [192.168.169.169]:
Hostname [foo.example.com]:
```

- b. The Oracle VM management interface configuration is displayed:

```
Oracle VM Management Interface

Interface: net0
```

```

IP Address: 192.168.1.10
Prefix (Netmask): 255.255.255.0
Gateway: 192.168.1.1
Primary DNS: 192.168.168.168
Secondary DNS: 192.168.169.169
Hostname: foo.example.com

Are these parameters correct?

1) Yes, configure the network with these parameters
2) No, enter new parameters for the network configuration

Choice (1-2):

```

Select 1 to confirm that parameters are correct. The tool then configures the network. Select 2 if you want to enter new parameters, the process to configure the network then restarts from the beginning.

Configuring the Hostname

The setup tool checks if the server is configured with a valid hostname, that is a hostname different from "localhost" and that resolves to an IP address different from 127.0.0.1.

- a. If the hostname of the server is set to localhost, then an error is displayed.

```

*** ERROR: The server has an invalid hostname (localhost).
-----

Server Hostname

The server has no hostname or an invalid hostname. Use
the "hostname" command to check and configure the hostname
of the server. You might also want to check the network
configuration of the server.

Press <return> to continue...
*** ERROR: The server has an invalid hostname (localhost).

```

After the setup tool exists, you must use the `hostname` command to configure the hostname of the server.

- b. If the hostname resolves to the 127.0.0.1 then an error is displayed and the `/etc/hosts` file is updated to not resolve the hostname to 127.0.0.1.

```

*** ERROR: The server hostname (foo) should not resolve to 127.0.0.1.
Configuring /etc/hosts to not resolve foo to 127.0.0.1
Updating /etc/inet/hosts, the previous file is backed up as /etc/inet/hosts.20121128190648

```

When the setup tool updates the `/etc/hosts` file, the original `/etc/hosts` file is backup as `/etc/inet/hosts.<date-and-time>`.

- c. If the hostname does not resolve to an IP address then an error is displayed.

```

*** ERROR: The server hostname (foo) does not resolve to an IP address.
-----

Server IP Address

The server hostname does not resolve to an IP address.

hostname: foo

```

```
Update the /etc/hosts file or the name service so that the
hostname of the server is resolved to a valid IP address.
You might also want to check the network configuration of
the server.

Press <return> to continue...
*** ERROR: The server hostname (fooxxx) does not resolve to an IP address.
```

After the setup tool exits, you must update the `/etc/hosts` file or your name service so that the hostname resolves to a valid IP address. For more information about naming services, see the [Working With Naming and Directory Services in Oracle Solaris 11.1](#) documentation at:

http://docs.oracle.com/cd/E26502_01/html/E29002/index.html

2.2.3.2 Configure the Storage

The setup tool checks if all disks are configured with Solaris I/O Multipathing. If some disks are not configured with Solaris I/O Multipathing, then the tool prints warning messages, and displays instructions for enabling Solaris I/O Multipathing.

```
Storage Configuration
*** WARNING: disk c6t216000C0FF8089D5d4s2 is not configured with I/O multipathing
*** WARNING: disk c5t216000C0FF8089D5d4s2 is not configured with I/O multipathing
*** WARNING: disk c3t4d0s2 is not configured with I/O multipathing
*** WARNING: disk c3t0d0s2 is not configured with I/O multipathing
*** WARNING: disk c3t1d0s2 is not configured with I/O multipathing

*** WARNING: Some disks are not configured with I/O multipathing, the usage of Solaris
I/O multipathing is recommended.

-----

Solaris I/O Multipathing
The usage of Solaris I/O multipathing is recommended. To enable Solaris
I/O multipathing on all supported multipath capable controller ports, run
the following command:
    stmsboot -e
Note that a device will have a different name from its original name when
it is under Solaris I/O multipathing control, and a reboot is required for
changes to take effect.
Refer to the stmsboot(1M) man page for more information.
Press <return> to continue...
```

Note that the setup tool doesn't automatically enable Solaris I/O Multipathing. For more information about enabling Solaris I/O Multipathing, refer to [Section 2.2.1.4, "Storage Requirements"](#).

2.2.3.3 Configure Clustering

The setup tool checks the clustering software is correctly configured.

If the clustering software is not correctly configured then its configuration is automatically updated.

```
Cluster Configuration
Cluster Configuration OK
```

2.2.3.4 Oracle VM Agent Configuration

If the Oracle VM Agent password is not defined then the Oracle VM Agent password menu is displayed.

```
*** ERROR: The Oracle VM Agent password is not defined.

-----
```

```
Oracle VM Agent password

Enter a password for the Oracle VM Agent (ovs-agent)
This password is used in Oracle VM manager to manage
and monitor this server and its guest VMs. You must
type it twice to ensure you know what it is and
didn't make a mistake in typing.

Password:
Password (confirm):
```

Enter a password to be used for the Oracle VM Agent. This password is used by [Oracle VM Manager](#) to manage and monitor the Oracle VM Server for SPARC, and the guests created and running within it. This is the password you use when discovering [Oracle VM Servers](#) in Oracle VM Manager.

Then re-enter the password.

The password characters are not echoed to the screen. If the two passwords do not match, the tool prompts you to enter them again.

2.2.3.5 Configuring the LDoms Manager

The setup tool checks if the LDoms Manager is correctly configured.

If the LDoms Manager is not correctly configured then its configuration is automatically updated.

```
LDoms Manager Configuration
*** WARNING: The LDoms Manager is not configured for outgoing migration.
Configuring the domain manager
LDoms Manager Configuration OK
```

2.2.3.6 Configuring LDoms

The setup tool checks if the LDoms configuration is correct.

1. If the LDoms configuration is not correct then it is automatically updated and saved on the Service Processor.

```
LDoms Configuration
*** ERROR: The vcc service is not configured on the primary domain.
*** ERROR: The vds service is not configured on the primary domain.
*** WARNING: The primary domain is configured with too many cpus for creating guest virtual
machines.
*** WARNING: The primary domain is configured with too much memory for creating guest
virtual machines.
*** WARNING: The primary domain is not configured with the recommended number of cpus (8).
*** WARNING: The primary domain is not configured with the recommended amount of memory (8GB).
*** WARNING: The system is not using the ovm-initial configuration.
Configuring the vcc service
Configuring the vds service
Configuring the primary domain
Saving the ovm-initial configuration on the service processor
LDoms Configuration OK
```

2. If the LDoms configuration has been updated then the LDoms Configuration menu is displayed.

```
LDoms Configuration

The LDoms configuration has been created and stored on the
service processor. To activate this configuration, you need
to reboot the system.

Do you want to reboot the system now?
```

- ```
1) Yes, reboot the system now
2) No, I will reboot the system later
```

```
Choice (1-2):
```

Select 1 to reboot the system now and activate the LDom's configuration. Select 2 to exit the installer, you need to manually reboot the system to activate the LDom's configuration.

### 2.2.3.7 Configuring Virtual I/O Services

The setup tool checks that virtual I/O services are correctly configured.

If a virtual I/O service is not correctly configured then its configuration is automatically updated.

```
Virtual I/O Services Configuration
*** ERROR: The virtual disk service (vds) is not configured to be disabled at boot time.
*** ERROR: The virtual switch service (vsw) is not configured to be disabled at boot time.
Configuring the virtual disk service
Configuring the virtual switch service
Virtual I/O Services Configuration OK
```

## 2.2.4 Control Domain CPU and Memory Settings

The [Oracle VM Agent](#) setup tool configures the control domain with 1 CPU core. If the server has 16 GB of memory or more, the control domain is allocated 8 GB of memory. If the server has less than 16 GB of memory, the control domain is allocated 2 GB of memory and a warning message is displayed <sup>1</sup>. If you encounter performance issues because the control domain does not have enough CPUs or memory, you can increase the number of CPU cores and the amount of memory assigned to the control domain. Note, with the Oracle VM Agent, you cannot assign less than 1 CPU core and 2 GB of memory to the control domain, while 8 GB of memory for the control domain is the recommended minimum.

Use the following procedure to change the number of CPU cores or the amount of memory assigned to the control domain:

#### To change the number of CPU cores or memory assigned to the control domain

1. Connect as root to the control domain.
2. Specify the number of CPU cores to assign to the control domain. For example, to assign 2 cpu cores to the control domain:

```
svccfg -s ovs-config setprop config/core_count=2
```

3. Specify the amount of memory (in GB) to assign to the control domain. For example, to assign 16 GB of memory to the control domain:

```
svccfg -s ovs-config setprop config/memory_size=16
```

4. Refresh and restart the `ovs-config` service:

```
svcadm refresh ovs-config
svcadm restart ovs-config
```

5. The restart of the `ovs-config` service automatically reconfigures the control domain with the specified number of CPU cores and amount of memory and restarts the other Oracle VM Agent services (`ovs-agent` and `ovmwatch`). Check that all services come back online:

<sup>1</sup> This is only likely to occur on older SPARC systems such as the T2, T2+ and the T3, since these systems can have a minimum of 4 GB or 8 GB of memory. Newer servers like the T4 (with a minimum of 16 GB) and the T5 (with a minimum of 128 GB), are unaffected and are automatically configured so that the control domain is allocated a full 8 GB of memory.

```
svcs ovm/*
STATE STIME FMRI
online 15:40:59 svc:/ovm/ovs-config:default
online 15:40:59 svc:/ovm/ovmwatch:default
online 15:41:18 svc:/ovm/ovs-agent:default
```

If a service fails to restart and goes into the maintenance state, check for errors in the log file of the service. The restart of the `ovs-config` service fails if the control domain cannot be configured with the specified number of CPU cores and amount of memory.

Note that the reconfiguration of the control domain is achieved dynamically without rebooting the control domain, but the new configuration persists if the control domain is rebooted. The reconfiguration can be achieved while virtual machines are running, and the change impacts any running virtual machines. The server can continue to be managed with Oracle VM Manager while the `ovs-agent` is not fully restarted.

To restore the default configuration, use the same steps to set the `core_count` and `memory_size` to 0.

## 2.2.5 Using the Oracle VM Agent for SPARC Service

To check the status of the Oracle VM Agent for SPARC service:

```
svcs ovs-agent
```

To start the Oracle VM Agent for SPARC service:

```
svcadm enable -r ovs-agent
```

To stop the Oracle VM Agent for SPARC service:

```
svcadm disable ovs-agent
```

If the [Oracle VM Agent](#) service fails to come online, look for errors in the `/var/svc/log/ovm-ovs-agent:default.log` file.

You can also check if the configuration has any error by running the following command:

```
ovs-agent-setup check
```

If the command reports any error, then the Oracle VM Agent service is be unable to start.

For more detailed information about managing Oracle Solaris 11 services, see *Oracle Solaris Administration: Common Tasks*:

[http://docs.oracle.com/cd/E23824\\_01/html/821-1451/hbrunlevels-25516.html#scrolltoc](http://docs.oracle.com/cd/E23824_01/html/821-1451/hbrunlevels-25516.html#scrolltoc)

## 2.2.6 Oracle VM Agent for SPARC Log File

The Oracle VM Agent for SPARC log file is located at:

```
/var/log/ovs-agent.log
```

The Oracle VM Agent for SPARC service log file is located at:

```
/var/svc/log/ovm-ovs-agent:default.log
```

The Oracle VM Agent for SPARC configuration service log file is located at:

```
/var/svc/log/ovm-ovs-config:default.log
```

## 2.2.7 Uninstalling Oracle VM Agent for SPARC

To uninstall Oracle VM Agent for SPARC:

1. On the [control domain](#), change directory to the location in which you uncompressed the [Oracle VM Agent](#) (see [Section 2.2.2, "Installing Oracle VM Agent for SPARC"](#)), and run the following as the *root* user:

```
cd ovs-ldoms-xx
./uninstall
```

The script uninstalls Oracle VM Agent for SPARC and removes the default Oracle VM Storage Connect plug-ins.

---

# Chapter 3 Installing Oracle VM Manager

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This chapter is intended for users who want to install [Oracle VM Manager](#). Oracle VM Manager is installed on a pre-configured Linux operating system, and is comprised of a variety of different components.

Installation of Oracle VM Manager includes the installation of Java, Oracle [WebLogic](#) Server, MySQL v5.6 and the Oracle VM Manager application itself.

An uninstaller is included with the installation script. The uninstaller gives you options to remove MySQL, Java, the Oracle VM Manager application, and the Oracle WebLogic Server.



### Note

Oracle VM Manager Release 3.3 does not support the use of an alternate database back end.

## 3.1 Oracle VM Manager Components

The applications necessary to run [Oracle VM Manager](#) are packaged in the ISO image. Some or all of the following applications may be installed on the [host computer](#) when you install Oracle VM Manager:

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Oracle VM Manager          | The Oracle VM Manager application provided as a Oracle <a href="#">WebLogic</a> Server domain and container.                                                                                                                                                                                                                                                                                                                                                  |
| Oracle WebLogic Server 12c | Oracle WebLogic Server 12c Standard Edition, including Application Development Framework (ADF) Release 12c, is included with the Oracle VM Manager. Use of Oracle WebLogic Server 12c Standard Edition is restricted to use with Oracle VM Manager. For more information about Oracle WebLogic Server, see the Oracle WebLogic Server 12c documentation:<br><br><a href="http://docs.oracle.com/middleware/1212/">http://docs.oracle.com/middleware/1212/</a> |
| MySQL Enterprise Edition   | MySQL Enterprise Edition is included for use as the Oracle VM Manager Management Repository. Use of MySQL Enterprise Edition, including without limitation MySQL Enterprise Backup, is restricted to use with Oracle VM Manager.<br><br>This MySQL database is installed locally using the packages that are bundled with the Oracle VM Manager installer. Oracle VM Manager                                                                                  |

makes use of its own version of MySQL 5.6 Enterprise Edition which is licensed for exclusive use by Oracle VM. MySQL is installed into the standard location with databases and configuration information located at `/u01/app/oracle/mysql/data`. The MySQL server that is installed uses a non-standard TCP Port (49500) for exclusive use by Oracle VM Manager. Do not use the bundled database for other applications.

In order to prevent potential conflicts with existing MySQL installations, The Oracle VM Manager installer requires that you remove any existing MySQL installation prior to installation. If you are running MySQL on the system where you are installing Oracle VM Manager, the installer exits to allow you to backup any existing databases and remove the existing MySQL instance before proceeding with the installation.

## 3.2 Minimum Hardware and Software Requirements

The following minimum system requirements must be met on the computer on which you want to install [Oracle VM Manager](#).

### 3.2.1 Hardware Requirements

Before you install Oracle VM Manager, make sure that your computer meets the minimum hardware requirements listed in [Table 3.1](#):

**Table 3.1 Hardware Requirements for Oracle VM Manager**

| Items           | Minimum Value                                                      |
|-----------------|--------------------------------------------------------------------|
| Memory          | 8.0 GB                                                             |
| Processor Type  | 64 bit                                                             |
| Processor Speed | 1.83 GHz*2                                                         |
| Swap Space      | 2.1 GB                                                             |
| Hard Disk Space | 5.5 GB in /u01<br>2 GB in /tmp<br>500 MB in /var<br>500 MB in /usr |

### 3.2.2 Software Requirements

Before you install Oracle VM Manager, make sure that your computer meets the following minimum software and configuration requirements.

#### 3.2.2.1 Operating Systems

Oracle VM Manager is supported on the following operating systems:

- Oracle Linux 5 Update 5 64-bit or later.
- Oracle Linux 6 64-bit or later.
- Red Hat Enterprise Linux 5 Update 5 64-bit or later.

- Red Hat Enterprise Linux 6 64-bit or later.

You can download Oracle Linux from:

<https://edelivery.oracle.com/linux>



#### Note

For more information about Oracle Linux, see:

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

<http://www.oracle.com/technetwork/server-storage/linux/>



#### Important

In all cases, it is assumed that at least the 'Minimal' package group is installed. This is important to help ensure that all required dependencies are covered.

### 3.2.2.2 Web Browsers

The Oracle VM Manager Web Interface is supported on the web browsers described in [Web Browser Requirements](#) in the *Oracle VM Manager User's Guide*.

### 3.2.2.3 Prerequisite Packages

If you have a minimal installation of Oracle Linux, you may not have the perl, libaio, zip and unzip packages installed. These are required packages for the Oracle VM Manager installer. To install perl, libaio, zip and unzip, enter:

```
yum install zip unzip libaio perl
```

The Oracle VM Manager installer is responsible for installing a number of different software packages, some of which may have other dependencies. If you have not installed at least a 'minimal' installation of Oracle Linux, the installer may exit at any point and notify you of missing dependencies. In this situation, you must ensure that dependency packages are installed before attempting to resume an installation. This issue may occur on systems that were installed using Kickstart and only a limited subset of packages.

Oracle VM Manager Release 3.3 includes a Python script called `UpgradeServers.py`. This script assists with the batch upgrade of multiple Oracle VM Servers.

### 3.2.2.4 Removal of Pre-Existing MySQL Installations

If you have an existing MySQL installation on the system where you intend to install Oracle VM Manager you must backup your databases and uninstall it. Oracle VM Manager requires exclusive use of MySQL due to the specific tuning parameters that it applies to the configuration. Oracle VM Manager uses MySQL Enterprise Edition on a non-standard port. The licensing of the MySQL Enterprise Edition provided with Oracle VM Manager grants exclusive use to Oracle VM. You must not use the MySQL server provided for any other purpose. If an existing MySQL installation is present on the system, the installer exits with an error message informing you that you must remove this before continuing with the installation.

### 3.2.2.5 Network

The host computer on which you install Oracle VM Manager must have the host name correctly configured (*pingable*). Make sure the computer's host name matches the host name in the `/etc/hosts` file. Use the following command to check the host name:

```
hostname
```

Use a text editor to check the host name in the `/etc/hosts` file. For example, to use VI enter

```
vi /etc/hosts
```

For example, if the computer's host name is `hostname1.example.com`, and the IP address is `10.1.1.1`, the corresponding item in the `/etc/hosts` file should be:

```
10.1.1.1 hostname1.example.com hostname1
```

Oracle VM Manager requires that the system time reported by all Oracle VM Servers is synchronized with the time reported by the Oracle VM Manager host. Therefore, Oracle VM Manager runs an NTP daemon that is used to update the system time on each Oracle VM Server. The NTP daemon on Oracle VM Manager must be able to synchronize with other NTP servers, or it will fail to promote itself to a stratum that the Oracle VM Servers can use to synchronize with. If you do not run NTP within your own environment, the Oracle VM Manager host must be able to communicate with other NTP servers on the Internet using UDP 123. Any firewalls preventing this can cause unexpected behavior within Oracle VM Manager, including the inability to properly perform server discovery.

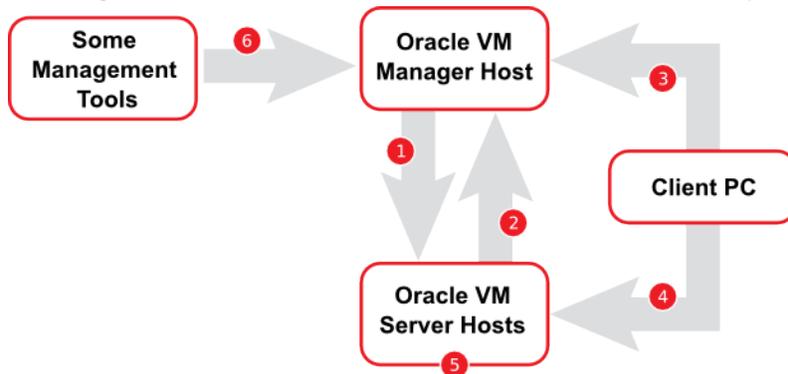
When a VLAN is used for the management network, IPv6 should be disabled before installing Oracle VM Manager. IPv6 is not supported by Oracle VM and disabling it before installing Oracle VM Manager may help to avoid some problems with network configuration in general.

### 3.2.2.6 Firewall Configuration

A default Oracle Linux install has the firewall enabled (iptables on). In order to use Oracle VM Manager on a system with iptables enabled you can either open all the ports used by Oracle VM Manager, or open all ports by disabling iptables.

To configure the firewall to open the required ports automatically, use the environment configuration script provided with the Oracle VM Manager installer. See [Section 3.3.1, "Configuring the Environment Before Installation"](#) for information on using this script.

The diagram and table below illustrate the firewall rules and requirements for Oracle VM.



**Table 3.2 Firewall Rules**

| No. | Component Relationship                | Ports and Description                                                                                                                                                                                                                           | Optional |
|-----|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 1   | Oracle VM Manager to Oracle VM Server | <ul style="list-style-type: none"> <li>TCP/8899 - HTTPS connection to the Oracle VM Agent.</li> <li>TCP/6900-xxxx - SSL secured VNC connections to connect to the VNC Console for virtual machines running on each Oracle VM Server.</li> </ul> | No       |

| No. | Component Relationship                     | Ports and Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Optional                                                          |
|-----|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
|     |                                            | <ul style="list-style-type: none"> <li>TCP/10000-xxxx - SSL secured port for telnet emulated serial connections to connect to the Serial Console for virtual machines running on each Oracle VM Server.</li> </ul>                                                                                                                                                                                                                                                                                                             |                                                                   |
| 2   | Oracle VM Server to Oracle VM Manager      | <ul style="list-style-type: none"> <li>TCP/7002 - HTTPS connection from Oracle VM Agent to the Oracle VM Core WSAPI.</li> <li>UDP/123 - NTP requests to an NTP server running on the Oracle VM Manager host.</li> </ul>                                                                                                                                                                                                                                                                                                        | No                                                                |
| 3   | Client PC to Oracle VM Manager             | <ul style="list-style-type: none"> <li>TCP/7002 - HTTPS connection from web browser to Oracle VM Manager web user interface, or WSAPI.</li> <li>TCP/10000 - SSH connection from SSH client to Oracle VM Manager CLI.</li> <li>TCP/22 - SSH connection to Oracle VM Manager host for administrative work.</li> </ul>                                                                                                                                                                                                            | No, although access to services should be limited to requirements |
| 4   | Client PC to Oracle VM Server              | <ul style="list-style-type: none"> <li>TCP/22 - SSH connection to Dom0 on each Oracle VM Server for administrative work.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                            | Yes                                                               |
| 5   | Oracle VM Server to Oracle VM Server       | <ul style="list-style-type: none"> <li>TCP/7777 - OCFS2/DLM heartbeat communication for clustered server pools.</li> <li>TCP/8002 (x86 only)- non-encrypted port to perform live virtual machine migrations.</li> <li>TCP/8003 (x86 only)- SSL-encrypted port to perform live virtual machine migrations.</li> <li>TCP/8101 (SPARC only)- SSL-encrypted port to perform live virtual machine migrations.</li> <li>TCP/6482 (SPARC only) - LDoms Manager XMPP port used to initiate live virtual machine migrations.</li> </ul> | No                                                                |
| 6   | Some Management Tools to Oracle VM Manager | <ul style="list-style-type: none"> <li>TCP/54322 - Access to the legacy API as required by some applications that have not yet been updated to use the WSAPI.</li> </ul>                                                                                                                                                                                                                                                                                                                                                       | Yes                                                               |

The following instructions explain how to resolve any firewall requirements manually, and assume that you have decided not to use the environment configuration script provided with the Oracle VM Manager installer.

Depending on your security requirements, do either:

- Disable iptables and open all ports, enter the following commands as the *root* user:

