Oracle® VM

Manager Getting Started Guide for Release 3.4

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Abstract

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Abstract

This tutorial describes how to get started with Oracle VM, and walks you through discovering Oracle VM Servers, registering storage, setting up networking, setting up a storage repository and importing resources into it, creating a server pool and creating virtual machines.

You should read and follow this tutorial if you are new to Oracle VM and want to quickly get up and running.

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Preface

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The Oracle VM Manager Getting Started Guide describes key tasks for users who are learning how to work with Oracle VM.

1 Audience

The Oracle VM Manager Getting Started Guide is intended for system administrators and end users who want to get started with 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:
	`dd if=/dev/rdsk/c0t1d0s6 of=/dev/rst0 bs=10b \`
	`count=10000`

braces { }	Braces indicate required items: `.DEFINE {macro1}`
brackets [ ]	Brackets indicate optional items: `cvtcrt termname [outfile]`
ellipses ...	Ellipses indicate an arbitrary number of similar items: `CHKVAL fieldname value1 value2 ... valueN`
italics	Italic type indicates a variable. Substitute a value for the variable: `library_name`
vertical line |	A vertical line indicates a choice within braces or brackets: `FILE filesize [K|M]`
forward slash /	A forward slash is used as an escape character in the Oracle VM Manager Command Line Interface to escape the special characters ", ', ?, \, /, <, >. Special characters need only be escaped when within single or double quotes: `create Tag name=MyTag description="HR/'s VMs"`

4 Conventions

The following text conventions are used in this document:

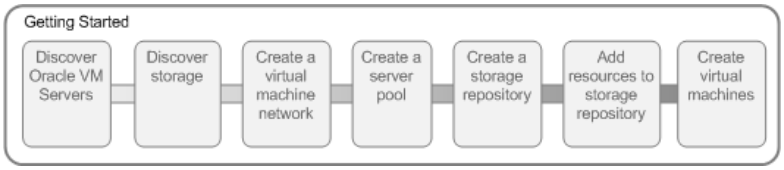
Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates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

Chapter 1 Getting Started with Oracle VM

This tutorial describes how to get started with Oracle VM, and walks you through discovering Oracle VM Servers, registering storage, setting up networking, setting up a storage repository and importing resources into it, creating a server pool and creating virtual machines.

You should read and follow this tutorial if you are new to Oracle VM and want to quickly get up and running.

This tutorial includes a visual indicator graphic to show you where you are in relation to the tutorial steps, as shown below.



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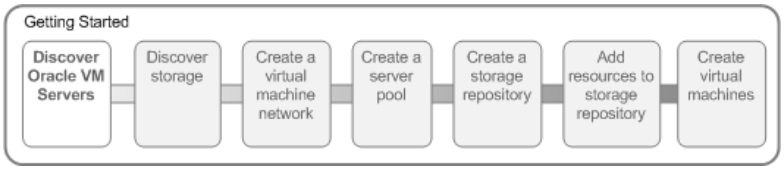
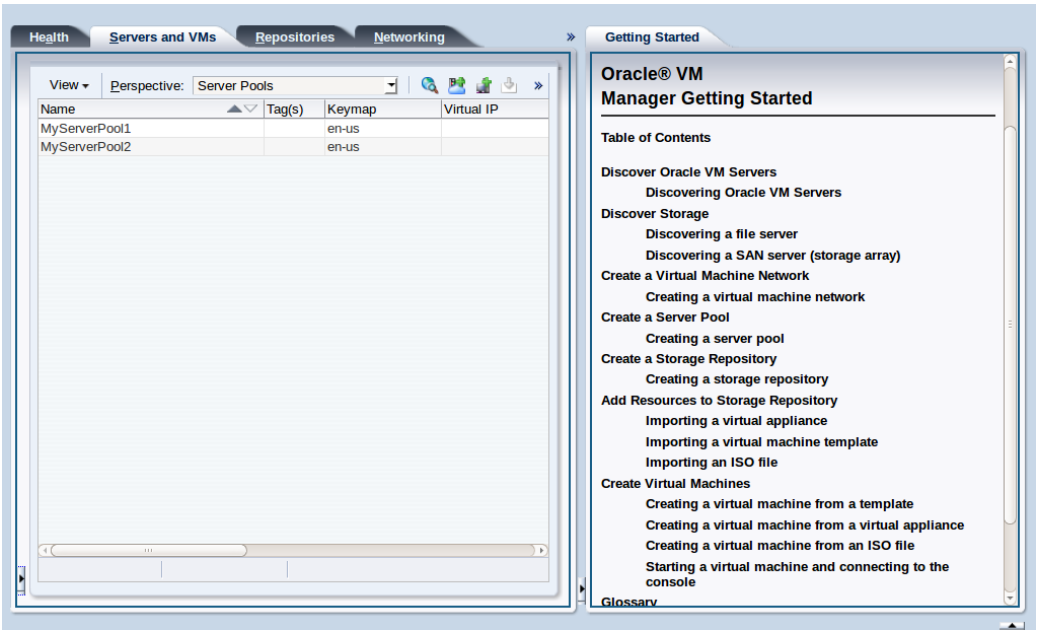


When you log into *Oracle VM Manager*, the **Servers and VMs** tab is displayed.