```
service iptables stop
chkconfig iptables off
```

- Alternatively, to open the required ports manually by using the iptables command as the *root* user:

```
iptables -A INPUT -m state --state NEW -m tcp -p tcp --dport 7002 -j ACCEPT
iptables -A INPUT -m state --state NEW -m udp -p udp --dport 123 -j ACCEPT
```

To remotely connect to the Oracle VM Manager core legacy API using an alternate external client such as Oracle Enterprise Manager, also enter the following command:

```
iptables -A INPUT -m state --state NEW -m tcp -p tcp --dport 54322 -j ACCEPT
```

To enable the Oracle VM Manager Command Line Interface, enter the following command:

```
iptables -A INPUT -m state --state NEW -m tcp -p tcp --dport 10000 -j ACCEPT
```

When all the ports have been opened, save the iptables configuration:

```
service iptables save
```

This does not require iptables to be restarted as the commands open the ports while iptables is running and the save ensures they are opened on reboot/restart in future.

### 3.3 Installing Oracle VM Manager

It takes approximately 8-15 minutes to complete the installation of [Oracle VM Manager](#), depending on the performance of the Oracle VM Manager host, and the installation type you choose.

Before you begin the installation, download the Oracle VM Manager software from:

<http://edelivery.oracle.com/oraclevm>

More information on obtaining the software is covered in [Section 1.2, "Getting Installation ISOs and Packages"](#).

Once you have downloaded the Oracle VM Manager installation ISO you must either burn it to DVD-ROM and mount the DVD on the target host (see [Section 1.3, "Installation From DVD-ROM or CD-ROM"](#)); or copy the ISO to the target host and perform a loopback mount of the ISO (see [Section 1.4, "Loopback ISO Mounts"](#)).

#### 3.3.1 Configuring the Environment Before Installation

Oracle VM Manager requires a system user named `oracle`, a group called `dba`, and a `/u01` directory with specific permissions on installation folders. The Oracle VM Manager installation media includes a shell script, `createOracle.sh`, that automatically configures the environment. This script does the following:



#### Note

You must use the bash login shell with the `oracle` user to install Oracle VM Manager.

The `createOracle.sh` script does the following:

- Creates the required operating system user, `oracle`, and groups, `dba`.



#### Note

The script does not set a password for the `oracle` user as a security measure. Because the user does not have a password, it is not possible to log in as the `oracle` user. If you want to allow login access, you must set the password manually.

- Creates the `/u01` directory, if it does not already exist, and sets permissions on required installation folders.



**Note**

The `/u01` directory must exist before you can install Oracle VM Manager. This directory must also have 2.4 GB of space available.

- Sets the required parameters in the `/etc/security/limits.conf` file on a Linux system.
- Opens the required ports in the `/etc/sysconfig/iptables` file on a Linux system.



**Note**

You should run the `createOracle.sh` script if you are installing Oracle VM Manager on the system for the first time. You do not need to run this script if you are reinstalling Oracle VM Manager on the same system.

To run `createOracle.sh` and configure the environment, do the following:

1. Mount the Oracle VM Manager installation media. See [Section 1.3, “Installation From DVD-ROM or CD-ROM”](#) or [Section 1.4, “Loopback ISO Mounts”](#).
2. Change directory to the mount point, for example:

```
cd /mnt/cdrom
```

3. As the `root` user, run `createOracle.sh`

```
./createOracle.sh
```



**Important**

The `createOracle.sh` script does not automatically enable the `iptables` service. You should manually confirm that the `iptables` service is enabled.

## Manually Setting Up the Oracle User

To install Oracle VM Manager, you must have an `oracle` user that is a member of a group named `dba` and which has the correct security limits set.

The environment configuration script automatically creates and configures the `oracle` user. As an alternative to using the script, you can set up the `oracle` user with the following commands:

- If the `oracle` user does not exist on the Oracle VM Manager host, enter the following commands as the `root` user to create the user, create the group, add the user to the group, and set the user's password:

```
groupadd dba
useradd -g dba oracle
```

- If the `oracle` user already exists, add it to the `dba` group using the following command:

```
usermod -g dba oracle
```

- The `oracle` user must also have a `hard nfiles` and `soft nfiles` minimum of at least 8192, as well as some other security limits set. To set these, edit the `/etc/security/limits.conf` file to include the following:

```
oracle hard nfile 8192
oracle soft nfile 8192
oracle soft nproc 4096
oracle hard nproc 4096
```

```
oracle soft core unlimited
oracle hard core unlimited
```

### 3.3.2 Running the Oracle VM Manager Installer

To install Oracle VM Manager, change directory to the mount point where you have either mounted the DVD-ROM or where you have mounted the ISO file and start the installation by running the runInstaller script as the *root* user:



#### Important

Please ensure that you have met the requirements outlined in [Section 3.2, “Minimum Hardware and Software Requirements”](#) before running the runInstaller.sh script.

```
cd /mnt/cdrom
./runInstaller.sh
```

Substitute `/mnt/cdrom` with the path to the mount point where the DVD-ROM or ISO file is mounted on your own system.

A set of installer options are displayed:

```
Please select an installation type:
 1: Install
 2: Upgrade
 3: Uninstall
 4: Help
```

At the command prompt, enter **1** to perform the installation. If you already have Oracle VM Manager installed and want to upgrade it, select **2** to **Upgrade**. If you already have Oracle VM Manager installed and want to remove it, select **3** to **Uninstall**.

See [Section 3.3.2.1, “Installation”](#) for information on installing Oracle VM Manager.

See [Section 3.4, “Uninstalling Oracle VM Manager”](#) for information on uninstalling Oracle VM Manager, and its components such as MySQL (if applicable), Oracle [WebLogic](#) Server, ADF and Java.

You can also perform a silent install using the installer script optional parameters. See [Section 3.3.2.2, “Performing a Silent Install”](#) on how to perform a silent install, and [Section 3.5, “Oracle VM Manager Installation Script \(runInstaller.sh\)”](#) at the end of this chapter for the full syntax to the installation script.

Upgrading Oracle VM Manager is discussed in [Chapter 5, Upgrading Oracle VM](#).

#### 3.3.2.1 Installation

The Installation option installs MySQL Enterprise Edition, MySQL Enterprise Edition Backup, Oracle WebLogic Server, Oracle Application Development Framework (ADF), Java, and Oracle VM Manager on the local system. The following example shows the installation process.



#### Note

If you have an existing MySQL installation on the system where you intend to install Oracle VM Manager you must backup your databases and uninstall it. Oracle VM Manager requires exclusive use of MySQL due to the specific tuning parameters that it applies to the configuration. Oracle VM Manager uses MySQL Enterprise Edition on a non-standard port. The licensing of the MySQL Enterprise Edition provided with Oracle VM Manager grants exclusive use to Oracle VM. You must

not use the MySQL server provided for any other purpose. If MySQL is installed as a result of a previous installation of Oracle VM Manager the installation prompts you to provide the hostname, root password and port number that was used in the previous installation.

### Example 3.1 Installation

```
./runInstaller.sh

Oracle VM Manager Release 3.x.x Installer

Oracle VM Manager Installer log file:
 /var/log/ovmm/filename.log

Please select an installation type:
 1: Install
 2: Upgrade
 3: Uninstall
 4: Help

Select Number (1-4): 1
```

The installation process starts, and the following is displayed:

```
Starting production with local database installation ...

Verifying installation prerequisites ...

One password is used for all users created and used during the installation.
Enter a password for all logins used during the installation:
Enter a password for all logins used during the installation (confirm):
```

A system-wide password is required during installation. This password is used for all components used by Oracle VM Manager including MySQL, Oracle [WebLogic](#) and the Oracle VM Manager application itself. Note that the password should at least adhere to the requirements for an Oracle WebLogic password as set out below:

- Be between 8 and 16 characters in length.
- Contain at least 1 lower case and 1 upper case letter.
- Contain at least 1 numeric value or special character.

Enter the system-wide password and then enter it again when you are prompted to confirm your password.

```
Please enter your fully qualified domain name, e.g. ovs123.us.oracle.com, (or IP address)
of your management server for SSL certification generation, more than one IP address are
detected: 10.172.76.71 192.168.122.1 [10.172.76.71]:
```

Enter the fully qualified domain name or IP address of the host where you are installing Oracle VM Manager. This is used to generate the self-signed SSL certificate that is used by Oracle VM Manager to encrypt HTTPS communications. The domain name must either match the domain name returned when running the `hostname -f` command on your system, or must match a valid IP address for the host. The installer validates the IP address or hostname entered here by attempting to ping the entry before proceeding with the installation. If the ping fails, the installer prompts to re-enter a valid domain name or IP address. It is not possible to enter 'localhost' or '127.0.0.1' as a valid hostname.

```
Verifying configuration ...
```

Warnings may occur if not all recommendations are met.

The installer provides a final option to continue or to abort the installation process. Enter **1** to continue. Progress of the installation is output on your screen step by step, as shown below:

```
Start installing the configured components:
 1: Continue
 2: Abort

 Select Number (1-2): 1

Step 1 of 9 : Database Software...
Installing Database Software...
Retrieving MySQL Database 5.6 ...
Unzipping MySQL RPM File ...
Installing MySQL 5.6 RPM package ...
Configuring MySQL Database 5.6 ...
Installing MySQL backup RPM package ...

Step 2 of 9 : Java ...
Installing Java ...

Step 3 of 9 : Database schema ...
Creating database 'ovs' ...
Creating database 'appfw'
Creating user 'ovs' for database 'ovs'...
Creating user 'appfw' for database 'appfw'

Step 4 of 9 : WebLogic and ADF...
Retrieving Oracle WebLogic Server 12c and ADF ...
Installing Oracle WebLogic Server 12c and ADF ...

Step 5 of 9 : Oracle VM ...
Installing Oracle VM Manager Core ...
Retrieving Oracle VM Manager Application ...
Extracting Oracle VM Manager Application ...

Retrieving Oracle VM Manager Upgrade tool ...
Extracting Oracle VM Manager Upgrade tool ...
Installing Oracle VM Manager Upgrade tool ...

Step 6 of 9 : Domain creation ...
Creating Oracle WebLogic Server domain ...
Starting Oracle WebLogic Server 12c ...
Creating Oracle VM Manager user 'admin' ...

Retrieving Oracle VM Manager CLI tool ...
Extracting Oracle VM Manager CLI tool...
Installing Oracle VM Manager CLI tool ...

Step 7 of 9 : Deploy ...
Configuring Https Identity and Trust...
Deploying Oracle VM Manager Core container ...
Configuring Client Cert Login...
Deploying Oracle VM Manager UI Console ...
Deploying Oracle VM Manager Help ...

Step 8 of 9 : Oracle VM Tools ...
Retrieving Oracle VM Manager Shell & API ...
Extracting Oracle VM Manager Shell & API ...
Installing Oracle VM Manager Shell & API ...

Retrieving Oracle VM Manager Wsh tool ...
Extracting Oracle VM Manager Wsh tool ...
Installing Oracle VM Manager Wsh tool ...
Copying Oracle VM Manager shell to '/usr/bin/ovm_shell.sh' ...
Installing ovm_admin.sh in '/u01/app/oracle/ovm-manager-3/bin' ...
Installing ovm_upgrade.sh in '/u01/app/oracle/ovm-manager-3/bin' ...
```

```
Step 9 of 9 : Start OVM Manager ...
Enabling Oracle VM Manager service ...
Shutting down Oracle VM Manager instance ...
Starting Oracle VM Manager instance ...
Waiting for the application to initialize ...
Oracle VM Manager is running ...

Please wait while WebLogic configures the applications...
Oracle VM Manager installed.
```

When the installation is complete a summary similar to the following is displayed:

```
Installation Summary

Database configuration:
 Database type : MySQL
 Database host name : localhost
 Database name : ovs
 Database listener port : 3306
 Database user : ovs

Oracle WebLogic Server configuration:
 Administration username : weblogic

Oracle VM Manager configuration:
 Username : admin
 Core management port : 54321
 UUID : 0004fb00000100007c08b684bd203388

Passwords:
There are no default passwords for any users. The passwords to use for Oracle VM Manager,
Database, and Oracle WebLogic Server have been set by you during this installation. In the
case of a default install, all passwords are the same.

Oracle VM Manager UI:
 https://hostname:7002/ovm/console
Log in with the user 'admin', and the password you set during the installation.

Note that you must install the latest ovmcore-console package for your Oracle Linux
distribution to gain VNC and serial console access to your Virtual Machines (VMs).
Please refer to the documentation for more information about this package.

For more information about Oracle Virtualization, please visit:
 http://www.oracle.com/virtualization/

Oracle VM Manager installation complete.

Please remove configuration file /tmp/ovm_configid.
```



### Important

Make sure you delete the temporary configuration file created during the installation:

```
/tmp/ovm_configid
```

This file is useful for debugging installation issues, but does contain some sensitive information that may present a security issue if left in place. This file is automatically deleted if you abort an installation.

When you have completed your installation, there are a number of additional steps that you should perform before you start using Oracle VM Manager to manage your deployment. Please see [Chapter 6, \*What Next?\*](#) to continue configuring your environment.

### 3.3.2.2 Performing a Silent Install

The Oracle VM Manager installer can be installed *silently*, without any intervention. An installation configuration file can be created to set particular installation options. The configuration script is written in YAML format (see <http://en.wikipedia.org/wiki/YAML>). Structure is shown through indentation using spaces. Do not use tab characters in the configuration file or it may not parse correctly. Sequence items are denoted by a dash, and key value pairs within a map are separated by a colon.

The following example silently performs an installation using predefined parameters.



#### Warning

Always provide the absolute path to the configuration file. The installer cannot process a relative path and will simply terminate the installation process.

#### Example 3.2 Silent install using configuration file

The command to run the silent production installation using a configuration file is:

```
./runInstaller.sh --config=/path/config.yml -i install --assumeeyes
```

Substitute `/path/config.yml` with the path to a YAML formatted configuration file that includes the following keys and values:

```
db:
 port : 49500 Sets the TCP port that MySQL uses
 user : ovs Sets the username for the Oracle VM Manager database in MySQL
 password : p4ssword Sets the password for the Oracle VM Manager database in MySQL

webLogic:
 user : weblogic Sets the username for the Oracle WebLogic Server administrative user
 password : p4ssword Sets the password for the Oracle WebLogic Server administrative user

OVMCore:
 user : admin Sets the username for the Oracle VM Manager application
 password : p4ssword Sets the password for the Oracle VM Manager application

Certificate:
 FQN : fully.qualified.domain.name
 Sets the value for the hostname applied to the
 automatically generated self-signed SSL certificate that
 Oracle VM Manager uses for HTTPS communications. It should
 either match a valid IP address, or should contain the hostname
 returned by the hostname -f command.
```

Replace the `p4ssword` entry with your own password. It is advisable to use the same password for all components to avoid confusion later. Replace the `fully.qualified.domain.name` with the fully qualified domain name of the server where you are installing Oracle VM Manager.



#### Note

The `db:port`, `db:user`, `webLogic:user` and `OVMCore:user` parameters are all ignored during a silent upgrade. You must include these parameters in your silent install configuration, however, they do not take effect.

### 3.3.3 Installation Logs

If any errors occur during installation, check the Oracle VM Manager installation log file. Usually, this should be found in:

```
/var/log/ovmm/ovm-manager-3-install-date.log
```

However, if the installer is unable to create this directory and file for some reason, such as inadequate permissions, the install file is located in:

```
/tmp/ovm-manager-3-install-date.log
```

During installation, the installer self-extracts into the `/tmp` directory, if the installer does not exit properly, you may also find an installation log in this location:

```
/tmp/ovmm-installer.selfextract_id/ovm-manager-3-install-date.log
```

### 3.3.4 Installation Directories

The locations of the Oracle VM Manager components are listed in [Table 3.3](#).

**Table 3.3 Oracle VM Manager component installation locations**

| Component                     | Location                                                                                               |
|-------------------------------|--------------------------------------------------------------------------------------------------------|
| MySQL                         | <code>/u01/app/oracle/mysql/data</code>                                                                |
| MySQL Enterprise Backup       | <code>/opt/mysql/meb-3.8/</code><br>Backups are stored in: <code>/u01/app/oracle/mysql/dbbackup</code> |
| Java                          | <code>/u01/app/oracle/java</code>                                                                      |
| Oracle WebLogic Server        | <code>/u01/app/oracle/Middleware/</code>                                                               |
| Oracle ADF                    | <code>/u01/app/oracle/Middleware/</code>                                                               |
| Oracle VM Manager application | <code>/u01/app/oracle/ovm-manager-3/</code>                                                            |
| Oracle WebLogic Server domain | <code>/u01/app/oracle/ovm-manager-3/domains/ovm_domain</code>                                          |

## 3.4 Uninstalling Oracle VM Manager

Before uninstalling [Oracle VM Manager](#), you may want to back up Oracle VM Manager and the Oracle VM Manager database schema. For information on how to back up Oracle VM Manager, see [Backing Up The Oracle VM Manager Configuration File](#).

You perform the uninstall using the Oracle VM Manager installation script. You must start the installer from the installation media; you cannot perform an uninstall without the installation media as there is no installer located on the Oracle VM Manager *host computer*. See [Section 3.3.2, "Running the Oracle VM Manager Installer"](#) for information on starting the installer. Follow the prompts to uninstall Oracle VM Manager. See [Section 3.5, "Oracle VM Manager Installation Script \(runInstaller.sh\)"](#) for the full syntax to the installation script.

The following example shows an uninstall of a default Oracle VM Manager installation. Before you uninstall Oracle VM Manager, make sure both the Oracle VM Manager Command Line Interface and Oracle VM Manager are shut down:

```
service ovmcli stop
service ovmm stop
```

#### Example 3.3 Uninstall Oracle VM Manager

```
./runInstaller.sh -i Uninstall -y

Oracle VM Manager Release 3.x.x Installer
```

```

Oracle VM Manager Installer log file:
/tmp/filename.log

Uninstall Oracle VM Manager

DB component : MySQL RPM package
MySQL RPM package installed by OVMM was found...
Removing MySQL RPM package installation ...

Product component : Java in '/u01/app/oracle/java/'
Java is installed ...

Removing Java installation ...

Product component : Oracle VM Manager in '/u01/app/oracle/ovm-manager-3/'
Oracle VM Manager is installed ...
Removing Oracle VM Manager installation ...

Product component : Oracle WebLogic Server in '/u01/app/oracle/Middleware/'
Oracle WebLogic Server is installed

Removing Oracle WebLogic Server installation ...
Service ovmm is deleted.
Service ovmcli is deleted.

Uninstall completed ...

```

The default behavior of an uninstall is to leave database backup files in place, in case there is a need to recover the database after a new installation. These files are located in `/u01/app/oracle/mysql/dbbackup`. If you wish to remove them after installation, you can do so manually.

## 3.5 Oracle VM Manager Installation Script (runInstaller.sh)

This section contains information about the [Oracle VM Manager](#) installation script, `runInstaller.sh`, and includes details on the usage, syntax and parameters. The `runInstaller.sh` script should always be run as the `root` user. Make sure you have met the requirements outlined in [Section 3.2, “Minimum Hardware and Software Requirements”](#) before running the `runInstaller.sh` script.

### Syntax

```

runInstaller.sh [-h | --help] [{ -c | --config= } configfile.yml] [{ -u | --uuid= } uuid]
[{ -i | --installtype= } { Install | Uninstall | Upgrade }] [{ -y | --assumeeyes }] [{ -n | --
noprereq }] [{ -k | --cleanup }]

```

### Options

Using the `runInstaller.sh` script with no options prompts you to enter any required options.

The following table shows the available options for this tool.

| Option                                         | Description                                                                                                                                                                                                                             |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>[-h   --help]</code>                     | Display the <code>runInstaller.sh</code> command parameters and options.                                                                                                                                                                |
| <code>{ -c   --config= } configfile.yml</code> | Specifies an install configuration file. This file is used to set install options in a silent install. The install configuration file should be in the format shown in <a href="#">Section 3.3.2.2, “Performing a Silent Install”</a> . |
| <code>{ -u   --uuid= } uuid</code>             | Sets the UUID for Oracle VM Manager.                                                                                                                                                                                                    |

| Option                                                                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                        | <ul style="list-style-type: none"> <li>The UUID is generated automatically during installation and is 15 or 32 hex digit string starting with the values '0004fb'.</li> <li>You should not specify the UUID when installing the first instance of Oracle VM Manager on a host. You should only specify the UUID when recovering or upgrading an instance of Oracle VM Manager.</li> <li>You should specify all alphabetic characters in the UUID as lowercase. Some releases of Oracle VM Manager can behave unexpectedly if you specify uppercase characters in the UUID.</li> <li>The UUID is saved to <code>/u01/app/oracle/ovm-manager-3/.config</code>.</li> </ul> |
| <code>{ -i   --installtype= } { Install   Uninstall   Upgrade }</code> | Sets the install type to use without being prompted during the install. Use this option during a silent install.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <code>{ -y   --assumeeyes }</code>                                     | Sets each prompt during the install to respond as yes. If combined with the <code>--installtype=Install</code> option, performs a silent install with the default settings.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <code>{ -n   --noprereq }</code>                                       | Sets the installer to ignore all prerequisite system checks such as memory or operating system requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <code>{ -k   --cleanup }</code>                                        | Cleans up all temporary installation configuration files after the install completes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

### Example 3.4 Running Oracle VM Manager installer as a silent install

Specifying an install configuration file and running a silent install:

```
./runInstaller.sh --config=/path/myconfig.yml --installtype=Install --assumeeyes
```

### Example 3.5 Running Oracle VM Manager installer without checking system prerequisites

Running the installer without checking the host system prerequisites:

```
./runInstaller.sh --noprereq
```

### Example 3.6 Running Oracle VM Manager installer with the UUID

Running the installer with the UUID of Oracle VM Manager to perform a recovery:

```
./runInstaller.sh --uuid=0004fb000000100002cb7f2df8a8d8
```



---

# Chapter 4 Oracle VM Server Automated Installation

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This chapter covers different automated installation techniques for installing Oracle VM Server.

It is important to understand that in the case of Oracle VM Server on x86 hardware, an installation is equivalent to a full operating system install and that the ISO provided is a bootable CD-ROM image. On SPARC hardware, the hypervisor is built into the firmware and Oracle Solaris 11.1 includes its own logical domain manager. Installation of Oracle VM Server on SPARC hardware involves installing the Oracle VM Agent for SPARC that allows Oracle VM Manager to interface with the SPARC LDOM manager. In this case, an installation of Oracle VM Server for SPARC involves installing additional packages and configuring the environment for Oracle VM.

For deployments of a large number of x86 Oracle VM Servers, network installation using PXE boot may be preferred to using the CD-ROM. For deployments of a large number of SPARC Oracle VM Servers, network installation using Solaris Auto-Install (AI) may be preferred.

Installations of Oracle VM Server for x86 hardware can be largely automated by taking advantage of a Kickstart configuration file that guides the Anaconda-based install wizard through each of the installation options available. Installations of Oracle VM Server for SPARC hardware can be largely automated by taking advantage of the AI manifest to automatically configure the system.

This chapter provides you with the information required for each of these installation techniques. Commands are provided for both x86 and SPARC environments where relevant.

## 4.1 Installation From PXE Boot

In deployments where multiple systems must be installed, it is common to perform a network-based installation by configuring target systems to load a PXE Boot image from a TFTP server configured on the same network. This deployment strategy typically suits environments where many Oracle VM Server instances are to be installed on x86 hardware at once.

This section describes some of the basic configuration steps required on a single Oracle Linux server that is set up to provide all of the services needed to handle a PXE Boot environment. There are many different approaches to the architecture and choices of software required to service PXE boot requests.

The information provided here is intended only as a guideline for setting up such an environment. It is recommended that you refer to other resources before attempting to set up an environment like this.

## 4.1.1 General Requirements

A PXE Boot environment has the following general requirements:

- A configurable DHCP server on the network where PXE Boot takes place.
- A TFTP server capable of servicing TFTP requests made by systems attempting to perform a PXE Boot.
- A PXELinux boot image that can be served by the TFTP server to systems performing a PXE Boot.
- A PXE configuration menu that describes the various boot options available to the systems performing a PXE Boot.
- The `initrd.img` and `vmlinuz` files that the servers performing a PXE Boot are going to load.
- A method that you can use to export the installation ISO contents over the network. Commonly, HTTP is used, however in this example we configure an NFS server with an export of the installation ISO contents, that can be used for the installation.

While not entirely necessary, the advantage of using PXE Boot to handle installation is leveraged by setting up a Kickstart configuration that can be used to automate many of the installation steps. This is discussed in more detail in [Section 4.2, “Using Kickstart to Automate Installation Options”](#), and we have assumed that this is a typical approach in this outline.

## 4.1.2 DHCP Configuration

Do not configure a new DHCP server on a network that is already serviced by another DHCP server. This can cause conflicts and result in PXE Boot failure.

If you have not already installed a DHCP server, you can do so by doing:

```
yum install dhcp
```

Set up your DHCP configuration file (`/etc/dhcpd.conf`) so that only PXEClient requests receive PXEClient responses. Add the following entry to the DHCP configuration file (refer to the [dhcpd.conf](#) man page for more information):

```
class "PXE" {
 match if substring(option vendor-class-identifier, 0, 9) = "PXEClient";
 option vendor-class-identifier "PXEClient";
 vendor-option-space PXE;
 next-server n.n.n.n;
 filename = "pxelinux.0";
}
```

where `n.n.n.n` is the IP address of the DHCP/PXE server.

In the DHCP configuration file, also edit the `server-identifier` entry:

```
server-identifier n.n.n.n;
```

where `n.n.n.n` is the IP address of the DHCP/PXE server.

Also in the DHCP configuration file, find the following subnet entry fields:

```
subnet 1.2.3.0 netmask 255.255.255.0 {
 range dynamic-bootp 1.2.3.100 1.2.3.200;
```

```
option routers 1.2.3.1;
option broadcast-address 1.2.3.225;
}
```

Edit the `subnet`, `range`, `router` and `broadcast-address` entries according to the DHCP/PXE server's network configuration.

Start the DHCP service:

```
service dhcpd start
```

Finally, configure the DHCP to always start at boot:

```
chkconfig dhcpd on
```

### 4.1.3 TFTP Configuration

If you have not already installed a TFTP server, you should do so:

```
yum install tftp-server
```

Edit the `/etc/xinetd.d/tftp` file to set the `disable` parameter to `no`:

```
disable = no
```

and set the TFTP root to `/tftpboot`:

```
server_args = -s /tftpboot
```

If the `/tftpboot` directory does not already exist, create it:

```
mkdir /tftpboot
```

Restart the `inetd` server:

```
service xinetd restart
```

### 4.1.4 PXELinux Configuration

If you have not already installed `syslinux`, you should do so:

```
yum install syslinux
```

If you have SELinux enabled, you must also install the `syslinux-tftpboot` package to make sure that files are given the correct SELinux context:

```
yum install syslinux-tftpboot
```

Copy the PXELinux binary, the menu system and the multiboot `com32` module from the `syslinux` package to your tftp server root (`/tftpboot` by default):

```
cp /usr/share/syslinux/pxelinux.0 /tftpboot/
cp /usr/share/syslinux/vesamenu.c32 /tftpboot/
cp /usr/share/syslinux/mboot.c32 /tftpboot/
```



#### Note

The `pxelinux.0`, `vesamenu.c32` and `mboot.c32` files must match the kernel requirements of the DHCP/PXE server. In our example, we use `vesamenu.c32` to present a graphical boot menu and `mboot.c32` to boot the installer into a Xen environment, however it is possible to simply use the `mboot.c32` image on its own to perform the same function without a graphical menu. In all cases, these

files should be copied from the syslinux package specific to your Oracle Linux installation where you intend to run the PXE server. Do not attempt to use the `mboot.c32` or `vesamenu.c32` files from an alternate location.

Create the `pxelinux.cfg` directory.

```
mkdir /tftpboot/pxelinux.cfg
```

Create a PXE Menu configuration file at `/tftpboot/pxelinux.cfg/pxe.conf` containing the following configuration:

```
MENU TITLE PXE Server
NOESCAPE 1
ALLOWOPTIONS 1
PROMPT 0
menu width 80
menu rows 14
MENU TABMSGROW 24
MENU MARGIN 10
menu color border 30;44 #ffffff #00000000 std
```

Create the `/tftpboot/pxelinux.cfg/default` PXE configuration file. Your configuration options may vary depending on your requirements. The following presents a guideline configuration:

```
DEFAULT vesamenu.c32
TIMEOUT 800
ONTIMEOUT BootLocal
PROMPT 0
MENU INCLUDE pxelinux.cfg/pxe.conf
NOESCAPE 1
LABEL BootLocal
 localboot 0
 TEXT HELP
 Boot to local hard disk
 ENDTEXT
LABEL OVS
 MENU LABEL OVS
 KERNEL mboot.c32
 # Note that the APPEND line should be unbroken, the \\ delimiter is used
 # to indicate that these line breaks should be removed
 APPEND ovs/xen.gz --- ovs/vmlinuz ip=dhcp \\
 dom0_mem=max:128G dom0_max_vcpus=20 \\
 ksdevice=eth0 ks=nfs:n.n.n.n:/srv/install/ks.config \\
 method=nfs:n.n.n.n:/srv/install/ovs --- ovs/initrd.img
 TEXT HELP
 Install OVM Server
 ENDTEXT
```

Replace `n.n.n.n` with the IP address of the DHCP/PXE server.

The default behavior on timeout is to boot to the local hard disk. To change the default behavior to force an install, you can change the `ONTIMEOUT` parameter to point to the `OVS` menu item. The important thing to remember here is that when an install is completed, the server reboots and if this option is not changed back to `BootLocal`, the server enters into an installation loop. There are numerous approaches to handling this, and each depend on your own environment, requirements and policies. The most common approach is to boot the servers using one configuration, wait for a period until they are all in the install process and then change this configuration file to ensure that they return to local boot at the time that they reboot.

The `KERNEL` location points to the `mboot.c32` module. This allows us to perform a multiboot operation so that the installer loads within a Xen environment. This is necessary for two reasons. First, it is useful to establish that the Xen hypervisor is at least able to run on the hardware prior to installation. Second, and

more importantly, device naming may vary after installation if you do not run the installer from within the Xen hypervisor, leading to problems with device configuration post installation.

Other things to note in the `APPEND` line:

- The Xen hypervisor is loaded first and this is located within the path `ovs/xen.gz` in the TFTP server root. This is set up in the next step in this section.
- The installer kernel is located within the path `ovs/vmlinuz` in the TFTP server root. This is set up in the next step in this section.
- The IP address for the installer kernel is acquired using DHCP as configured earlier in this section.
- Limits are applied to dom0 for the installer to ensure that the installer is stable while it runs. This is achieved using the parameters `dom0_mem=max:128G` and `dom0_max_vcpus=20`. These parameters are used by default when the installer is loaded from CDROM and it is recommended that they are used if you intend to perform a network install.
- The Kickstart device is set to `eth0`. This is technically dependent on how your servers are cabled and configured. In some cases, detection of Ethernet devices may be unpredictable. You may find it more sensible to specify the `ksdevice` option to point to a particular MAC address using: `ksdevice=00:14:4f:ec:ad:80`.
- The Kickstart configuration path is specified pointing to an NFS server, which we configure and set up later in this section. The content of this file is also discussed in more detail in [Section 4.2, “Using Kickstart to Automate Installation Options”](#). You could equally use HTTP or HTTPS for this, but in this example we set up an NFS server for this purpose.
- The method is specified as using NFS and an export is also listed. This is the location of the content of the entire Oracle VM Server installation ISO, that will be used to copy the packages required for the installation. You could equally use HTTP or HTTPS for this, but in this example we set up an NFS server for this purpose.
- The initial ramdisk image is located within the path `ovs/initrd.img` in the TFTP server root. This is set up in the next step in this section.
- Although we have broken the `APPEND` line across multiple lines for readability, using the `\\` delimiter to show that the line breaks, the entire `APPEND` statement must be on a single line.

## 4.1.5 Copying the ISO Kernel and initrd

Create the directory in the TFTP server root to host the Oracle VM Server Xen hypervisor, installer kernel and initrd image:

```
mkdir /tftpboot/ovs
```

Mount the Oracle VM Server installation ISO as a loopback device, following the instructions in [Section 1.4, “Loopback ISO Mounts”](#).

Copy the contents of the `images/pxeboot` folder from the ISO into the new directory you have created:

```
cp /mnt/images/pxeboot/* /tftpboot/ovs/
```

Substitute `mnt` with the path to the mount point where you mounted the ISO.

## 4.1.6 NFS Configuration

If you have not already installed an NFS server, you should do so:

```
yum install nfs-utils
```

Make a directory to contain the contents of the Oracle VM Server installation ISO that will be exported via NFS:

```
mkdir -p /srv/install/ovs
```

Copy the entire contents of the Oracle VM Server installation ISO into this new directory:

```
cp -r /mnt/* /srv/install/ovs
```

Substitute `mnt` with the path to the mount point where you mounted the ISO. Do not simply provide access to the ISO file itself via NFS; you need to make the contents available instead.

Now configure your NFS exports by editing the `/etc/exports` file to contain the following:

```
/srv/install *(ro,async,no_root_squash,no_subtree_check,insecure)
```

Depending on your security requirements, you may configure this export to only cater to particular hosts.

Start the NFS service:

```
service nfs start
```

Configure the NFS service to always start at boot:

```
chkconfig nfs on
chkconfig nfslock on
```

### 4.1.7 Copy Kickstart Configuration File To The NFS Export

Assuming that you have created a Kickstart configuration file to automate the steps through the Anaconda wizard that guides you through the installation process, you should copy this file to the NFS export at the path point defined in the PXELinux configuration file:

```
cp /tmp/ks.conf /srv/install/ks.config
```

Substitute `/tmp/ks.conf` with the path to your predefined Kickstart configuration file.

Refer to [Section 4.2, “Using Kickstart to Automate Installation Options”](#) to learn how to create your own Kickstart configuration file.

### 4.1.8 Final Steps

At this point your DHCP/PXE Server is fully configured and ready to assist your target servers with a completely automated installation.

To begin the process, make sure you have updated the `/tftpboot/pxelinux.cfg/default` configuration file to use the `ovs` option as the default in the case of a timeout.

Reboot each target server and make sure you have configured the Network Boot or PXE Boot option in the BIOS.

Each target server should make a DHCP request automatically during the network boot process. The DHCP/PXE Server should respond providing an IP address and the path to the PXELinux binary on the TFTP server. Each target server makes a TFTP request for the PXELinux file, and then loads the default menu.

After 800ms the target server reaches its timeout if no menu option is selected. The `ovs` option is selected by default. The server uses TFTP to load the kernel and initrd image, and begins the boot process.

If the server is able to connect to the NFS server, installation begins.

When installation is complete, and prior to reboot, it is imperative that you change the `/tftpboot/pxelinux.cfg/default` configuration file to use the `LocalBoot` option as the default in the case of a timeout.

## 4.2 Using Kickstart to Automate Installation Options

The Oracle VM Server installation for x86 hardware can be automated using a Kickstart configuration file. Kickstart is well documented for Oracle Linux. You can find out more information at:

[http://docs.oracle.com/cd/E37670\\_01/E41137/html/ol\\_kickstart.html](http://docs.oracle.com/cd/E37670_01/E41137/html/ol_kickstart.html)

If you perform a manual installation of Oracle VM Server installation for x86 hardware, a Kickstart configuration template using the options that you selected during your install is generated automatically by the Anaconda install wizard and is available in `/root/anaconda-ks.cfg`. It is recommended that you perform at least one installation manually to obtain this file with the correct parameters already set for future installations.

A typical Kickstart configuration file for Oracle VM Server, as generated by Anaconda for an installation using an NFS server as the path to the installation ISO, may look similar to the following:

```
Kickstart file automatically generated by anaconda.

install
eula Accepted
nfs --server=n.n.n.n --dir=/srv/install/ovs
lang en_US.UTF-8
keyboard us
network --onboot yes --device eth0 --mtu=1500 --bootproto dhcp --noipv6
ovsagent --iscrypted 6pkg8GsEJFbLPdRf6$JvBX.yJo6F9oyz1qIdIPy0bHvPpOHE1ZKvg3FR9DIWW07nMy/k2T5r3r
ovsmgmtif eth0
rootpw --iscrypted 6T00IU.UJCLq2JZio$iJlRPwV5wX7pD3puIUrZh1j7R2aF.cGFs6FEs2K9Py2yO3eEntR2vRko4
Reboot after installation
reboot
firewall --disabled
authconfig --enablshadow --enablemd5
selinux --disabled
timezone --utc America/Los_Angeles
bootloader --location=mbr --driveorder=sda,sdb --append="rhgb quiet"
The following is the partition information you requested
Note that any partitions you deleted are not expressed
here so unless you clear all partitions first, this is
not guaranteed to work
clearpart --all --drives=sda

part / --fstype=ext4 --grow --maxsize=51200 --size=1024
part /boot --fstype=ext4 --size=500
part swap --grow --maxsize=16128 --size=16128

The following line is used to create an additional partition using the remaining disk space
This partition can be used to host a local repository or provision a VM with a virtual disk
part None --fstype=ext4 --grow --size=100

repo --name="Oracle VM Server" --baseurl=nfs:n.n.n.n:/srv/install/ovs --cost=100

%packages
@base
@core
@ovs-virtualization

%end
```

The example above has marked the EULA (End User License Agreement) as Accepted. If you do this, make sure that you have read the EULA and that you agree to its terms.

If all of your servers are equivalent and you can afford to clear all partitions on the disk where you are installing Oracle VM Server, you can uncomment the partitioning information to automate this part of the installation across all of your servers. You must include a `clearpart` declaration and include the `--drives` parameter to make sure a swap partition can be created.

Since Oracle VM Server does not have very large disk space requirements, it is typically installed into a partition of limited size. If you have a large local physical disk, you may want to use the remaining disk space to host a local repository or to attach as a virtual disk to a virtual machine. For this purpose, the kickstart configuration may include the line:

```
part None --fstype=ext4 --grow --size=100
```

Remember that when installing to a server with a large number of Fibre Channel LUNs connected, the installer may take a long time to examine all storage devices. To avoid this, it is good to add a line into your Kickstart configuration to tell the Anaconda installer to ignore all other disks other than the target installation disk. For instance, you might add a line similar to the following:

```
ignoredisk --only-use=/dev/disk/by-path/pci-0000:00:1f.2-scsi-0:0:0:0
```

If you use Oracle Linux 6, which is the default base operating system for Oracle VM Server, or Fibre Channel LUNs, disk device naming can change across reboots. This means that a local disk may not be at `/dev/sda` as you might have expected for each subsequent reboot. In this case, it may be better to use the UUID for a disk as found at `/dev/disk/by-id`, or better still, use the `/dev/disk/by-path`. Identifying disks by-path is more reliable when working with a number of identical machines, since it is likely that the by-id name is different for every disk. Using the by-path identifier allows you to use the same Kickstart configuration file for more than one machine. You can find out how disks are identified by running the following command as root:

```
ls -lR /dev/disk
```

For example:

```
clearpart --all --drives=/dev/disk/by-path/pci-0000:00:1f.2-scsi-0:0:0:0
ignoredisk --only-use=/dev/disk/by-path/pci-0000:00:1f.2-scsi-0:0:0:0
part /boot --fstype=ext4 --size=100
part / --fstype ext4 --size=3072 --ondisk=/dev/disk/by-path/pci-0000:00:1f.2-scsi-0:0:0:0
part swap --size=1024 --ondisk=/dev/disk/by-path/pci-0000:00:1f.2-scsi-0:0:0:0
```



### Tip

Beware of boot loader lines within a Kickstart configuration file that contain the append option `console=hvc0`. This option can cause the console for the server to echo your password when you log in. If you see this option in your Kickstart configuration file, remove it.

If your server has multiple network interfaces, you should at least specify the network interface to be used for the management interface first. If you have more than one network interface specified in a kickstart file, the first interface is used as the management interface. It is preferable to not include lines for any of the other network interfaces available on your server within the kickstart configuration file, as this can confuse the installer. You can configure additional network interfaces on a server within Oracle VM Manager after installation and discovery.

If you have a server with a particularly large amount of memory, you may want to edit the boot loader line to cater to these requirements. Equally, if you need to enable Huge Page support to facilitate Huge

Pages for paravirtual machines, you need to edit the same line. For example, your boot loader line may be adjusted to read as follows:

```
bootloader --location=mbr --driveorder=sda,sdb --append="rhgb quiet allowsuperpage" --dom0_mem=1440M
```

See [Section 5.4.5, "Post-upgrade Steps"](#) for more information on the options that you may want to append here.

There are numerous options available for use in a Kickstart configuration file. The file generated by Anaconda after it has successfully completed the installation should be sufficient for use to automate the installation process on other systems, unless you need to provide different partitioning information for each system. In this case, you may need to create and maintain a separate Kickstart file for each system.

It is possible to create a `%post` division in your Kickstart configuration file for the purpose of automating some actions after the install has completed, but before the server has rebooted. This can prove useful if you need to perform additional tasks, such as copying SSH keys from a location accessible to the server, or for triggering a change to a PXELinux configuration parameter to prevent an install loop as discussed in [Section 4.1, "Installation From PXE Boot"](#).

## 4.3 Automated Installer (AI) for SPARC

Oracle Solaris and the Oracle VM Agent for SPARC can be automatically installed on SPARC servers over the network using Solaris Automated Installer (AI). This allows for the rapid deployment of Oracle VM Server for SPARC across multiple SPARC systems, reducing administrative overhead and the likelihood of configuration or installation errors. Solaris AI is described in detail in the document titled *Installing Oracle Solaris 11.1 Systems* at:

[http://docs.oracle.com/cd/E26502\\_01/html/E28980/useaipart.html](http://docs.oracle.com/cd/E26502_01/html/E28980/useaipart.html)

In this section we assume that you already have a sufficient understanding of Solaris AI and are able to set up an Install Server to deploy Solaris to your SPARC systems. This section highlights the additional steps that you need to perform to ensure that the Oracle VM Agent for SPARC and any other required packages are also installed and configured on your SPARC systems.

To set up and configure SPARC AI for rapid deployment of Oracle VM Server for SPARC across multiple SPARC systems, the following steps must be taken:

- Set up an IPS repository with the Oracle VM Agent for SPARC software.
- Create an Oracle Solaris Installation Service.
- Create an installation manifest for Oracle VM Agent for SPARC.
- Create a configuration profile for the installation of Oracle VM Server for SPARC.
- Install Oracle VM Server for SPARC on your SPARC hardware.

### 4.3.1 Setting up an IPS repository

In addition to installing Solaris, your IPS repository must be configured to install the Oracle VM Agent for SPARC software. To do this, you must set up an IPS repository that contains the Oracle VM Agent for SPARC software packages to be used during the installation.

**To set up an IPS repository for Oracle VM Agent for SPARC :**

1. If you have not already created a package repository that is accessible over HTTP, you must create one by performing the following actions on the system where you intend to host your repositories:

```
pkgrepo create /path/to/my-repository
svccfg -s application/pkg/server setprop pkg/inst_root=/path/to/my-repository
svccfg -s application/pkg/server setprop pkg/port=8888
svcadm refresh application/pkg/server
svcadm enable application/pkg/server
```

2. Check that the package repository server is online:

```
svcs pkg/server
STATE STIME FMRI
online 16:39:50 svc:/application/pkg/server:default
```

3. Download the latest Oracle VM Agent for SPARC software from <https://edelivery.oracle.com/oraclevm>, as described in Section 1.2, “Getting Installation ISOs and Packages”.
4. If you intend to take advantage of server pool clustering, also download the distributed lock manager DLM package from <https://edelivery.oracle.com/oraclevm>, as described in Section 1.2, “Getting Installation ISOs and Packages”.

5. Extract the software, for example:

```
tar xzf ovs-ldoms-3.3.1-bXXX.tar.gz
```

6. Copy the software to the package repository, for example:

```
pkgrecv -s ovs-ldoms-3.3.1-bXXX/ovs-ldoms.p5p -d /path/to/my-repository 'ovm/*'
pkgrecv -s ovs-dlm-3.3.1-bXXX.p5p -d /path/to/my-repository 'ovm/*'
```

7. Restart the package repository server and ensure that it is online:

```
svcadm restart application/pkg/server
svcs pkg/server
```

If the package repository server is not online, restart the server where it is hosted.

8. Check that the contents of the repository are available, for example:

```
pkgrepo list -s /path/to/my-repository
pkgrepo list -s http://my-repo-server:8888/
```

## 4.3.2 Creating an Oracle Solaris Installation Service

To install Oracle Solaris 11.1 over the network, you must create an Oracle Solaris installation service using the `installadm create-service` command. The exact process for this is described in detail in the document titled *Installing Oracle Solaris 11.1 Systems* at:

[http://docs.oracle.com/cd/E26502\\_01/html/E28980/useaipart.html](http://docs.oracle.com/cd/E26502_01/html/E28980/useaipart.html)

After the procedure is completed, you can check that your installation service is correctly set up by using the `installadm list` command. The output from this command should look similar to the following:

```
installadm list
Service Name Alias Of Status Arch Image Path

solaris11_1_13_1_0-sparc - on sparc /export/auto_install/solaris11_1_13_1_0-sparc
```

In the example output, the installation service is `solaris11_1_13_1_0-sparc`.

Make sure that your install service uses a version of Solaris 11.1 that includes Oracle VM Server for SPARC 3.1.1. Oracle VM Server for SPARC 3.1.1 has been integrated into Oracle Solaris 11.1 beginning

with SRU 17.5. To download the software, refer to Oracle Solaris 11.1 Support Repository Updates (SRU) Index [ID 1501435.1](https://support.oracle.com/epmos/faces/DocumentDisplay?id=1501435.1) from My Oracle Support, available at:

<https://support.oracle.com/epmos/faces/DocumentDisplay?id=1501435.1>

### 4.3.3 Creating an Installation Manifest

You need to create a custom XML AI manifest file to install and configure the Oracle VM Agent automatically. For more information about custom XML AI manifest file, see [Customizing an XML AI Manifest File](http://docs.oracle.com/cd/E26502_01/html/E28980/changeai.html) at:

[http://docs.oracle.com/cd/E26502\\_01/html/E28980/changeai.html](http://docs.oracle.com/cd/E26502_01/html/E28980/changeai.html)

#### Create an Installation Manifest

1. Start by copying the default manifest of your install service:

```
installadm list -n solaris11_1_13_1_0-sparc -m
Service/Manifest Name Status Criteria

solaris11_1_13_1_0-sparc
 orig_default Default None
installadm export -n solaris11_1_13_1_0-sparc -m orig_default -o manifest_ai_ovm.xml
```

2. Open the exported `manifest_ai_ovm.xml` in a text editor and customize it in the following way:

- In the **<source>** section, make sure that a Solaris publisher is defined and that it points to a Solaris IPS repository for the Solaris 11.1 version that also contains the Oracle VM Server for SPARC 3.1.1 packages. For example:

```
<publisher name="solaris">
 <origin name="http://solaris-11-repository"/>
</publisher>
```

- In the **<source>** section, add the Oracle VM (ovm) publisher with a reference to the IPS repository that you have set up with Oracle VM Agent for SPARC software. For example:

```
<publisher name="ovm">
 <origin name="http://my-repo-server:8888"/>
</publisher>
```

- In the **<software\_data>** install section, add the following lines to have the Oracle VM Agent for SPARC software and the DLM software installed:

```
<name>pkg:/ovm/ovs-agent</name>
<name>pkg:/ovm/dlm</name>
```

3. Add the manifest to the installation service. In addition, you can specify criteria associated with this manifest. This manifest is only applicable to SPARC **sun4v** system, so you should at least use the **sun4v** criteria:

```
installadm create-manifest -n solaris11_1_13_1_0-sparc -f manifest_ai_ovm.xml -m ovm -c \
arch="sun4v"

installadm list -m -n solaris11_1_13_1_0-sparc
Service/Manifest Name Status Criteria

solaris11_1_13_1_0-sparc
 ovm arch = sun4v
 orig_default Default None
```

## 4.3.4 Creating a Configuration Profile

To have the server automatically configured after the installation, you need to provide a configuration profile. For more information about creating a configuration profile, see [Creating System Configuration Profiles](#) at:

[http://docs.oracle.com/cd/E26502\\_01/html/E28980/syscfg-2.html#syscfg-3](http://docs.oracle.com/cd/E26502_01/html/E28980/syscfg-2.html#syscfg-3)

To create a configuration profile, run the interactive configuration tool and save the output to a file. The following command creates a valid profile in `profile_ovm.xml` from responses you enter interactively:

```
sysconfig create-profile -o profile_ovm.xml
```



### Important

In the interactive configuration tool, you *must* select the option to configure the network manually or it will not be possible to automatically configure Oracle VM Agent for SPARC using the installation service.

To have the Oracle VM Agent for SPARC configured automatically during the installation, add the following section inside the `<service_bundle>` section of the generated `profile_ovm.xml` file:

```
<service version="1" type="service" name="ovm/ovs-config">
 <instance enabled="true" name="default">
 <property_group type="application" name="config">
 <propval type="astring" name="password" value="encrypted-password" />
 <propval type="boolean" name="autoconfig" value="true" />
 </property_group>
 </instance>
</service>
```

Replace the `encrypted-password` value with the encrypted version of the password that you want to use for the Oracle VM Agent.

You can generate the encrypted version of the password on any system using the following command:

```
python -c "import crypt, sys; print crypt.crypt(sys.argv[-1], \
 '\$6\$\$s\$' % sys.argv[-2])" $(pwgen -s 16 1) password
```

Substitute `password` with the password that you want to use for the Oracle VM Agent, for example:

```
python -c "import crypt, sys; print crypt.crypt(sys.argv[-1], \
 '\$6\$\$s\$' % sys.argv[-2])" $(pwgen -s 16 1) s3cr3tp4ssw0rd
\$6\$-c\$pgcCqd6Urrepi9EzdK93x5XSpyiNzup7SACDNjVotsgm6HFNeg385wMu1GjE.J.S.FL8J7gt15VZnq7t0Ad/N0
```

The output from this command is the `encrypted-password` value that you should substitute in the section that you added to the configuration profile.

Finally, add the configuration profile to the installation service. In addition, you can specify criteria associated with this profile. This profile is only applicable to SPARC **sun4v** system, so you should at least use the **sun4v** criteria:

```
installadm create-profile -n solaris11_1_13_1_0-sparc --file profile_ovm.xml -c arch=sun4v

installadm list -p
Service/Profile Name Criteria

solaris11_1_13_1_0-sparc
 profile_ovm.xml arch = sun4v
```

### 4.3.5 Performing an Installation

For more information about installing a server with the Solaris Auto-Install, see [Installing Client Systems](http://docs.oracle.com/cd/E26502_01/html/E28980/client.html) at: [http://docs.oracle.com/cd/E26502\\_01/html/E28980/client.html](http://docs.oracle.com/cd/E26502_01/html/E28980/client.html)

On the installation server, you must associate the MAC address of each server, that you wish to install, with the installation service that you have set up. This is achieved by running the following command:

```
installadm create-client -n solaris11_1_13_1_0-sparc -e mac-address
```

Substitute *mac-address* with the actual MAC address for the network interface on the server that is used to connect to the installation service.

On your target servers, if you have configured your DHCP to provide the information for the installation service, you can issue the following command at boot:

```
ok boot net:dhcp - install
```

If you have not configured DHCP, on your target server issue the following commands at boot:

```
ok setenv network-boot-arguments host-ip=client-ip,router-ip=router-ip,\
 subnet-mask=subnet-mask,hostname=hostname,\
 file=http://install-server-ip-address:5555/cgi-bin/wanboot-cgi
ok boot net - install
```

Substitute *client-ip* with the IP address that you intend to allocate to the server, *router-ip* with the IP address of your router or default gateway, *subnet-mask* with the subnet mask of your network, and *hostname* with the hostname that you wish to use for your server. Finally, ensure that the URL that you provide for the *file* parameter matches the URL to access your Solaris AI server.



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# Chapter 5 Upgrading Oracle VM

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Oracle VM Release 3.x is not backwardly compatible with Oracle VM Release 2.x. If you are using Oracle VM Release 2.x you cannot upgrade to Release 3.x. You must reinstall your [Oracle VM Servers](#) and Oracle VM Manager. You can, however, reuse your [virtual machine](#) templates from Oracle VM Release 2.x by importing them into Oracle VM Release 3.x.

For information on repository migration from Oracle VM Release 2 to Oracle VM Release 3, see the My Oracle Support website at:

<https://support.oracle.com/oip/faces/secure/km/DocumentDisplay.jspx?id=1366216.1>

There is no provision for upgrading releases where an Oracle Database XE has been used as a back end repository for Oracle VM Manager. Oracle VM Manager no longer supports Oracle Database XE as a back end repository and there is no way to migrate to the new MySQL database back end supported in Oracle VM Release 3.3. If you are using Oracle VM Release 3.x with a supported Oracle Database such as Oracle Database SE or Oracle Database EE, you should be aware that Oracle VM RRelease 3.3 no longer supports these databases to store Oracle VM configuration data. Instead, Oracle VM Release 3.3 uses its own bundled MySQL database for this purpose. The upgrade process includes a facility to help migrate Oracle VM configuration data from a previously supported Oracle Database into the bundled MySQL database.

The upgrade procedures discussed in this chapter refer to upgrades between Oracle VM Release 3.1.1 or 3.2.x to Oracle VM Release 3.3.x. Upgrades from earlier versions of Oracle VM are not supported. This chapter outlines the upgrade process for all the components of Oracle VM when upgrading to minimize down time and make sure the upgrade process is performed in the correct order.



### Note

Generally, there is no need to perform incremental upgrades between releases; that is, you can skip releases as long as you upgrade from Oracle VM 3.x to 3.x. For example, you can upgrade from Release 3.0.2 to 3.1.1. The exception to this is if

you are running Oracle VM Release 3.0.1, where you must first upgrade to Release 3.0.2 or 3.0.3 before upgrading to Release 3.2. Also, if you are running Oracle VM Release 3.0.x, you must first upgrade to Release 3.2 before upgrading to Release 3.3.

## 5.1 Upgrading Overview

When upgrading Oracle VM, you must upgrade [Oracle VM Manager](#) first, then upgrade the [Oracle VM Servers](#) managed by the Oracle VM Manager that you have just upgraded. The Oracle VM Manager upgrade is performed with the Oracle VM Manager ISO file/CD.

If running Oracle VM Server on x86 hardware, the Oracle VM Server upgrade can be performed using either the Oracle VM Server CD, or using Oracle VM Manager from a server update repository. The server update repository retrieves the Oracle VM Server updates from the Unbreakable Linux Network (ULN). To access ULN, you need an Oracle Support contract.

For Oracle VM Servers that are running on SPARC hardware, the upgrade cannot be achieved using the update facility provided within Oracle VM Manager. Instead, you must use the `update` script provided with the Oracle VM Agent for SPARC software, or from a Solaris IPS repository with the Oracle VM Agent for SPARC Release 3.3.1 software.

If you intend to upgrade Oracle VM Servers that have never been under the ownership of an Oracle VM Manager instance, it is necessary that you discover and take ownership of these servers using the original release of the Oracle VM Manager software before the Oracle VM Manager software is upgraded. It may be more appropriate to reinstall these servers using the newer version of the Oracle VM Server software.



### Important

- Oracle supports different versions of Oracle VM Server in a server pool only for the duration of the Oracle VM upgrade process.

After the upgrade is complete, all instances of Oracle VM Server should be at the same version across your Oracle VM environment. If you have instances of Oracle VM Server at different versions in a production environment, unexpected behavior and issues with high availability (HA) can occur.

- When upgrading Oracle VM Server, you can add an instance of Oracle VM Server to a server pool only if that instance is at the same version or later than the servers in that server pool. For example, if a server pool contains several servers at Release 3.3.x, you can add a server at either Release 3.3.x or at Release 3.4.x.

Before you begin the Oracle VM upgrade, download the Oracle VM software from the Oracle Software Delivery Cloud at:

<http://edelivery.oracle.com/oraclevm>

More information on obtaining the software is covered in [Section 1.2, “Getting Installation ISOs and Packages”](#).

If you have an Oracle Support contract, you can also download Oracle VM patch updates from the My Oracle Support web site at:

<https://support.oracle.com>

The process you should follow when upgrading Oracle VM is described in a high level view below. More detailed information is available in the sections that follow.

**To upgrade Oracle VM:**

1. Download the Oracle VM software from the Oracle Software Delivery Cloud. Extract the software to the component ISO files.
2. To upgrade Oracle VM Manager:
  - a. Mount the Oracle VM Manager ISO file or burn and load the CD on the Oracle VM Manager [host computer](#).
  - b. On the Oracle VM Manager host computer, run the `runInstaller.sh` script from the mounted Oracle VM Manager ISO file/CD or directory to upgrade Oracle VM Manager and select the `Upgrade` option.
3. To upgrade Oracle VM Server on x86 hardware:
  - If you are upgrading Oracle VM Server between 3.3.x errata releases, do one of the following:
    - Set up a Yum repository which retrieves updates from the Oracle VM 3.x channel on ULN. On the Oracle VM Manager host, use the `UpgradeServers.py` script to batch update servers within your environment. This is the preferred method of upgrading Oracle VM Servers.
    - Set up a Yum repository which retrieves updates from the Oracle VM 3.x channel on ULN. Then, from Oracle VM Manager, add the Yum repository as a server update repository, place each Oracle VM Server into maintenance mode, and update each Oracle VM Server. When the update is complete, take each Oracle VM Server out of maintenance mode.
    - Burn the Oracle VM Server ISO file to a bootable CD. Upgrade each Oracle VM Server using the Oracle VM Server CD.
  - If you are upgrading from Oracle VM Server Release 3.2 or earlier to Release 3.3, do one of the following:
    - Set up two Yum repositories, one as a transitional repository containing the packages for Release 3.2, and a second containing the target packages for Release 3.3. When the Yum repositories are in place, you can run the `UpgradeServers.py` script on the Oracle VM Manager host to batch update servers as required.
    - Remove the Oracle VM Server from the server pool, delete the Oracle VM Server from Oracle VM Manager, and then reinstall the Oracle VM Server using the 3.3.x installation media. After the installation is complete, you then discover the Oracle VM Server with Oracle VM Manager and add it to the appropriate server pool.
4. To upgrade Oracle VM Server on SPARC hardware:
  - If you are upgrading from Oracle VM Agent for SPARC Release 3.2.x, do the following:
    - a. If required, update Oracle VM Server for SPARC to Oracle Solaris 11.1 SRU 10 or higher.
    - b. Download the Oracle VM Agent for SPARC software.



**Important**

Reinstalling Oracle VM Server deletes all configuration settings.

- c. Run the `update` script to upgrade Oracle VM Agent for SPARC.
- If you are upgrading between Oracle VM Agent for SPARC 3.3.x Releases, do the following:
  - a. Set up two Solaris IPS (Image Packaging System) repositories, a `solaris` repository and an `ovm` repository.
  - b. Download the Oracle VM Agent for SPARC software.
  - c. Transfer the Oracle VM Agent for SPARC software to the `ovm` IPS repository.
  - d. Run the `UpgradeServers.py` script on the Oracle VM Manager host, or through the Oracle VM Manager user interface, to upgrade Oracle VM Agent for SPARC.

The following sections discuss these steps in more detail.



### Caution

When Oracle VM Manager is upgraded, you must upgrade all the Oracle VM Servers managed by that instance of Oracle VM Manager before you can return the Oracle VM environment to normal operation. Rolling upgrades of the Oracle VM Servers is supported, but Oracle VM Manager and all Oracle VM Servers must be at the same software revision level during normal operation of the Oracle VM environment. For example, Oracle VM Manager and all Oracle VM Servers should be running Oracle VM Release 3.3.



### Note

It is important that you ensure that each server has the required space to be able to perform an upgrade. It is good practice to remove any files that are no longer required from the `/boot` and `/` directories on each server prior to upgrade.

## 5.2 Upgrading Oracle VM Manager

The steps required to upgrade Oracle VM Manager are provided in this section. Major changes to Oracle VM Manager that improve performance, stability and enhance usability, require that you read this section thoroughly before you proceed with an upgrade.



### Important

When upgrading from a release prior to Oracle VM Manager 3.3.1, the upgrade process deletes any existing job or event history prior to upgrade. This is due to a redesign of the job and event models within Oracle VM Manager that greatly improves performance. There is no way to access your job or event history after an upgrade.

This upgrade requirement raises a number of important points that you should be aware of before proceeding:

- Perform a full backup of your Oracle VM Manager database and configuration file before performing any upgrade steps described here. See [Backing Up The Oracle VM Manager Configuration File](#) for information on backing up Oracle VM Manager.
- If necessary, set the location for storing backups of the local MySQL database for Oracle VM Manager to the default path before you attempt to upgrade Oracle VM

Manager. Ensure that the default path is configured until the upgrade completes successfully. See [Backing up the MySQL Database Repository](#) for information on default paths and procedures.

- Environments with large job and event histories take a long time to process before the upgrade process can complete. Therefore, it is important that you take this into account when you plan your upgrade. You may need to set aside a few days to complete an upgrade for a very large deployment that includes numerous servers and virtual machines.
- During the actual upgrade process it is very important that no jobs are triggered using the Oracle VM Manager Web Interface, the Oracle VM Manager Command Line Interface or the Oracle VM Web Services API. In the case that a job is triggered during the upgrade process, the upgrade may abort. In this situation, you must check that all jobs are complete and then attempt to run the upgrade script again.
- If necessary, set the umask default on Oracle VM Manager to `0022` before you begin the upgrade process. If umask is set to another value, it can cause the upgrade process to end unexpectedly.

It is absolutely critical that before you upgrade Oracle VM Manager you make sure that you meet the minimum system requirements described in [Section 3.2.1, “Hardware Requirements”](#). Since Oracle VM Manager 3.3 differs from previous releases, in that it requires that its database is hosted locally, it is possible that a system hosting a previous release of Oracle VM Manager does not meet the requirements for this release. Check the minimum hardware requirements and upgrade system hardware, if required. Remember that if you increase the RAM available to your system, you should also increase the amount of swap space available. General guidelines for this vary, but a rough rule for this is to set the swap space to an equivalent of the amount of physical RAM on your system once you pass the 8 GB mark.

Ensure that no other Linux users have access to the Oracle VM Manager host and that any monitoring services are disabled during the upgrade process.

## 5.2.1 Running the Installer to Perform the Upgrade

The `runInstaller.sh` script included on the Oracle VM Manager installation ISO includes an option that allows you to perform an upgrade of a previous version of Oracle VM Manager.

```
./runInstaller.sh

Oracle VM Manager Release 3.3.x Installer

Oracle VM Manager Installer log file:
/tmp/ovm-manager-3-install-yyyy-mm-dd-xxxxxx.log

Please select an installation type:
 1: Install
 2: Upgrade
 3: Uninstall
 4: Help

Select Number (1-4): 2

Verifying upgrading prerequisites ...
Starting Upgrade ...