Figure 2.1 Default screen



When you first log in a tutorial is displayed in the **Getting Started** tab. To hide the tutorial, click the **Collapse Pane** ‣ arrow to the right of the management pane.

When you add *Oracle VM Servers* to your Oracle VM Manager environment, this process is known as *discovering* Oracle VM Servers. This term is used often in this tutorial. The first thing you should do to set up your virtualization environment is to discover your Oracle VM Servers.

When an Oracle VM Server is discovered, it contains some basic information about itself, and about any immediate connectivity to shared storage arrays, but it is considered to be in an unconfigured state. Any storage attached to the Oracle VM Server is also discovered. For more information on discovering an Oracle VM Server, see Discover Servers.

Depending on your hardware and networking configuration, external storage may be automatically detected during discovery of the Oracle VM Servers. This is always the case with local *OCFS2* storage on an Oracle VM Server.

When you have discovered your Oracle VM Servers, you should next discover your storage.

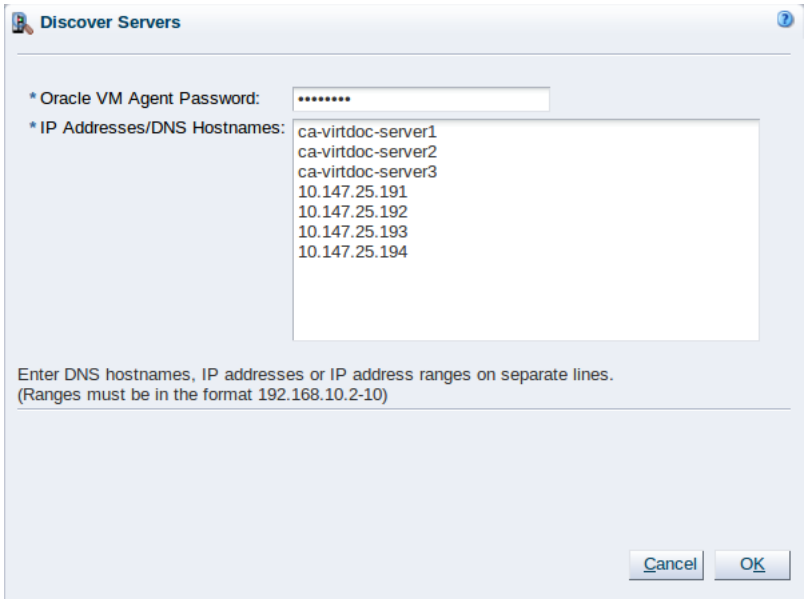
2.1 Discovering Oracle VM Servers

This example walks through discovering three Oracle VM Servers. Replace the IP addresses for those of your own servers.

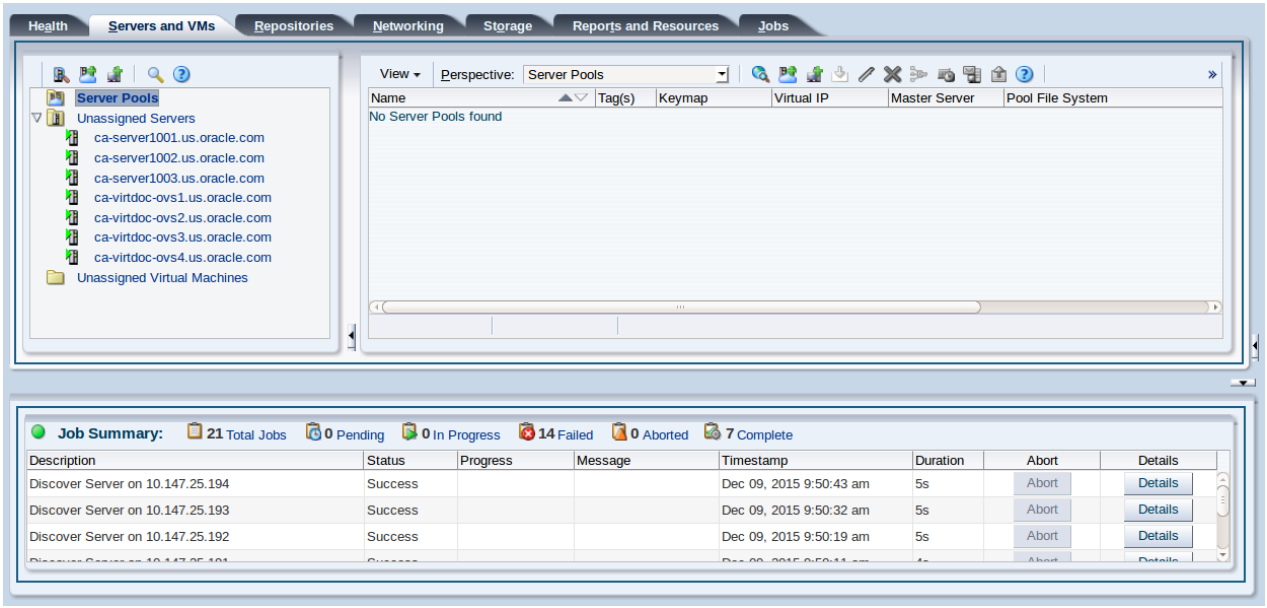
To discover Oracle VM Servers:

1. Click the **Servers and VMs** tab, if not already selected.
2. Click **Discover Servers** in the toolbar.

3. Enter the Oracle VM Agent password for the Oracle VM Server(s) to be discovered, this should be set to the same password for each server that is intended to be grouped together in a *server pool*. Also enter the IP addresses or hostnames for the Oracle VM Server(s). Click **OK**.