Reading database parameters from config ...
```

It is also possible to trigger the upgrade process by passing the correct `installtype` parameter on the command line:

```
./runInstaller.sh --installtype Upgrade
```

If you do not have both the `zip` and `unzip` packages installed on the system that you are upgrading, the installer exits with an error notifying you to install these packages before proceeding with the upgrade.

You are prompted to provide the passwords for each component during the upgrade procedure. You must enter the password you set for that component during the original installation, or the current password if it has been changed since installation.

A log of the upgrade is available in the `/tmp/ovm-manager-3-install-date_id.log` file.



### Tip

When you have completed an upgrade of Oracle VM Manager it is recommended that you ensure that the latest packages required for the VNC and Serial Consoles are also installed. The instructions for installing these packages are provided in [Section 6.5, “Installing and Upgrading Packages Required For The VNC and Serial Console”](#).

### To upgrade Oracle VM Manager:

1. Log in to the Oracle VM Manager [host computer](#) as the `root` user.
2. Oracle VM Manager must be running to perform the upgrade. If Oracle VM Manager is not running, start it. On Linux:

```
service ovmm start
```

If Oracle VM Manager is not running when you run the installation script, an error is returned by the script and the installer exits.

3. Mount the Oracle VM Manager ISO file or burn a DVD-ROM disc and mount that. See either [Section 1.3, “Installation From DVD-ROM or CD-ROM”](#) or [Section 1.4, “Loopback ISO Mounts”](#) for more information.
4. Start the Oracle VM Manager installation script, for example:

```
cd /OVMCD
./runInstaller.sh
```

The installer starts and presents you with a variety of options:

```
Oracle VM Manager Release 3.3.x Installer

Oracle VM Manager Installer log file:
/tmp/ovm-manager-3-install-yyyy-mm-dd-xxxxxx.log

Please select an installation type:
 1: Install
 2: Upgrade
 3: Uninstall
 4: Help

Select Number (1-4): 2

Verifying upgrading prerequisites ...
Starting Upgrade ...

Reading database parameters from config ...
```

Enter the menu number for the [Upgrade](#) option and press **Enter** to continue with the upgrade. You are prompted for the password that must be used to access the current Oracle VM Manager database:

```
Typically the current Oracle VM Manager database password will be the same as the
Oracle VM Manager application password.
```

```
Although you need to enter a *new* password for Oracle WebLogic Server 12c, it
may be the same password that you used for the previous Oracle VM Manager installation.
```

```
Database Repository
=====
Please enter current Oracle VM Manager database password for user ovs:
```

Enter the password that should be used to access the database. If you set a system-wide password during the original installation and have not changed the database password at any stage, this password should be used here. This password continues to be used for the database after the upgrade is complete. If you enter this password incorrectly and the installer is unable to access the database, the installer exits with an error message.

The installer prompts you for the current Oracle VM Manager password. This is the same password that you use to log into the Oracle VM Manager Web Interface, using the **admin** username.

```
Oracle VM Manager application
=====
Please enter current Oracle VM Manager application password for user admin:
```

Enter the password. If you set a system-wide password during the original installation and have not changed the **admin** user password at any stage, this password should be used here. This password continues to function after the upgrade. If you intend to change it, you must do so after the upgrade is complete.

The installer prompts you to set the new Oracle WebLogic Server password. The installer does not need to know the original password for this operation. You can choose to either reuse the original password, or set a new password here. Keep in mind that if you set a new password, you should make note of the new password and ensure that anybody who may need to know this password is informed via your own site processes. Since this step essentially sets a new password, the installer also prompts you to confirm your password entry to ensure that you have not mistyped it.

```
Oracle WebLogic Server 12c
=====
Please enter a "new" Oracle WebLogic Server 12c user password for user weblogic:
Please enter a "new" Oracle WebLogic Server 12c user password for user weblogic (confirm):
```

You are prompted for the system's FQDN (fully qualified domain name) or IP address to use during the generation of the SSL certificate that should be used for HTTPS connections to Oracle VM Manager:

```
Please enter your fully qualified domain name, e.g. ovs123.us.oracle.com,
(or IP address) of your management server for SSL certification
generation 192.168.0.254 [192.168.0.254]: manager.example.com
```

It is important that you specify the hostname, fully qualified domain name or the IP address that is to be used when accessing the Oracle VM Manager Web Interface, so that the SSL certificate hostname matches the hostname portion of the URL entered into the web browser.

The installer displays the current release number and the release number to which Oracle VM Manager is to be upgraded, and presents a final option to exit from the upgrade process:

```
Verifying configuration ...
```

```
Upgrading from version 3.x.y.z to version 3.3.v.w
```

```
Start installing the configured components:
```

```
1: Continue
```

```
2: Abort
```

```
Select Number (1-2): 1
```

Select the [Continue](#) option to continue with the upgrade process.

```
Verifying upgrading prerequisites ...
```

```
Starting Upgrade ...
```

```
Reading database parameters from config ...
```

```
Verifying configuration ...
```

```
Upgrading from version 3.x.y.z to version 3.3.v.w
```

```
Running full database backup ...
```

```
Successfully backed up database as 3.x.y_preUpgradeBackup-yyyymmdd_xxxxxx
```

The upgrade process automatically ensures that the database for the current installation is fully backed up prior to starting the upgrade. This ensures that you are able to roll back to the version that you currently have installed if something fails during the upgrade process. This backup file is located in `/u01/app/oracle/mysql/dbbackup/`.

Before the actual upgrade takes place, a pre-upgrade script runs to remove any existing job history. This process can take quite some time, depending on the number of jobs in the job history. The pre-upgrade process provides output that indicates the number of jobs that must be deleted at different stages of its progress so that you can monitor its status:

```
Running ovm_preUpgrade script, please be patient this may take a long time ...
```

```
Sun May 18 13:53:02 2014: Deleting 4163 Jobs before upgrade.
```

```
Sun May 18 13:54:02 2014: 200 Jobs have been deleted. 3963 Jobs remaining.
```

```
Sun May 18 13:55:00 2014: 400 Jobs have been deleted. 3763 Jobs remaining.
```

```
Sun May 18 13:55:58 2014: 600 Jobs have been deleted. 3563 Jobs remaining.
```

```
Sun May 18 13:56:56 2014: 800 Jobs have been deleted. 3363 Jobs remaining.
```

```
...
```

```
Sun May 18 14:11:39 2014: 3800 Jobs have been deleted. 363 Jobs remaining.
```

```
Sun May 18 14:12:43 2014: 4000 Jobs have been deleted. 163 Jobs remaining.
```

```
Sun May 18 14:12:55 2014: Jobs have been deleted.
```

The rest of the upgrade process is automated and continues as follows:

```
Stopping service on Linux: ovmm
```

```
Exporting core database, please be patient this may take a long time ...
```

```
NOTE: To monitor progress, open another terminal session and run:
```

```
tail -f /var/log/ovmm/ovm-manager-3-install-YYYY-MM-DD-HHmms.log
```

```
Product component : Java in '/u01/app/oracle/java'
```

```
Java is installed ...
```

```
Removing Java installation ...
```

```
Installing Java ...
```

```
DB component : MySQL RPM package
```

```
MySQL RPM package installed by OVMM was found...
```

```
Removing MySQL RPM package installation ...
```

```
Installing Database Software...
```

```
Retrieving MySQL Database 5.6 ...
```

```
Unzipping MySQL RPM File ...
```

## Running the Installer to Perform the Upgrade

```
Installing MySQL 5.6 RPM package ...
Configuring MySQL Database 5.6 ...
Installing MySQL backup RPM package ...

Product component : Oracle VM Manager in '/u01/app/oracle/ovm-manager-3/'
Oracle VM Manager is installed ...
Removing Oracle VM Manager installation ...

Product component : Oracle WebLogic Server in '/u01/app/oracle/Middleware/'
Oracle WebLogic Server is installed

Removing Oracle WebLogic Server installation ...
Service ovmm is deleted.

Retrieving Oracle WebLogic Server 12c and ADF ...
Installing Oracle WebLogic Server 12c and ADF ...
Applying patches to Weblogic ...

Installing Oracle VM Manager Core ...
Retrieving Oracle VM Manager Application ...
Extracting Oracle VM Manager Application ...

Retrieving Oracle VM Manager Upgrade tool ...
Extracting Oracle VM Manager Upgrade tool ...
Installing Oracle VM Manager Upgrade tool ...

Creating Oracle WebLogic Server domain ...
Starting Oracle WebLogic Server 12c ...
Creating Oracle VM Manager user 'admin' ...
Upgrading core database, please be patient this may take a long time ...
NOTE: To monitor progress, open another terminal session and run:
tail -f /var/log/ovmm/ovm-manager-3-install-YYYY-MM-DD-HH:mm:ss.log

Retrieving Oracle VM Manager CLI tool ...
Extracting Oracle VM Manager CLI tool...
Installing Oracle VM Manager CLI tool ...

Configuring Https Identity and Trust...
Deploying Oracle VM Manager Core container ...
Configuring Client Cert Login...
Deploying Oracle VM Manager UI Console ...
Deploying Oracle VM Manager Help ...
Disabling HTTP access...

Retrieving Oracle VM Manager Shell & API ...
Extracting Oracle VM Manager Shell & API ...
Installing Oracle VM Manager Shell & API ...

Retrieving Oracle VM Manager Wsh tool ...
Extracting Oracle VM Manager Wsh tool ...
Installing Oracle VM Manager Wsh tool ...

Retrieving Oracle VM Manager Tools ...
Extracting Oracle VM Manager Tools ...
Installing Oracle VM Manager Tools ...
Copying Oracle VM Manager shell to '/usr/bin/ovm_shell.sh' ...
Installing ovm_admin.sh in '/u01/app/oracle/ovm-manager-3/bin' ...
Installing ovm_upgrade.sh in '/u01/app/oracle/ovm-manager-3/bin' ...

Enabling Oracle VM Manager service ...
Shutting down Oracle VM Manager instance ...
Starting Oracle VM Manager instance ...
Waiting for the application to initialize ...
Oracle VM Manager is running ...

Please wait while WebLogic configures the applications...
```

```
Installation Summary

Database configuration:
 Database type : MySQL
 Database host name : localhost
 Database name : ovs
 Database listener port : 49501
 Database user : ovs

Oracle WebLogic Server configuration:
 Administration username : weblogic

Oracle VM Manager configuration:
 Username : admin
 Core management port : 54321
 UUID : 0004fb000001000089b5dd06719d804c

Passwords:
There are no default passwords for any users. The passwords to use for Oracle VM Manager,
Database, and Oracle WebLogic Server have been set by you during this installation. In the
case of a default install, all passwords are the same.

Oracle VM Manager UI:
 https://manager.example.com:7002/ovm/console
Log in with the user 'admin', and the password you set during the installation.

Note that you must install the latest ovmcore-console package for your Oracle Linux
distribution to gain VNC and serial console access to your Virtual Machines (VMs).
Please refer to the documentation for more information about this package.

For more information about Oracle Virtualization, please visit:
 http://www.oracle.com/virtualization/

Oracle VM Manager upgrade complete.

Please remove configuration file /tmp/ovm_configp3Jrjk.
```

### 5.2.2 Removing Temporary Files After Upgrade

If you have upgraded from a release prior to 3.3, you must remove the temporary files that are created as part of the upgrade process. These files can be used by Oracle Support to help you recover your environment if something goes wrong with your upgrade and you did not take adequate steps to backup your database before the upgrade. However, they also contain information about your entire environment that should not be left in temporary file space indefinitely.

It is important that you verify that your upgrade has completed successfully and that Oracle VM Manager is fully functional before you remove these temporary files. Log into the Oracle VM Manager Web Interface and check that your environment is configured as it was prior to upgrade. Check that you are able to perform actions on your Oracle VM Servers and storage via the Oracle VM Manager Web Interface. If your environment is functional, you can proceed with the removal of the temporary files generated by the upgrade.

To remove temporary files after upgrade, do the following as the root user on the Oracle VM Manager host:

```
rm -Rf /tmp/workdir_sel*
rm -Rf /tmp/ovm*
```

On many systems, temporary files are deleted automatically on reboot. If you have any concern about security after an upgrade, in most cases a system reboot ensures that these files are cleaned up properly.

## 5.3 Using Oracle VM Manager with Oracle VM Server Release 3.2

Oracle VM Manager offers some compatibility to manage Oracle VM Server Release 3.2, to assist with the upgrade process. Due to changes in authentication mechanisms in Release 3.3, it may be necessary to disable the use of TLS1 for SSL-based authentication during the interim stage where you may have successfully installed or upgraded an Oracle VM Manager instance to Release 3.3, but your Oracle VM Server instances are still running an earlier release.

To do this, you must edit the `/etc/sysconfig/ovmm` file on the Oracle VM Manager host and set the `USETLS1` parameter as follows:

```
USETLS1=NO
```

Due to the number of changes in Release 3.3, some features available in Oracle VM Manager may not function as expected if you continue to run your Oracle VM Servers on a previous release of the software. Therefore, it is recommended that this change is used as a temporary feature during the upgrade process.

When all your Oracle VM Servers have been upgraded, you should reset the `USETLS1` parameter to improve Oracle VM security:

```
USETLS1=YES
```

## 5.4 Upgrading Oracle VM Server for x86

The steps required to upgrade Oracle VM Server are provided in this section. Major changes to Oracle VM Server that improve performance, stability and enhance usability, require that you read this section thoroughly before you proceed with an upgrade.

Before you upgrade your [Oracle VM Servers](#), you must upgrade the [Oracle VM Manager](#) which manages them. See [Section 5.2, “Upgrading Oracle VM Manager”](#) for information on upgrading Oracle VM Manager.

The underlying kernel and environment used for Oracle VM Server Release 3.3 differs considerably from previous releases. Therefore, the upgrade process from Release 3.2 and earlier is more complex, and requires that you perform the necessary preparation before performing the upgrade. This process is described in [Section 5.4.1, “Preparing to Upgrade Oracle VM Servers from Release 3.2 or Earlier”](#). When you have performed all the required preparation, you can proceed to upgrade your Oracle VM Servers using the upgrade script provided, as described in [Section 5.4.2, “Upgrading Oracle VM Server using the UpgradeServers.py Script”](#).

There are three methods you can use to upgrade Oracle VM Server Release 3.3:

- [Section 5.4.2, “Upgrading Oracle VM Server using the UpgradeServers.py Script”](#). This is the preferred method of performing errata release upgrades, since you are able to perform batch upgrades in a single step. Although the process may take as long as using the Oracle VM Manager Web Interface for each Oracle VM Server, you can execute the operation with a single command, rather than waiting for each server to complete the upgrade before initiating the upgrade on the next server.
- [Section 5.4.3, “Upgrading Oracle VM Server Using Oracle VM Manager”](#). This option is useful where there are a small number of Oracle VM Servers to upgrade, and you want to use a graphical interface to perform upgrades on a per-server basis. This upgrade option is only supported when upgrading from Oracle VM Server Release 3.3 to a later Oracle VM Server release.
- [Section 5.4.4, “Upgrading Oracle VM Server Using the CD”](#). This option requires direct access to the Oracle VM Server hardware and is only recommended in a situation where Oracle VM Manager is unavailable for some reason.

**Tip**

It is good practice to perform an initial upgrade on a single Oracle VM Server before attempting to upgrade the rest of the servers in a deployment. This helps you to resolve and debug any potentially missing pre-upgrade requirements before you perform a full upgrade of your environment.

It is also good practice to check that no unused files are taking up disk space in the `/boot` or `/` directories prior to performing the upgrade. If there is not enough disk space available in these directories, an upgrade may fail or the server that is being upgraded may be unable to reboot after the upgrade has completed.

**Important**

When you have upgraded an Oracle VM Server, it is recommended that you ensure the Oracle VM Storage Connect plug-ins you are using are updated to their latest versions as well. If you are using the default generic storage plug-ins, they are updated during the upgrade, but if you are using plug-ins provided by a third party vendor, you must obtain the packages from the vendor and install them yourself. Instructions for installing Oracle VM Storage Connect plug-ins are provided in the *Oracle VM Administrator's Guide*. If you are upgrading from a release prior to Oracle VM Server Release 3.3, you may need to add the packages for your third party plug-ins to the upgrade repository before performing the upgrade, as described in [Section 5.4.1, "Preparing to Upgrade Oracle VM Servers from Release 3.2 or Earlier"](#).

## 5.4.1 Preparing to Upgrade Oracle VM Servers from Release 3.2 or Earlier

To upgrade Oracle VM Server from a release prior to Release 3.3, you can either:

- Set up two separate Yum repositories in Oracle VM Manager and use the `UpgradeServers.py` script to upgrade multiple Oracle VM Servers to Release 3.3.
- Use the Oracle VM Server installation media to reinstall each server, as follows:
  1. Migrate all virtual machines off the Oracle VM Server that you plan to upgrade. See [Migrate Virtual Machines](#) in the *Oracle VM Manager User's Guide*.
  2. Unpresent all repositories from the Oracle VM Server. See [Present or Unpresent Repository](#) in the *Oracle VM Manager User's Guide*.
  3. Delete the Oracle VM Server from Oracle VM Manager. See [Delete Server](#) in the *Oracle VM Manager User's Guide*.
  4. Reinstall the Oracle VM Server with the 3.3.x installation media. See [Section 2.1.2, "Installing Oracle VM Server From a DVD-ROM or CD-ROM"](#).
  5. Discover the Oracle VM Server with Oracle VM Manager and add it to the appropriate server pool after the installation is complete. See [Discover Servers](#) in the *Oracle VM Manager User's Guide*.

The following sections describe how to configure the Yum repositories to upgrade Oracle VM Server from Release 3.2 or earlier to Release 3.3.

### 5.4.1.1 Preparing the Yum Repositories

When upgrading an x86 Oracle VM Server from Release 3.2 or earlier to Release 3.3, the server requires a two step upgrade and each upgrade step requires a separate Yum repository. The first of these two

repositories is referred to as the *Oracle VM Server 3.3 Transitional Update Repository*, while the second is the *Oracle VM Server 3.3 Update Repository*. Both of these repositories are available on the installation ISO. The transitional repository is contained in a folder named `Transition`, while the update repository is contained within a folder named `Server`.

This section describes how to create and set up your Yum repositories. These repositories should be located on a system that can be accessed via HTTP or HTTPS.

**To create a Yum repository:**

1. Download the most recent Oracle VM Server Installation ISO.
2. Create a folder where the ISO is to be mounted.
3. Mount the ISO.
4. Create a folder where both repositories can be accessed via some form of HTTP server, for example `/var/www/repos`.



**Tip**

If you have not set up a web server to serve files, you could use Python to temporarily serve your repositories by changing to the directory that you have created and running the Python `SimpleHTTPServer` module:

```
cd /var/www
python -m SimpleHTTPServer 80
```

You may do this when you have finished setting up your repositories and you are ready to perform the upgrade.

5. Copy the mounted ISO folder to the new folder that you have created using `-r` for recursive and `-p` for preserve.
6. If you have installed additional packages on your existing Oracle VM Servers, you must ensure that these packages are also added to the *Oracle VM Server 3.3 Update Repository* as described in this section.
7. Check that both of the repositories are accessible via HTTP using a web browser.

**Example 5.1 Setting up the Yum Repositories**

This example shows some of the steps that you might take to set up both of the required repositories to perform the upgrade.

```
mkdir /tmp/ovs-mount
mount -o loop OVS-3.3.1.iso /tmp/ovs-mount
mkdir /var/www/repos
cp -rp /tmp/ovs-mount/* /var/www/repos/
```

On an alternate system, such as one of the Oracle VM Servers that you intend to update, check that you are able to access the two update repositories via HTTP. For example, use `wget` to download a small file like the `repomd.xml` file:

```
wget http://example.com/repos/Server/repodata/repomd.xml
wget http://example.com/repos/Transition/repodata/repomd.xml
```

**5.4.1.2 Adding Packages to a Yum Repository**

If your existing Oracle VM Servers have additional packages installed, such as third-party Oracle VM Storage Connect plug-ins, you need to add these packages to the *Oracle VM Server 3.3 Update*

*Repository* to make sure they are preserved or upgraded during the upgrade process. **All additional packages that you want to preserve, must be compatible with Oracle Linux 6.**

**To add packages to a Yum repository:**

1. Download the packages from the appropriate vendors.
2. Copy the packages into the `Server/Packages` directory in the *Oracle VM Server 3.3 Update Repository*, for example:

```
cp osc-sun7k.rpm /var/www/repos/Server/Packages/
```

3. Make sure that you have changed directory so that you run the following commands from the root of the *Oracle VM Server 3.3 Update Repository*, for example:

```
cd /var/www/repos/Server
```

4. Find the repository configuration file:

```
find ./ -name "*comps-ovs-core.xml"
./repodata/3bbd98ef14e1e62734b8df6360825010001323218736-comps-ovs-core.xml
```

5. Use the filename for the repository configuration to recreate the repository:

```
createrepo -g ./repodata/3bbd98ef14e1e62734b8df6360825010001323218736-comps-ovs-core.xml ./
```

### 5.4.1.3 Configuring the Yum Repositories within Oracle VM Manager

The two required Yum repositories must be set up within the Oracle VM Manager Web Interface, so that the upgrade script can identify them accurately and use them to perform the upgrade on the specified Oracle VM Servers. The Yum repositories are called *server update repositories* in the Oracle VM Manager Web Interface.

Use the Oracle VM Manager Web Interface to create two server update repositories, one for each Yum repository. Make sure you create these server update repositories in the **x86** server update group. The following tables contain the information you need to create the server update repositories using the **Create Server Update Repository** dialog box.

Full instructions for creating a server update repository using a Yum repository in the Oracle VM Manager Web Interface are provided in [Create New Server Update Repository](#) in the *Oracle VM Manager User's Guide*.

**Table 5.1 Oracle VM Server 3.3 Transitional Update Repository**

Field	Value	Notes
<b>Name</b>	<code>3.3_trans_repo</code>	By naming the repository in this way within Oracle VM Manager you are able to use the <code>UpgradeServers.py</code> script described in <a href="#">Section 5.4.2, "Upgrading Oracle VM Server using the UpgradeServers.py Script"</a> . The name is case sensitive.
<b>Repository Name</b>	<code>3.3_trans_repo</code>	
<b>URL</b>	<code>http://example.com/repos/Transition</code>	Substitute this URL with the URL to your repository.
<b>Enabled</b>	Yes	This repository must be enabled if you intend to use the <code>UpgradeServers.py</code> script described in <a href="#">Section 5.4.2, "Upgrading Oracle</a>

Field	Value	Notes
		VM Server using the UpgradeServers.py Script”.
Package Signature Type	GPG or None	If you want to verify the validity of packages provided by the repositories, set the signature type to use a <a href="#">GPG</a> key. Alternatively, use <code>NONE</code> if there is no verification required.
Package Signature Key	<a href="http://example.com/repos/RPM-GPG-KEY-oracle-ol5">http://example.com/repos/RPM-GPG-KEY-oracle-ol5</a>	If you opted to verify the validity of packages provided by the repository, provide the verification signature for the repository. Substitute this URL with the URL to the verification signature for the repository. Note that this should be the GPG key provided for the Oracle Linux 5 repository.

**Table 5.2 Oracle VM Server 3.3 Update Repository**

Field	Value	Notes
Name	<code>3.3_ovs_repo</code>	By naming the repository in this way within Oracle VM Manager you are able to use the <code>UpgradeServers.py</code> script described in <a href="#">Section 5.4.2, “Upgrading Oracle VM Server using the UpgradeServers.py Script”</a> . The name is case sensitive.
Repository Name	<code>3.3_ovs_repo</code>	
URL	<a href="http://example.com/repos/Server">http://example.com/repos/Server</a>	Substitute this URL with the URL to your repository.
Enabled	Yes	This repository must be enabled if you intend to use the <code>UpgradeServers.py</code> script described in <a href="#">Section 5.4.2, “Upgrading Oracle VM Server using the UpgradeServers.py Script”</a> .
Package Signature Type	GPG or None	If you want to verify the validity of packages provided by the repositories, set the signature type to use a <a href="#">GPG</a> key. Alternatively, use <code>NONE</code> if there is no verification required.
Package Signature Key	<a href="http://example.com/repos/RPM-GPG-KEY-oracle">http://example.com/repos/RPM-GPG-KEY-oracle</a>	If you opted to verify the validity of packages provided by the repository, provide the verification signature for the repository. Substitute this URL with the URL to the verification signature for the repository. Note that this should be the GPG key provided for the Oracle Linux 6 repository.

## 5.4.2 Upgrading Oracle VM Server using the UpgradeServers.py Script

Oracle VM Manager Release 3.3 includes a script that assists with the batch upgrade of multiple Oracle VM Servers. This script is required for the upgrade of servers from a release prior to Release 3.3, but is also the preferred method of upgrading servers through Release 3.3 errata updates, since it is capable of performing batch upgrades for whole server pools, or for lists of specified servers. The script is located on the Oracle VM Manager host at:

```
/u01/app/oracle/ovm-manager-3/ovm_tools/bin/UpgradeServers.py
```

The script requires that the necessary Yum repositories are set up ahead of time with specific names. This set up is described in [Section 5.4.1, “Preparing to Upgrade Oracle VM Servers from Release 3.2 or Earlier”](#). If you intend to use this script to perform a batch upgrade of your SPARC servers, make sure that the IPS repositories are properly set up, as described in [Section 5.5, “Upgrading Oracle VM Agent for SPARC”](#).

When the script runs, the normal maintenance mode work is performed automatically in the background, so that virtual machines are automatically moved around to allow servers to be upgraded and rebooted, while minimizing potential downtime.

The script maintains a log file in the directory from which the script was run; it is named `UpgradeServers.log`. This file may be useful to debug upgrade issues.

Oracle VM Servers cannot be upgraded, using this script, if:

- Oracle VM Manager is not running or has not yet been upgraded.
- The Oracle VM Server is not owned by the Oracle VM Manager performing the upgrade.
- The Oracle VM Server is not running.
- The Oracle VM Server is at a version greater than or equal to the current Oracle VM Manager version.
- The Oracle VM Server for SPARC version is prior to Release 3.3.
- The Oracle VM Server has a critical error.

## Syntax

```
UpgradeServers.py [-h | --help | ?] [{ --host-name | -H } host] [{ -P | --port } port] [{ -u | --user-name } user] [{ -l | --pools } pool] [{ -v | --servers } server] [--noprompt]
```

## Options

Using the `UpgradeServers.py` script with no options prompts you to enter the username and password for an instance of Oracle VM Manager on the localhost.

The following table shows the available options for this tool.

Option	Description
<code>[ -h   --help   ? ]</code>	Display the <code>UpgradeServers.py</code> command parameters and options.
<code>{ --host-name   -H } host</code>	The host name of the server running Oracle VM Manager. Usually, this script is run on the Oracle VM Manager host, so this option is not required. The default is <code>localhost</code> .
<code>{ -P   --port } port</code>	The port number for the Oracle VM Manager instance. The default is <code>7002</code> .
<code>{ -u   --user-name } user</code>	The username to log into the Oracle VM Manager instance. You are prompted for the password for this credential.
<code>{ -l   --pools } pool</code>	The names or IDs of any server pools to upgrade. To specify multiple server pools, enter them in a comma separated list, with no spaces.

Option	Description
<code>{ -v   --servers } server</code>	The names or IDs of any Oracle VM Servers to upgrade. To specify multiple Oracle VM Servers, enter them in a comma separated list, with no spaces.
<code>--noprompt</code>	Do not prompt to continue the upgrade. If packages are missing, the upgrade exits immediately, see <a href="#">Section 5.4.2.1, “Non-native Packages”</a> . Otherwise, the upgrade continues without prompting.

### Example 5.2 Upgrading Oracle VM Servers in a server pool

Upgrading all Oracle VM Servers in two server pools, named *pool1* and *pool2* and prompting for required options:

```
$./UpgradeServers.py -l pool1,pool2
```

### Example 5.3 Upgrading Oracle VM Servers

Upgrading three Oracle VM Servers named *server1*, *server2* and *server3*, and suppressing all prompts (except errors and the password prompt):

```
$./UpgradeServers.py -v server1,server2,server3 -noprompt
```

### Example 5.4 Upgrading Oracle VM Servers on a remote Oracle VM Manager

Upgrading Oracle VM Servers on a remote host that has an Oracle VM Manager instance:

```
$./UpgradeServers.py -H ovmmanger.example.com -u admin -v server1,server2,server3
```

## 5.4.2.1 Non-native Packages

If you have installed any packages on any of your Oracle VM Servers after the initial Oracle VM Server installation (non-native packages), it is possible that the presence of those packages may cause the upgrade to fail. For the script to succeed, you must place new Oracle Linux 6 compatible versions of these non-native packages in the *Oracle VM Server 3.3 Update Repository* before starting the upgrade. See [Section 5.4.1.1, “Preparing the Yum Repositories”](#) for more information on updating non-native packages.

Before starting any Oracle VM Server upgrades, the upgrade script checks for non-native packages that may have been installed on any of the servers to be upgraded. The script also checks the **3.3\_ovs\_repo** to determine whether any of these packages exist in that repository. To perform this check, the script makes use of a text file that enumerates the set of packages included in Oracle VM Server Release 3.1 and 3.2. The upgrade script compares the list of packages on the server to the appropriate version in this file to determine the list of non-native packages on the server. This file is located at:

```
/u01/app/oracle/ovm-manager-3/ovm_tools/etc/UpgradeServersYumPkgLists.txt
```

Depending on the version of Oracle VM Server on the server to upgrade, you may need to update this file to match the package list for your release. The appropriate package list file for your upgrade can be downloaded from:

<http://www.oracle.com/technetwork/server-storage/vm/downloads/index.html>

The script displays the status of all detected non-native packages:

```
Thu Dec 26 15:39:26 2013 INFO: Non-native package Status in 3.3_ovs_repo
Thu Dec 26 15:39:26 2013 INFO: -----
```

```
Thu Dec 26 15:39:26 2013 INFO: osc-oracle-netapp OK: package exists
Thu Dec 26 15:39:26 2013 INFO: osc-oracle-s7k OK: package exists
Thu Dec 26 15:39:26 2013 INFO: python-ontapi OK: package exists
```

If a non-native package is found that is not in the **3.3\_ovs\_repo**, its status is described as **MISSING**, and you are prompted to fix the problem before proceeding with the upgrade. There are two approaches to dealing with a **MISSING** package:

- Manually add an Oracle Linux 6 compatible version of the package to the repository as described in [Section 5.4.1.1, “Preparing the Yum Repositories”](#) if you intend to continue to use it in your upgraded environment.
- On each Oracle VM Server where the package is currently installed, you can manually uninstall the package if it is not required in your upgraded environment, or if you intend to install an alternative after upgrade is complete.

### 5.4.2.2 Post-upgrade Storage Array Plug-in Reconciliation

After all Oracle VM Servers have been upgraded, it is possible that any non-generic Oracle VM Storage Connect plug-ins have also been updated to a newer version. In this situation, there may be a version mismatch in the configuration of the plug-in on any Oracle VM Server that is configured to use the storage array. This could result in errors whenever a storage array operation is performed since the expected plug-in version is no longer installed on any of the servers.

For this reason, when the upgrade is complete, the script checks the plug-ins for all storage arrays configured within Oracle VM Manager. If a plug-in is found within the Oracle VM Manager repository that no longer exists on any server that is configured for that storage array, the script attempts to determine whether a newer version of the same plug-in has been installed. If the script is able to find a newer version of the plug-in already installed on the servers, it automatically updates the configuration of the storage array to use the new plug-in.

Due to the way that this is handled, the storage array is only usable after the upgrade is complete, since the storage array's plug-in is not updated until all running servers using that plug-in have been upgraded.

### 5.4.2.3 Typical Output From the UpgradeServers.py Script

In the following example, the UpgradeServers.py script is used to update a single Oracle VM Server. The example shows typical output for the upgrade process, but you should be aware that output may vary depending on the parameters used when invoking the script:

```
$ cd /u01/app/oracle/ovm-manager-3/ovm_tools/bin/
$./UpgradeServers.py --noprompt -u admin -H localhost -v MyServer1
Enter your OVM Manager password:
Sun May 18 16:01:08 2014 INFO:
Sun May 18 16:01:08 2014 INFO: UpgradeServers script starting...
Sun May 18 16:01:08 2014 INFO: OVM Manager version: 3.3.x.y
Sun May 18 16:01:08 2014 INFO: Command line args: ['UpgradeServers.py', '--noprompt', '-v',
'MyServer1']
Sun May 18 16:01:10 2014 INFO: Server: MyServer1. Transition Server Update Repository:
3.3_trans_repo, URL/path: http://myrepos.example.com/ovs_upgrade_repo/Transition
Sun May 18 16:01:10 2014 INFO: Server: MyServer1. OVS Server Update Repository: 3.3_ovs_repo,
URL/path: http://myrepos.example.com/ovs_upgrade_repo/Server
Sun May 18 16:01:10 2014 INFO: Getting update packages list in Server Update Repository:
3.3_ovs_repo, using oldest server: MyServer1, version: 3.2.8-735
Sun May 18 16:01:10 2014 INFO: Disabling Server Update Repository: 3.3_trans_repo
Sun May 18 16:01:10 2014 INFO: Waiting up to 35 seconds for updates of the Server Update
Repositories to complete on server MyServer1.
Sun May 18 16:01:17 2014 INFO: Finished updating Server Update Repositories.
Sun May 18 16:01:22 2014 INFO: Checking servers for non-native packages (those installed after
initial server installation)
```

```

Sun May 18 16:01:23 2014 INFO: Non-native package status:

Sun May 18 16:01:23 2014 INFO: Non-native package Status in 3.3_ovs_repo
Sun May 18 16:01:23 2014 INFO: -----
Sun May 18 16:01:23 2014 INFO: osc-oracle-netapp OK: package exists
Sun May 18 16:01:23 2014 INFO: osc-oracle-s7k OK: package exists
Sun May 18 16:01:23 2014 INFO: python-ontapi OK: package exists

Sun May 18 16:01:24 2014 INFO: Non-generic plug-ins have been found: [u'Oracle/Oracle NetApp
 Filer Plugin'], that are in use on existing storage arrays.
Sun May 18 16:01:24 2014 INFO: Evaluating server: MyServer1, version: 3.2.8-735, for
 upgrading. [1 of 1 servers].
Sun May 18 16:01:24 2014 INFO: Disabling Server Update Repository: 3.3_ovs_repo
Sun May 18 16:01:24 2014 INFO: Enabling Server Update Repository: 3.3_trans_repo
Sun May 18 16:01:25 2014 INFO: Waiting up to 35 seconds for updates of the Server
 Update Repositories to complete on server MyServer1.
Sun May 18 16:01:30 2014 INFO: Finished updating Server Update Repositories.
Sun May 18 16:01:31 2014 INFO: Starting upgrade of server: MyServer1, type: X86_64,
 version: 3.2.8-735, using Server Update Repository: 3.3_trans_repo
Sun May 18 16:01:33 2014 INFO: No VMs are on server: MyServer1, starting server upgrade.
Sun May 18 16:02:03 2014 INFO: Waiting for upgrade of server: MyServer1, to complete.
 The server is running. [RUNNING]
Sun May 18 16:02:45 2014 INFO: Server: MyServer1, upgraded successfully to version:
 3.2.8-735.1 (using Server Update Repository: 3.3_trans_repo).
Sun May 18 16:02:45 2014 INFO: Disabling Server Update Repository: 3.3_trans_repo
Sun May 18 16:02:46 2014 INFO: Enabling Server Update Repository: 3.3_ovs_repo
Sun May 18 16:02:46 2014 INFO: Waiting up to 35 seconds for updates of the Server
 Update Repositories to complete on server MyServer1.
Sun May 18 16:02:53 2014 INFO: Finished updating Server Update Repositories.
Sun May 18 16:02:55 2014 INFO: Starting upgrade of server: MyServer1, type: X86_64,
 version: 3.2.8-735.1, using Server Update Repository: 3.3_ovs_repo
Sun May 18 16:02:56 2014 INFO: No VMs are on server: MyServer1, starting server upgrade.
Sun May 18 16:03:27 2014 INFO: Waiting for upgrade of server: MyServer1, to complete.
 The server is performing the upgrade. [STOPPING]
Sun May 18 16:03:57 2014 INFO: Waiting for upgrade of server: MyServer1, to complete.
 The server is performing the upgrade. [STOPPING]
...
Sun May 18 16:14:31 2014 INFO: Waiting for upgrade of server: MyServer1, to complete.
 The server is rebooting after the upgrade. [STOPPED]
Sun May 18 16:15:01 2014 INFO: Waiting for upgrade of server: MyServer1, to complete.
 The server is rebooting after the upgrade. [STOPPED]
...
Sun May 18 16:19:32 2014 INFO: Waiting for upgrade of server: MyServer1, to complete.
 The server is starting back up. [STARTING]
Sun May 18 16:20:03 2014 INFO: Server: MyServer1, upgraded successfully to version: 3.3.x-y
 (using Server Update Repository: 3.3_ovs_repo).
Sun May 18 16:20:03 2014 INFO: Evaluating if any storage arrays need their plug-ins updated.
Sun May 18 16:20:03 2014 INFO: No plug-ins were found that needed updating.
Sun May 18 16:20:03 2014 INFO: Log file is available at /opt/ovm/ovmwh/bin/UpgradeServers.log
Sun May 18 16:20:03 2014 INFO: UpgradeServers script stopping...

```

### 5.4.3 Upgrading Oracle VM Server Using Oracle VM Manager

Upgrade of an Oracle VM Server using the Oracle VM Manager Web Interface directly is only supported for upgrades between Oracle VM Server Release 3.3 errata releases. If you are attempting to upgrade an Oracle VM Server from an earlier release, you must perform the necessary preparation described in [Section 5.4.1, “Preparing to Upgrade Oracle VM Servers from Release 3.2 or Earlier”](#), then use the server upgrade script described in [Section 5.4.2, “Upgrading Oracle VM Server using the UpgradeServers.py Script”](#). You may find it useful to use the UpgradeServers.py script to update Oracle VM Server Release 3.3 errata releases as the script contains more error handling and checking than the the method described in this section using the Oracle VM Manager Web Interface.

This section directs you to the location in the Oracle VM documentation that discusses upgrading the Oracle VM Servers in your Oracle VM Release 3.3 environment using a server update repository.

To upgrade Oracle VM Server using a server update repository, you must first set up a Yum repository based on the Oracle VM Release 3.x channel on ULN. When you have created the repository, add the repository to Oracle VM Manager as a server update repository. You then use Oracle VM Manager to perform the upgrades on the Oracle VM Servers. For information on setting up a server update repository and using Oracle VM Manager to perform the upgrade of Oracle VM Servers, see [Update Server](#) and [Server Update Groups](#) in the *Oracle VM Manager User's Guide*.

Make sure you do not use the *Oracle VM Server 3.3 Transitional Update Repository* to upgrade between Oracle VM Server Release 3.3 errata releases.

## 5.4.4 Upgrading Oracle VM Server Using the CD

A log of the install is located in `/root/upgrade.log`. If the installation fails, review this log file for help identify the cause of any installation problems.

To upgrade the Oracle VM Server using the Oracle VM Server CD:

1. Burn the Oracle VM Server ISO file to a bootable CD.
2. Start the Oracle VM Server installer by following the steps in [Section 2.1.2, "Installing Oracle VM Server From a DVD-ROM or CD-ROM"](#).
3. If an existing Oracle VM Server installation is found on the computer, the **System to Upgrade** screen is displayed. Select **Oracle VM Server 3.x (disk)** to upgrade the existing installation.

Select **OK** and press **Enter**.

4. The **Upgrade Boot Loader Configuration** screen is displayed. Select **Update boot loader configuration** to update the existing boot loader. Select **Skip boot loader updating** to make no changes to the boot loader. Select **Create new boot loader configuration** to create a new boot loader.

Select **OK** and press **Enter**.

If you selected **Create new boot loader configuration**, the **Boot Loader Configuration** screen is displayed.

The **Boot Loader Configuration** screen is displayed. If you want to set a boot loader password to increase security of your machine, select **Use a GRUB Password**, enter a password in the **Boot Loader Password** field, and re-enter the password in the **Confirm** field.



### Warning

Do not use boot loader passwords if Distributed Power Management (DPM) is used. A boot loader password has to be entered manually with every boot, which prevents DPM from starting a server successfully. For more information about DPM, see [What are Server Pool Policies?](#) in the *Oracle VM Concepts Guide*

Select **OK** and press **Enter**.

The **Boot Loader Configuration** screen is displayed. Select **Master Boot Record (MBR)** or **First sector of boot partition** as the location to install the boot loader. If you want to change the drive order, select **Change drive order** and follow the prompts to change the drive order.

Select **OK** and press **Enter**.

5. The **Upgrade to begin** screen is displayed. Select **OK** and press **Enter**. The installer installs and configures Oracle VM.
6. When all files are installed and configuration complete, the **Complete** screen is displayed. If you performed the upgrade from the CDROM drive, remove the Oracle VM CDROM.

Select **Reboot** and press **Enter**. The computer reboots.

The Oracle VM console is displayed.

The Oracle VM Server upgrade is complete.

## 5.4.5 Post-upgrade Steps

This section describes different post-upgrade steps that may be required after an upgrade. Many of these steps are dependent on whether or not you have upgraded from a previous release, such as Oracle VM 3.2. The requirement to perform the step is clarified at the beginning of each sub-section here.

### 5.4.5.1 Discover Oracle VM Server After Reinstall

If you upgraded Oracle VM Server by reinstalling it with the installation media, you must discover the Oracle VM Server with Oracle VM Manager after the installation is complete. For example, if you upgraded from Release 3.2 or earlier, you can delete the Oracle VM Server from Oracle VM Manager and then reinstall Oracle VM Server with the 3.3.x installation media instead of upgrading with the `UpgradeServers.py` script.

For instructions to discover Oracle VM Server with Oracle VM Manager, see [Discover Servers](#) in the *Oracle VM Manager User's Guide*.

### 5.4.5.2 Refresh Server Pools To Validate Oracle VM Storage Connect plug-in

After upgrade completes, it is always good practice to refresh your server pools to ensure that the information presented within Oracle VM Manager is up to date and synchronized with the actual state of any servers in a server pool. More importantly, if you are using any third party Oracle VM Storage Connect plug-in for your storage devices, you may be unable to refresh your storage arrays until these plug-ins have been validated. Refreshing server pools allows the servers that have been presented to the storage to validate the Oracle VM Storage Connect plug-in that they are using. Once this has been done, operations on storage arrays can resume normally.

To refresh your server pools, refer to [Refresh All](#) in the *Oracle VM Manager User's Guide*.

### 5.4.5.3 Remove the Transitional Yum Repository

If you have upgraded your Oracle VM Servers from a 3.2 release and have added a transitional Yum repository for the purpose of performing the upgrade, as described in [Section 5.4.1.3, "Configuring the Yum Repositories within Oracle VM Manager"](#), it is important that you disable or remove this repository in Oracle VM Manager if you have finished your server upgrades. If this repository remains enabled in Oracle VM Manager, you may have trouble updating Oracle VM Servers across future errata releases. See [Server Update Groups](#) in the *Oracle VM Manager User's Guide* for more information.

### 5.4.5.4 Edit Boot Parameters To Enable Hypervisor Features

If you have upgraded from an earlier release, it is possible that some of the hypervisor boot parameters for your server may need editing to ensure that newer features are enabled. To update these boot parameters,

on each affected Oracle VM Server, open `/boot/grub.conf` in an editor. Edit the line starting with `kernel /xen.gz` and append the required boot parameters.

### To support Huge Pages on Para-Virtualized (PV) guests

Huge page support, for PV guests, requires that the Xen hypervisor starts with the boot parameter `allowsuperpage` set. To allow the hypervisor to use this feature when starting up virtual machines, you must append the option to the kernel boot parameters. For example:

```
kernel /xen.gz console=com1,vga com1=57600,8n1 dom0_mem=1440M allowsuperpage
```

You must reboot the server for this setting to take effect.

### For large servers with more than 20 physical CPUs

For Oracle VM Servers with more than 20 physical CPUs, performance can be improved by pinning virtual CPUs to dom0 and setting a maximum value for the number of virtual CPUs that can be used by dom0. On a new install where a system has more than 20 physical CPUs, this value is usually set to 20. To ensure that you get the best possible performance on an Oracle VM Servers with more than 20 physical CPUs, set the Xen boot parameters `dom0_vcpus_pin` and `dom0_max_vcpus=20`. For example:

```
kernel /xen.gz console=com1,vga com1=57600,8n1 dom0_mem=32768M allowsuperpage dom0_vcpus_pin \
dom0_max_vcpus=20
```

You must reboot the server for these settings to take effect.

#### 5.4.5.5 Handling Missing Disks, File Systems and Repositories

On a small number of systems, local physical disks may be allocated an alternate device mapper ID during the upgrade process. This only affects a few different ATA type disks. The change in device mapper ID can result in some local physical disks, their file systems and repositories as being marked as missing within Oracle VM Manager. Although the physical disk is discovered after the upgrade, it is detected as a new disk. The old entry within Oracle VM Manager, for the same disk, is retained but is marked as missing.

If you are affected by this, you may need to take some steps to reconfigure your environment for the change. This includes removing the missing disks and then refreshing the newly discovered disks, their file systems and any hosted repositories. The repository must additionally be presented to the affected Oracle VM Server again, so that it can be used.

If you have virtual machines that use local physical disks for storage, you may need to reconfigure these virtual machines to remove the missing disk and replace it with the newly discovered disk.

This section describes how to identify whether you are affected and the steps that you may need to take to return to a fully functioning environment.

#### Checking For Missing Disks

To see whether you are affected by this issue at all, you can use the Oracle VM Manager Web Interface to view the Physical Disks perspective for each Oracle VM Server in your environment. If a disk has been affected by the upgrade, it is displayed with a WARNING status. The event message shows "Physical disk is Offline".

In an environment with many Oracle VM Servers, it may not be practical to use the Oracle VM Manager Web Interface to check the status of the physical disks for every server. You can, however, use the Oracle VM Manager Command Line Interface in combination with the `grep` utility to quickly view all of the events that contain this event message. An example, where the command is run on the Oracle VM Manager host, follows:

```
$ ssh -l admin localhost -p 10000 "getEvents severity=WARNING" | grep -i "physical \
disk is offline"

id:3190 createTime:May 09, 2014 2:02:00 pm modTime:May 09, 2014 2:02:00 pm
type:storage.device.offline. severity:Warning summary:Physical disk is
Offline acked:No description:OVMEVT_007005D_001 Rescan storage layer on
server [ovs237] did not return physical disk [3600605b0057feba01a0e216512d1b7aa]
for storage array [Generic Local Storage Array @ ovs237].
assocObjectId:0004fb0000180000833252939ba41cf9
```

Note that for these events, you must check that the event occurs for a Generic Local Storage Array. The server that is affected is displayed in the output, as is the id for the missing disk.

If this event message exists for any of the local physical disks attached to any of your Oracle VM Servers, then you are most likely affected by this issue and should continue with the rest of the steps described here.

### Identifying Newly Discovered Disks and Matching Them To Missing Disks

By default, the simple names that Oracle VM Manager assigns to physical disks are based on the disk Page83 ID. If you have not renamed your physical disks, identifying newly discovered disks that map onto missing disks is simple, since the disk names can be compared to find matches. This is illustrated in the following output from the Oracle VM Manager Command Line Interface:

```
OVM> list physicalDisk
Command: list physicalDisk
Status: Success
Time: 2014-05-06 13:40:49,503 PDT
Data:
 id:0004fb00001800007b2cdfbecb973c4d
 name:SATA_VBOX_HARDDISK_VBcdfef5359-5146ac3d_
 id:0004fb0000180000f9c966f19c14cc95
 name:SATA_VBOX_HARDDISK_VBcdfef5359-5146ac3d
```

In this output, the first physical disk listed is the original disk item, while the second disk is the newly discovered version of the same disk. The first physical disk is marked as missing in Oracle VM Manager. Since the second disk has the same name, with the exclusion of the final underscore character, it is easy to identify that these entries actually point to the same disk.

If you have changed the names for your physical disks, this process is fractionally more complicated since you must compare the Page83 ID of each disk to find the match. Obtaining the Page83 ID of a disk using the Oracle VM Manager Command Line Interface is illustrated below:

```
OVM> show physicaldisk id=0004fb00001800009eed86fbc36b41bc
Command: show physicaldisk id=0004fb00001800009eed86fbc36b41bc
Status: Success
Time: 2014-05-13 13:45:56,732 CEST
Data:
 Page83 ID = 350014ee20137ee44
 Server Reserved = No
 Shareable = No
 Size (GiB) = 465.76
 State = UNKNOWN
 Thin Provision = No
 Type = LUN
 Vendor = ATA
 File System 1 = 0004fb00000500000809e28f4fab56b1 [fs on 350014ee20137ee44]
 Volume Group = 0004fb00003200004dddc710a12aalb7 [Local Storage Volume Group]
 Id = 0004fb00001800009eed86fbc36b41bc [Server5 ATA Disk]
 Name = Server5 ATA Disk
 Description = WDC WD5001ABYS-0
 Locked = false
```

Note that the Page83 ID is shown as a property of the disk. You must obtain the Page83 ID for each missing disk and then find any physical disks that have their name or Page83 ID set to the same value. These disks are the newly discovered versions of the same physical disk.

## Useful Steps Before Reconfiguring Your Environment

The names of any child objects of the missing disk, such as file system names, repository names and the names of any items within the repository are all associated with the missing disk. This information is lost when you delete the missing disk from your environment. If you have named any of these objects within Oracle VM Manager, you should take note of the names of these objects before continuing. Although this is not a necessary step, since the names are only helpful within Oracle VM Manager and do not affect the running of your environment, to return your environment to the same state after you delete any missing disks you may wish to rename these objects once they are associated with the newly discovered version of the same physical disk.

Using the Oracle VM Manager Command Line Interface you can run the following commands to obtain a dump of the names of all of these objects:

```
OVM> list physicaldisk
OVM> list filesystem
OVM> list repository
OVM> show repository id=0004fb0000030000e0f09683cd2ac72a
```

Substitute `0004fb0000030000e0f09683cd2ac72a` with the id for each repository in your environment, and run the same command for each repository.

The goal of this exercise is to obtain a listing of the names of any of the objects that may be affected when you remove the physical disk that they are associated with. Store the information returned by these commands in a place that you can refer to when you need to rename objects.

## Steps To Deal With Affected Repositories

If you have made a record of the object names of all affected objects, it is safe to delete the missing disks, as illustrated in the following output from the Oracle VM Manager Command Line Interface:

```
OVM> delete physicalDisk id=0004fb00001800007b2cdfbecb973c4d
Command: delete physicalDisk id=0004fb00001800007b2cdfbecb973c4d
Status: Success
Time: 2014-05-06 13:43:55,253 PDT
JobId: 1399409030129
```

These actions can also be performed in the Oracle VM Manager Web Interface, if preferred.

Once you have deleted the missing disk entry, you must perform the following actions:

- Identify the newly discovered disk that corresponds to the disk that you have deleted, and refresh it as described in [Refresh Physical Disk](#) in the *Oracle VM Manager User's Guide*.
- Now, refresh the file systems on the disk as described in [Refresh File System](#) in the *Oracle VM Manager User's Guide*.
- Next, you must refresh the repositories that are hosted on the local physical disk, as described in [Refresh Repository](#) in the *Oracle VM Manager User's Guide*.
- Finally, present the repository to the Oracle VM Server where the physical disk is located. See [Present or Unpresent Repository](#) in the *Oracle VM Manager User's Guide* for more information.

At this point, your environment is usable, although the names of various objects have been lost. For instance, any file system names, repository names, or the names of objects such as virtual machines in a

repository are likely to have been reset to default values. If you kept a record of the object names affected, as recommended in the previous step, then you can manually rename objects as required.

## Steps To Deal With Affected Virtual Machines

If you have any virtual machines that were configured to use a local physical disk that is marked as missing, you must remove the original disk mapping and then reconfigure the virtual machine to attach a new physical disk. When you select the new physical disk, you should select the physical disk with the same Page83 ID as the missing disk. To reconfigure these disk mappings, you must edit the virtual machine as described in [Edit Virtual Machine](#) in the *Oracle VM Manager User's Guide*.

## 5.5 Upgrading Oracle VM Agent for SPARC

Upgrades for Oracle VM Servers that are running on SPARC hardware can be handled by setting up two Oracle Solaris Image Package System (IPS) repositories. Your IPS repositories can be hosted on any system, either x86 or SPARC, as long as it is running Oracle Solaris 11 or later. The system where you configure these repositories must be accessible over the network by all of the SPARC based Oracle VM Servers that you wish to upgrade. The first repository should be set up to handle Oracle Solaris updates and should have its publisher set to `solaris`. This repository can be used to keep the Oracle Solaris software in your control domains up to date. Instructions on setting up and copying IPS repositories can be found in the book titled *Copying and Creating Oracle Solaris 11.1 Package Repositories* in the *Oracle Solaris 11.1 Information Library* at:

[http://docs.oracle.com/cd/E26502\\_01/html/E28985/index.html](http://docs.oracle.com/cd/E26502_01/html/E28985/index.html)

The second IPS repository should be set up to contain the Oracle VM Agent for SPARC and associated packages. This repository can be used to ensure that the latest version of Oracle VM Agent for SPARC is available to be installed on your Oracle VM Servers. You can also use this repository to store commonly required packages such as the distributed lock manager (DLM) package required for cluster support. See [Section 6.1, "Installing DLM for SPARC Server Pool Clusters"](#) for more information on the DLM package. This repository should have its publisher set to `ovm`. The instructions that follow explain how to set up and configure this IPS repository.

### To set up an IPS repository for Oracle VM Agent for SPARC :

1. If you have not already created a package repository that is accessible over HTTP, you must create one by performing the following actions on the system where you intend to host your repositories:

```
pkgrepo create /path/to/my-repository
svccfg -s application/pkg/server setprop pkg/inst_root=/path/to/my-repository
svccfg -s application/pkg/server setprop pkg/port=8888
svcadm refresh application/pkg/server
svcadm enable application/pkg/server
```

2. Check that the package repository server is online:

```
svcs pkg/server
STATE STIME FMRI
online 16:39:50 svc:/application/pkg/server:default
```

3. Download the latest Oracle VM Agent for SPARC software from <https://edelivery.oracle.com/oraclevm>, as described in [Section 1.2, "Getting Installation ISOs and Packages"](#).
4. If you intend to take advantage of server pool clustering, also download the distributed lock manager DLM package from <https://edelivery.oracle.com/oraclevm>, as described in [Section 1.2, "Getting Installation ISOs and Packages"](#).
5. Extract the software, for example:

```
tar xzf ovs-ldoms-3.3.1-bXXX.tar.gz
```

- Copy the software to the package repository, for example:

```
pkgrecv -s ovs-ldoms-3.3.1-bXXX/ovs-ldoms.p5p -d /path/to/my-repository 'ovm/*'
pkgrecv -s ovs-dlm-3.3.1-bXXX.p5p -d /path/to/my-repository 'ovm/*'
```

- Restart the package repository server and ensure that it is online:

```
svcadm restart application/pkg/server
svcs pkg/server
```

If the package repository server is not online, restart the server where it is hosted.

- Check that the contents of the repository are available, for example:

```
pkgrepo list -s /path/to/my-repository
pkgrepo list -s http://my-repo-server:8888/
```

## 5.5.1 Create Server Update Repositories in Oracle VM Manager

The IPS repositories must be set up within the Oracle VM Manager Web Interface, so that the upgrade script can identify them accurately and use them to perform the upgrade on the specified Oracle VM Servers. The repositories are called *server update repositories* in the Oracle VM Manager Web Interface.

Use the Oracle VM Manager Web Interface to create two server update repositories, one for each repository. Make sure you create these server update repositories in the **Sparc** server update group. The following tables contain the information you need to create the server update repositories using the **Create Server Update Repository** dialog box.

Full instructions for creating a server update repository in the Oracle VM Manager Web Interface are provided in [Create New Server Update Repository](#) in the *Oracle VM Manager User's Guide*.

**Table 5.3 Solaris Repository**

Field	Value	Notes
<b>Name</b>	<code>3.3_trans_repo</code>	By naming the repository in this way within Oracle VM Manager you are able to use the <code>UpgradeServers.py</code> script described in <a href="#">Section 5.4.2, "Upgrading Oracle VM Server using the UpgradeServers.py Script"</a> . The name is case sensitive.
<b>Repository Name</b>	<code>solaris</code>	This should be set to the same name that you used for the IPS publisher.
<b>URL</b>	<code>http://my-repo-server:8888/solaris</code>	Substitute this URL with the URL to your Solaris IPS repository.
<b>Enabled</b>	Yes	You can enable or disable this repository to control whether only the Oracle VM Agent software is updated, or whether other Solaris packages are updated as well. This repository must be enabled if you intend to use the <code>UpgradeServers.py</code> script described in <a href="#">Section 5.4.2, "Upgrading Oracle VM Server using the UpgradeServers.py Script"</a> .

Field	Value	Notes
Package Signature Type	None	No package signature type is required here.

**Table 5.4 OVM Repository**

Field	Value	Notes
Name	<code>3.3_ovs_repo</code>	By naming the repository in this way within Oracle VM Manager you are able to use the <code>UpgradeServers.py</code> script described in Section 5.4.2, “Upgrading Oracle VM Server using the UpgradeServers.py Script”. The name is case sensitive.
Repository Name	<code>ovm</code>	This should be set to the same name that you used for the IPS publisher.
URL	<code>http://my-repo-server:8888/ovm</code>	Substitute this URL with the URL to your Oracle VM Agent for SPARC IPS repository.
Enabled	Yes	You can enable or disable this repository to control whether the Oracle VM Agent software is updated, or whether only Solaris packages are updated. This repository must be enabled if you intend to use the <code>UpgradeServers.py</code> script described in Section 5.4.2, “Upgrading Oracle VM Server using the UpgradeServers.py Script”.
Package Signature Type	None	No package signature type is required here.

## 5.5.2 Upgrading Oracle VM Server for SPARC

With your IPS repositories properly configured, you are able to perform individual server upgrades from within the Oracle VM Manager Web Interface as described in [Update Server](#) in the *Oracle VM Manager User's Guide*. If you have defined repositories for the Solaris operating system and for the Oracle VM Agent, then an update action is performed for both the Solaris operating system and the Oracle VM Agent. If you only want to update a particular component, either the Solaris operating system or the Oracle VM Agent, disable the repository with the component that you do not want to update within Oracle VM Manager.

If you have named your repositories correctly, as outlined in the preceding steps, you are also able to use the batch server upgrade script, `UpgradeServers.py`, described in Section 5.4.2, “Upgrading Oracle VM Server using the UpgradeServers.py Script”. Both repositories must be enabled for this script to work.

If you have updated the Oracle VM Agent on your servers and have not installed the DLM package, clustering is not supported until you install this package. Ideally, the DLM package should be installed before the upgrade, but you are still able to install the DLM package after the Oracle VM Agent has been updated. If you intend to do this, perform the following steps on each server in your environment:

- Stop the ovs-config service:

```
svcadm disable -s ovs-config
```

- Install the DLM package. See Section 6.1, “Installing DLM for SPARC Server Pool Clusters” for more details. Assuming you have added the package to your OVM IPS repository:

```
pkg install ovs-dlm
```

- Restart the ovs-config service:

```
svcadm enable ovs-config
```

## 5.6 Rolling Back From an Upgrade

In this section we describe some of the steps that you may need to perform to rollback from an upgrade. Provision is made for a rollback from an upgrade of Oracle VM Manager if something goes wrong during the upgrade process. Rollback of Oracle VM Server upgrades is not catered for, and in this instance you must reinstall the version of Oracle VM Server that you wish to roll back to, and then rediscover the server in Oracle VM Manager.

The Oracle VM Manager automatically performs a full data backup of the database, if you are currently using the bundled MySQL database, when you run the installer with the upgrade option. This backup is stored in `/u01/app/oracle/mysql/dbbackup`. The name of the backup is printed to the screen during the upgrade process and is named similarly to `3.2.1_preUpgradeBackup-YYYYMMDD_hhmmss`.

If your Oracle VM Manager was using the bundled MySQL database, you must first uninstall the Oracle VM Manager Release 3.3 software, then install the previous version of the software, and finally restore the database from this backup.

If your Oracle VM Manager was using a remote Oracle Database, and you have left this database intact through the upgrade process, rolling back simply requires that you uninstall the Oracle VM Manager Release 3.3 software, then install the previous version of the software, taking care to provide the details for the existing Oracle Database tablespace during the installation process.

Instructions for both of these scenarios follow.

### Rolling Back Oracle VM Manager to a previous release using MySQL:

1. Uninstall Oracle VM Manager Release 3.3 software using the instructions provided at [Section 3.4, "Uninstalling Oracle VM Manager"](#).



#### Important

Do not remove the database backup directory after you have completed the uninstall process, The database backup generated during the upgrade process is required to restore your previous environment.

2. Install the previous Oracle VM Manager version, following the installation instructions provided in the documentation for that version.
3. Stop the `ovmm`, and `ovmm_mysql` services respectively.
4. Run the database restore utility with the database backup that was created during the beginning of the upgrade. To do this issue the following command:

```
cd /u01/app/oracle/ovm-manager-3/ovm_tools/bin
su oracle -c "sh ./RestoreDatabase.sh 3.2.1_preUpgradeBackup-YYYYMMDD_hhmmss"
```

Substitute `3.2.1_preUpgradeBackup-YYYYMMDD_hhmmss` with the name of the backup that you wish to restore to. This is typically the name of the pre-upgrade backup that is printed in the output of the upgrade process.

5. Start the `ovmm_mysql` and `ovmm` services respectively.

6. Log into the Oracle VM Manager Web Interface and check that the configuration matches what was in place prior to the upgrade process. Use the [Refresh All](#) option within the Oracle VM Manager Web Interface to refresh all of your server pools to ensure that all of your virtual machine resources are available.

### **Rolling Back Oracle VM Manager to a previous release using an Oracle Database:**

1. If you have not left the Oracle Database OVM tablespace (`ovs`) intact since your upgrade, you must restore the data from a backup before attempting to rollback.
2. Uninstall the Oracle VM Manager Release 3.3 software using the instructions provided at [Section 3.4, "Uninstalling Oracle VM Manager"](#).
3. Install the previous Oracle VM Manager version, following the installation instructions provided in the documentation for that version. During the installation, the installer detects the presence of the old database table space (`ovs`) and provides an option to use the old database table space. Select this option to restore Oracle VM Manager to the state that it was in when the database was last backed up.
4. Log into the Oracle VM Manager Web Interface and check that the configuration matches what was in place prior to the upgrade process.



---

## Chapter 6 What Next?

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The information contained within this chapter is not part of the default installation process for Oracle VM, however to ensure that your environment runs smoothly and that all elements within your deployment are functional and can be supported, you should perform a number of additional steps to fully configure your environment. These steps are discussed in the following sections.

## 6.1 Installing DLM for SPARC Server Pool Clusters

Clustered server pools are supported on SPARC hardware, as long as the cluster file system is hosted on NFS storage, there is a single control domain, and the distributed lock manager (DLM) package is installed. If any of these requirements are not met, you are unable to take advantage of clustering functionality within a server pool. It is not compulsory to use clustered server pools within Oracle VM, however the advantages provided by configuring clustering for a server pool make this option desirable. In this section we describe how to download and install the DLM package to meet one of the basic requirements for server pool clustering on Oracle VM Server for SPARC.

If you do not already have the DLM software, download DLM for SPARC from the Oracle Software Delivery Cloud:

<https://edelivery.oracle.com/oraclevm>

Use of DLM for SPARC is subject to that section of the Oracle License Agreement that covers Oracle VM Manager at:

<https://edelivery.oracle.com/oraclevm>

See [Section 1.2, “Getting Installation ISOs and Packages”](#), in the appendix, for more information on accessing and downloading packages and ISOs.

When you have downloaded the DLM package you should store it in a place that is accessible to all of the Oracle VM Servers in your deployment, or copy it to each server so that it can be installed. The package is named: `ovs-dlm-3.3.1-bxxx.p5p`, where `xxx` should be equivalent to the build number for the Oracle VM Agent for SPARC package.

Install the package on the control domain for each Oracle VM Server, using the following command:

```
pkg install -g ovs-dlm-3.3.1-bxxx.p5p dlm
```

Take care to ensure that the package name matches the filename where you have stored the package, replacing `xxx` with the appropriate build number and `3.3.1` with the appropriate release number.

Once you have finished installing the DLM for SPARC package on all of your servers, you will be able to configure clustered server pools as normal within Oracle VM Manager. See [How do Server Pool Clusters Work?](#) in the *Oracle VM Concepts Guide* for more information on server pool clustering.

## 6.2 Configuring a Secondary Service Domain for SPARC

If you are running a SPARC environment, and you do not intend to make use of the clustering features included in this release, you may want to consider setting up and configuring a secondary service domain to improve the availability of virtual machines in the instance where the primary control domain may need to be restarted, or may fail.

Instructions on configuring and setting up a secondary service domain are provided in [Configuring a Secondary Service Domain on SPARC](#) in the *Oracle VM Administrator's Guide*. This is an advanced configuration that imposes some limitations on how you are able to use the product.

## 6.3 Installing Diagnostic Tools for Oracle VM Server

As an optional post-installation step, Oracle recommends that you also install and configure diagnostics tools on all [Oracle VM Servers](#). These tools can be used to help debug and diagnose issues such as system crashes, hanging, unscheduled reboots, and [OCFS2](#) cluster errors. The output from these tools can be used by Oracle Support and can significantly improve resolution and response times. See [Installing Oracle VM Server Diagnostic Tools](#) in the *Oracle VM Administrator's Guide* guide for information on installing the diagnostic and support tools.

## 6.4 Configure the NTP Service on the Oracle VM Manager Host

When an Oracle VM Server is discovered in Oracle VM Manager, NTP (Network Time Protocol) is automatically configured and enabled to ensure time synchronization. Oracle VM automatically configures the Oracle VM Manager [host computer](#) as the NTP source for all Oracle VM Servers under its control, unless other NTP servers are configured for each server via the CLI.

If you do not set up your own list of NTP servers, and want to use the Oracle VM Manager host computer to provide NTP time synchronization services, NTP must first be installed and configured on the Oracle VM Manager host server. Make sure that your Oracle VM Manager host is either registered with the [Unbreakable Linux Network \(ULN\)](#) or configured to use [Oracle's public YUM service](#).

### To configure NTP on the Oracle VM Manager host:

1. Install the NTP package.

```
yum install ntp
```

When NTP is installed, configure it to both synchronize with upstream servers and provide time services to the local network, where the Oracle VM Servers reside.

2. Enable upstream synchronization by defining the upstream time servers in the `ntp.conf` file.

Oracle Linux uses three public NTP servers as upstream time sources by default. Check with your network administrator if time services are provided on the corporate network and, if necessary, replace the default entries with the names or IP addresses of your NTP servers.

Use your favorite text editor to modify `/etc/ntp.conf`. Search for these entries:

```
vi /etc/ntp.conf
server 0.rhel.pool.ntp.org
```

```
server 1.rhel.pool.ntp.org
server 2.rhel.pool.ntp.org
```

- Configure downstream access for the Oracle VM Servers in your local network. To do so, disable the default "noquery" option for the Oracle VM Server management network.

Again in the `/etc/ntp.conf` file, search for this entry:

```
#restrict 192.168.1.0 mask 255.255.255.0 nomodify notrap
```

Remove the # character at the start of the line to uncomment this entry. Replace `192.168.1.0` with the network address of your Oracle VM Server management network. You may also need to adjust the netmask (`255.255.255.0`). Once you have finished editing, save the `/etc/ntp.conf` file.

- Start the NTP service and set it to launch automatically upon boot.

```
service ntpd start
chkconfig ntpd on
```

- When NTP is running, check upstream synchronization. The `ntpq` command should output something similar to this example:

```
ntpq -p
 remote refid st t when poll reach delay offset jitter
=====
lists2.luv.asn. 203.161.12.165 16 u 25 64 3 3.495 -3043.1 0.678
ns2.novatelbg.n 130.95.179.80 16 u 27 64 3 26.633 -3016.1 0.797
spl.mycdn.fr 130.234.255.83 16 u 24 64 3 4.314 -3036.3 1.039
```

When upstream NTP is working properly, delay and offset values should be non-zero and the jitter value should be below 100.

- Test downstream synchronization from another server in the management network to ensure that NTP services are working. Note that it may take several minutes before your NTP server is able to provide time services to downstream clients. Begin by checking the *stratum level* of your server:

```
ntpq -c rv
assID=0 status=c011 sync_alarm, sync_unspec, 1 event, event_restart,
version="ntpd 4.2.4p8@1.1612-o Tue Jul 6 21:50:26 UTC 2010 (1)",
processor="x86_64", system="Linux/2.6.32-200.19.1.el6uek.x86_64",
leap=11, stratum=16, precision=-20, rootdelay=0.000,
rootdispersion=1.020, peer=0, refid=INIT,
reftime=00000000.00000000 Thu, Feb 7 2036 17:28:16.000, poll=6,
clock=d21d4a96.a26c5962 Fri, Sep 16 2011 14:09:58.634, state=0,
offset=0.000, frequency=0.000, jitter=0.001, noise=0.001,
stability=0.000, tai=0
```

If the server is showing `stratum=16`, wait a few minutes and try again. It may take up to 15 minutes for an NTP server to stabilize sufficiently to lower its stratum level.

Downstream clients will not synchronize with a server at stratum level 16. Once the stratum level has dropped, log in to an available Linux host in your management network, not running Oracle VM Manager, and issue the following command:

```
ntpdate -d manager.hostname
[...]
16 Sep 13:58:25 ntpdate[1603]: step time server 192.168.1.1 offset 3.009257 sec
```

This command runs `ntpdate` in debug mode, in which case the availability of the remote time server is checked. If the debug run ends in a line similar to the one in this example, the test is successful. In

case the stratum level is still too high, the error message "Server dropped: strata too high" is displayed.

When you have confirmed with these tests that NTP is working properly for your environment, you should not need to check this again.



**Caution**

NTP communicates over UDP port 123. Ensure that no firewall is blocking this traffic.

## 6.5 Installing and Upgrading Packages Required For The VNC and Serial Console

There are two types of virtual machine consoles in Oracle VM Manager: the VNC console used to connect virtual machines in x86-based [server pools](#), and the *serial* console used to connect to virtual machines in both x86-based and SPARC-based server pools. Both console types require you to install the appropriate package on the Oracle VM Manager host computer. You receive the following notification when the installation of Oracle VM Manager completes:

```
Note that you must install the latest ovmcore-console package for your Oracle Linux
distribution to gain VNC and serial console access to your Virtual Machines (VMs).
Please refer to the documentation for more information about this package.
```

This package is available in the root folder of the Oracle VM Manager Installation ISO.

There are versions of this package for both Oracle Linux 5 and Oracle Linux 6. They are named as follows:

- ovmcore-console-*x.y-z*.el5.noarch.rpm for Oracle Linux 5
- ovmcore-console-*x.y-z*.el6.noarch.rpm for Oracle Linux 6

Copy the appropriate package for the Oracle Linux installation where you are running Oracle VM Manager and then install it with the command:

```
rpm -ivh ovmcore-console-x.y-z.elv.noarch.rpm
```

Substitute *x.y-z* with the most current version number of the package available. Substitute *v* with the version number of your Oracle Linux installation.

If you already have an earlier version of this package installed, you may wish to upgrade it. In which case, you may use the following command instead:

```
rpm -U ovmcore-console-x.y-z.elv.noarch.rpm
```

This package installs the noVNC VNC client and the jsTerm terminal emulator on the Oracle VM Manager host. The noVNC client is a web-based VNC client that is rendered using HTML5 WebSockets and Canvas. You can find out more about this software at <http://kanaka.github.io/noVNC/>. The jsTerm terminal emulator is a web-based terminal emulator that can be used to facilitate telnet-type connections using HTML5 WebSockets and Canvas.

Note that to use these console services, your web browser must fully support the HTML5 Canvas and WebSockets elements. The list of supported web browsers presented in [Web Browser Requirements](#) in the [Oracle VM Manager User's Guide](#) covers all browsers that also provide the necessary support to make use of the virtual machine consoles included in Oracle VM Manager.

As of version 3.3.1 of Oracle VM Manager there is no requirement to install or run any other software on the client computer.

## 6.5.1 VNC Console for x86 Requirements

Oracle VM Manager uses a secure tunnel to protect the virtual machine *console* (remote connection utility) data across the network. Oracle VM Manager does not communicate directly with the VNC client, but rather connects via an SSH-encrypted tunnel on port 69xx (where xx is based on the [guest](#) to which it is connecting).

Any firewall between the Oracle VM Manager and the Oracle VM Servers needs ports 6900 and above open; one port for each virtual machine on an Oracle VM Server. For example, if you have 100 virtual machines on an Oracle VM Server, you should open ports 6900-6999 (100 ports) on any firewall between the Oracle VM Server and Oracle VM Manager.

To connect to a virtual machine's VNC console in Oracle VM Manager, you must install the appropriate package on the Oracle VM Manager host computer.

Ensure that you are using a supported web browser when accessing the VNC console.

See [Launch Console](#) for more information on using and configuring the VNC client.

## 6.5.2 Oracle VM Server Serial Console for x86 and SPARC

You cannot use the standard VNC console to connect to virtual machines on a SPARC-based server pool. Instead, use the *serial* console. The serial console can also be used to connect to virtual machines running on x86-based server pools although the console, in this case, is read-only and non-interactive.

Any firewall between the Oracle VM Manager and the Oracle VM Servers needs ports 10000 and above open; one port for each virtual machine on an Oracle VM Server. For example, if you have 100 virtual machines on an Oracle VM Server, you should open ports 10000-10099 (100 ports) on any firewall between the Oracle VM Server and Oracle VM Manager.

To connect to a virtual machine's serial console in Oracle VM Manager, you must install the appropriate package on the Oracle VM Manager host computer.

Ensure that you are using a supported web browser when accessing the serial console.

See [Launch Serial Console](#) for more information on using the serial console to connect to virtual machines in SPARC-based server pools.

## 6.6 Change the Backup and Restore Path for the Oracle VM Manager Database

Oracle VM Manager automatically performs backups of the Oracle VM Manager database. By default, these backups are located in `/u01/app/oracle/mysql/dbbackup`. If you have network attached storage available, it is strongly recommended that you change the default path for these backups to use a mount point on an external device, particularly if you can make use of some form of RAID to further protect this data.

The path where database backups are stored is defined in `/etc/sysconfig/ovmm`.

Please refer to [Backing up the MySQL Database Repository](#) in the *Oracle VM Administrator's Guide* for more information on this parameter and on the backup and restore process in general.

## 6.7 Starting and Stopping Oracle VM Manager

This section discusses the methods of starting and stopping Oracle VM Manager. For information on starting and stopping the Oracle VM Manager Command Line Interface, see [Starting and Stopping the CLI](#) in the *Oracle VM Manager Command Line Interface User's Guide*.

## Instructions for Oracle VM Manager on Linux for x86

When Oracle VM Manager is installed, it is set to automatically start when the operating system starts. If you want to disable this, enter:

```
chkconfig ovmm off
```

To manually start or stop Oracle VM Manager, and to verify its status, log in as the *root* user, and use the syntax:

```
/sbin/service ovmm [start|stop|status|restart]
```

For example, to start Oracle VM Manager:

```
/sbin/service ovmm start
```

To stop Oracle VM Manager, you must first stop the Oracle VM Manager Command Line Interface, then Oracle VM Manager:

```
/sbin/service ovmm stop
```

To restart Oracle VM Manager:

```
/sbin/service ovmm restart
```

To check the status of Oracle VM Manager:

```
/sbin/service ovmm status
```

The `status` option returns whether the Oracle VM Manager service is running or stopped.

If the Oracle VM Manager [host computer](#) runs a full graphical desktop environment, you can also use the **Services** dialog to start and stop the CLI. From the **Applications** menu, select **System Settings > Server Settings > Services**. Or by running the following command in a terminal to display the **Services** dialog:

```
/usr/bin/system-config-services
```

In the **Service Configuration** dialog, select **ovmm** to check the status, and start or stop it.

## Instructions for Oracle VM Manager on Solaris for SPARC

When Oracle VM Manager is installed, it runs as a service that can be managed using the standard Solaris Service Management Facility (SMF) tools. Therefore, to obtain a report on the status of the service, you can simply use the `svcs` tool:

```
svcs ovmm
```



### Tip

You can use the `-l` to print a more detailed listing, including the full FMRID and restarter service paths.

Starting, stopping and restarting the service can be handled using the `svcadm` command. This can either be done on a temporary basis using the `-t` option, or can be enforced permanently to set the start-up behavior of the service.

For example, to stop Oracle VM Manager from starting up on start-up, run the command:

```
svcadm disable ovmm
```

To stop Oracle VM Manager from running temporarily:

```
svcadm disable -t ovmm
```

To start Oracle VM Manager:

```
svcadm enable ovmm
```

## 6.8 Logging in to Oracle VM Manager

To open the Login page of Oracle VM Manager, enter the following address in a Web browser:

`https://hostname:port/ovm/console`

Where, *hostname* refers to the host name or IP address of the Oracle VM Manager host, and *port* refers to the port number on which Oracle VM Manager is listening.



### Important

The *hostname* should match the fully qualified domain name or IP address that you configured during installation of Oracle VM Manager. The SSL certificate that was generated for HTTPS traffic is specific to this hostname. If you enter an alternate hostname or IP address, the SSL certificate may fail validation and you may see an error in your browser.



### Note

In previous version of Oracle VM Manager unencrypted HTTP traffic was allowed by default. This has been disabled to always encrypt traffic using the Secure Sockets Layer (SSL). Therefore, you should always use *https* within the protocol portion of the URL to access the Oracle VM Manager.

To connect to Oracle VM Manager on a host named `myserver.example.com`, use:

`https://myserver.example.com:7002/ovm/console`



### Important

You should ensure that if you are accessing Oracle VM Manager through a firewall, the firewall should be configured to allow TCP traffic on the port configured in Oracle VM Manager. By default, this is set to 7002.

Enter your Oracle VM Manager administration username (which is *admin* by default) in the **Username** field. This is the administration username you create during the Oracle VM Manager install. Enter the password for the Oracle VM Manager administration username in the **Password** field.



### Warning

In addition to the default *admin* user, you can also log into Oracle VM Manager using other default accounts created by the Oracle VM Manager installer, namely:

- *OracleSystemUser*
- *weblogic*

Make sure the passwords for all accounts are secure. See [Oracle VM Manager Administrator Tool \(ovm\\_admin\)](#) in the *Oracle VM Administrator's Guide* for information on managing Oracle VM users and passwords.

Now you are logged in, you can create storage repositories, server pools, add Oracle VM Servers, and create virtual machines, import resources, and so on.

The user interface displays context sensitive information, relevant to the selection in the navigator and content panes. For further information on using the user interface, please refer to the [Oracle VM Manager Getting Started Guide](#) and the [Oracle VM Manager User's Guide](#).

## 6.9 Administrative Changes

There are a number of systems administration tasks that may be performed at any time after you have completed your deployment. These include tasks such as changing the default self-signed SSL certificate that Oracle VM Manager uses, to a CA signed certificate of your own choosing, installing third-party Oracle VM Storage Connect plug-ins, or changing the Oracle VM Manager administrator password. These additional steps are discussed in the [Oracle VM Administrator's Guide](#).

---

# Glossary

## C

### control domain

A privileged domain that creates and manages other logical domains and services.

## D

### dom0

An abbreviation for *domain zero*. The management domain with privileged access to the hardware and device drivers. Dom0 is the first domain started at boot time. Dom0 has more privileges than domU. It can access the hardware directly and can manage the device drivers for other domains. It can also start new domains.

### domain

A configurable set of resources, including memory, virtual CPUs, network devices and disk devices, in which virtual machines run. A domain is granted virtual resources and can be started, stopped and rebooted independently.

See Also: [dom0](#)

See Also: [domU](#)

## G

### GPG key

The GPG key (or GnuPG key) is the key used in the GNU project's implementation of the OpenPGP key management standard. The GPG key is used to check the validity of a YUM repository, and any packages (RPMs) downloaded from the repository.

### guest

A guest operating system that runs within a domain in Oracle VM Server. A guest may be paravirtualized or hardware virtualized. Multiple guests can run on the same Oracle VM Server.

## H

### hardware virtualized machine (HVM)

A hardware virtualized guest runs on the virtualization platform as it would on a physical host. Because the device drivers of the hardware virtualized guest are emulated, dom0 must contain device emulation code to support the guest's device drivers. The other types of privileged instructions issued by the hardware virtualized guest, for example, for CPU or memory access, are not emulated, but are trapped, which also requires support from CPU vendors.

The guest's OS does not require any modification to run as a hardware virtualized guest.

A virtual machine with an unmodified guest operating system. It is not recompiled for the virtual environment. There may be substantial performance penalties running as a hardware virtualized guest. Enables Microsoft Windows™™ operating system to be run, as well as legacy operating systems. Hardware virtualization is only available on Intel® VT or AMD SVM CPUs.

### high availability

High availability (HA) help ensure the uninterrupted availability of a virtual machine. If HA is configured for your virtual machine, and if the Oracle VM Server on which it is running fails or shuts down, the virtual machine is

---

restarted on another available Oracle VM Server in the server pool. The server pool must be clustered. You must enable high availability for both the server pool and the virtual machine.

#### host computer

The physical computer on which the software is installed. Typically used to refer to either the computer on which Oracle VM Server or Oracle VM Manager is running.

## O

### OCFS2

OCFS2 is a general-purpose shared-disk cluster file system for Linux capable of providing both high performance and high availability. OCFS2 is developed by Oracle and is integrated within the mainstream Linux kernel. OCFS2 is used within Oracle VM to facilitate clustered server pools, storage of virtual machine images and for the purpose of allowing guests to share the same file system.

A clustered server pool always uses an OCFS2 file system to store the cluster configuration and to take advantage of OCFS2's heartbeat facility. There are two types of heartbeats used in OCFS2 to ensure high availability:

- The disk heartbeat: all Oracle VM Servers in the cluster write a time stamp to the server pool file system device.
- The network heartbeat: all Oracle VM Servers communicate through the network to signal to each other that every cluster member is alive.

These heartbeat functions exist directly within the kernel and are fundamental to the clustering functionality that Oracle VM offers for server pools. The server pool file system should be stored on a separate NFS server or on a small LUN if possible, as OCFS2's heartbeat facility can be disturbed by intensive I/O operations taking place on the same physical storage.

A storage repository configured on a LUN-based repository must be linked to a clustered server pool due to the nature of the OCFS2 file system. As a result, LUN-based repositories cannot be shared between multiple server pools, although it is possible to move an OCFS2 repository from one server pool to another.

For more information on OCFS2, please refer to <https://oss.oracle.com/projects/ocfs2/>.

### Oracle VM Agent

An application installed with Oracle VM Server. The Oracle VM Agent receives and processes management requests, and provides event notifications and configuration data to the Oracle VM Manager. Oracle VM Manager manages the virtual machines running on Oracle VM Server by communicating with Oracle VM Agent. It contains three components: master Oracle VM Server, Utility Server, and Virtual Machine Server.

### Oracle VM Manager

The Oracle VM Manager is the management platform, which offers an easy-to-use, web-browser interface as well as a command-line interface (CLI). The Oracle VM Manager tracks and manages the resources available in your virtual environment. The user interface, which is an Application Development Framework (ADF) web application, allow you to easily manage Oracle VM Server pools. Manages virtual machine life cycle, including creating virtual machines from templates or from installation media, deleting, powering off, uploading, deployment and live migration of virtual machines. Manages resources including ISO files, templates and shared virtual disks.

### Oracle VM Server

A self-contained virtualization environment designed to provide a lightweight, secure, server-based platform for running virtual machines. The Oracle VM Server comprises a hypervisor and a privileged domain (called dom0) that allow multiple domains or virtual machines (that is, Linux, Solaris, Windows, and so on) to run on one physical machine. Includes Oracle VM Agent to enable communication with Oracle VM Manager.

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The Oracle VM Server for x86 incorporates an open source Xen hypervisor component, which has been customized and optimized to integrate into the larger, Oracle - developed virtualization server. The Oracle VM Server for x86 is also responsible for access and security management and generally acts as the server administrative entity, because the hypervisor's role is limited.

On Oracle VM Server for SPARC systems, the SPARC hypervisor is built into the SPARC firmware and is generally referred to as the Logical Domains Manager (LDM). As with the Xen hypervisor, each virtual machine is securely executed on a single computer and runs its own guest Oracle Solaris operating system

## S

### server pool

Logically an autonomous region that contains one or more physical Oracle VM Servers. Presents a unified view of the storage where the virtual machines reside, and groups the users of these virtual machines into a single community called a *group*, in which each user is a server pool member.

Each server pool can have up to 32 physical servers. Each Oracle VM Server can be a member of only one server pool. The server pool is the operational unit of Oracle VM. Policies are configured and enforced at the server pool level.

A minimum cluster of three Oracle VM Server nodes in each server pool is strongly recommended for high availability. If one node in the cluster experiences a hardware failure or is shut down for maintenance, failover redundancy is preserved with the other two nodes. Having a third node in the cluster also provides reserve capacity for production load requirements.

## V

### virtual machine (VM)

A guest operating system and the associated application software that runs within Oracle VM Server. May be paravirtualized or hardware virtualized machines. Multiple virtual machines can run on the same Oracle VM Server.

### VLAN

A layer-2 network may be segregated into partitions, at the switch or router, so that network traffic is isolated to a distinct broadcast domain. VLANs can be tagged so that a trunk can transport data for all of the different VLANs in a network.

VLANs are commonly used in large networks to help simplify network design, provide mechanisms to achieve better scalability, and to improve security.

## W

### WebLogic

Oracle WebLogic Server is a platform that includes an application server that can run java applications within a web-based framework. Oracle VM Manager runs as an application within Oracle WebLogic Server, taking advantage of many of Oracle WebLogic Server's many features to deliver a robust web UI through which Oracle VM can be fully managed.

The installation process behind Oracle VM Manager automatically installs and configures Oracle WebLogic Server on the system where Oracle VM Manager is installed. During this process, a *weblogic* user is set up within Oracle WebLogic Server to manage Oracle WebLogic Server configuration and to administer the underlying system. An *admin* user is also set up within Oracle WebLogic Server and is given permission to access the Oracle VM Manager application. A typical setup uses the same password for both of these users, although

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this is not always the case and it is possible to configure a different password for each user depending on your requirements.

In general, users of the Oracle VM Manager application should avoid attempting to access the underlying Oracle WebLogic Server, or to change any configuration parameters here without guidance from Oracle Support.

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