The Oracle VM Servers are discovered and added to the **Unassigned Servers** folder in the **Servers and VMs** tab. The displayed name of a discovered Oracle VM Server is the assigned DNS name, and not the IP address. You can edit the name after the Oracle VM Server is discovered. For more information on editing an Oracle VM Server, see Edit Server.


Health
Servers and VMs
Repositories
Networking
Storage
Reports and Resources
Jobs
Server Pools
Unassigned Servers
ca-server1001.us.oracle.com
ca-server1002.us.oracle.com
ca-server1003.us.oracle.com
ca-virtdoc-ovs1.us.oracle.com
ca-virtdoc-ovs2.us.oracle.com
ca-virtdoc-ovs3.us.oracle.com
ca-virtdoc-ovs4.us.oracle.com
Unassigned Virtual Machines
View
Perspective: Server Pools
Name
Tag(s)
Keymap
Virtual IP
Master Server
Pool File System
No Server Pools found
Job Summary:
21 Total Jobs
0 Pending
0 In Progress
14 Failed
0 Aborted
7 Complete
Description
Status
Progress
Message
Timestamp
Duration
Abort
Details
Discover Server on 10.147.25.194
Success
Dec 09, 2015 9:50:43 am
5s
Abort
Details
Discover Server on 10.147.25.193
Success
Dec 09, 2015 9:50:32 am
5s
Abort
Details
Discover Server on 10.147.25.192
Success
Dec 09, 2015 9:50:19 am
5s
Abort
Details

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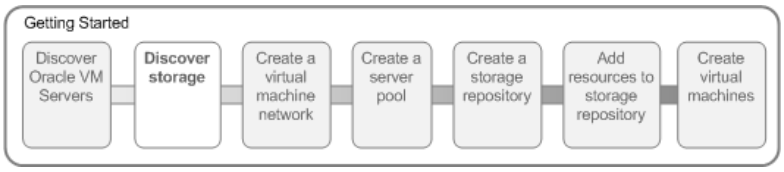


Storage refers to two different types of disk space: the space available for environment resources such as virtual machine templates and ISO files, and the logical or physical disks used by *virtual machines*.

Virtual machines use two types of storage, as follows:

- **Virtual disks**: disk image files on a file system.
- **Raw physical disks**: LUNs accessed directly by the virtual machine.

A storage repository can be any of the following:

- iSCSI: Abstracted LUNs or raw disks accessible over existing Ethernet infrastructure (SAN Servers).
- FCP: Abstracted LUNs or raw disks accessible over Fibre Channel host bus adapters (SAN Servers).
- NFS: File-based storage over existing Ethernet infrastructure (NAS or File Servers).

The first step, before you can discover storage, is to configure the storage repositories that contain environment resources. You configure the storage repository outside of the Oracle VM environment. This step includes tasks such as creating and exporting file system mounts on an NFS server. For more information about discovering and configuring storage, see Storage Tab.

In addition to the storage entities you require for storage repositories, you should make sure you leave at least 12 GB of disk space for each *server pool file system*. The server pool file system is used to hold the server pool and cluster data, and is also used for cluster heartbeating. You create server pool file systems the same way you create storage entities for storage repositories. For more information about the use and management of clusters and server pools, see How do Server Pool Clusters Work?.

Your storage may have been automatically discovered when you discovered your Oracle VM Servers. If not, you must discover it. If your storage server exposes a writable file system, discover the file server using the procedure in Discover File Server. If your storage server exposes raw disks (SAN volumes, iSCSI targets and LUNs) discover the SAN servers using the procedure in Discover SAN Server.

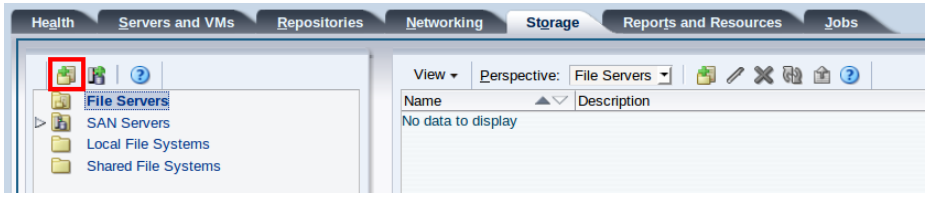
The following examples show how to discover a file server, and a SAN server so that your storage is ready to be used to create a storage repository or server pool file system.

3.1 Discovering a file server

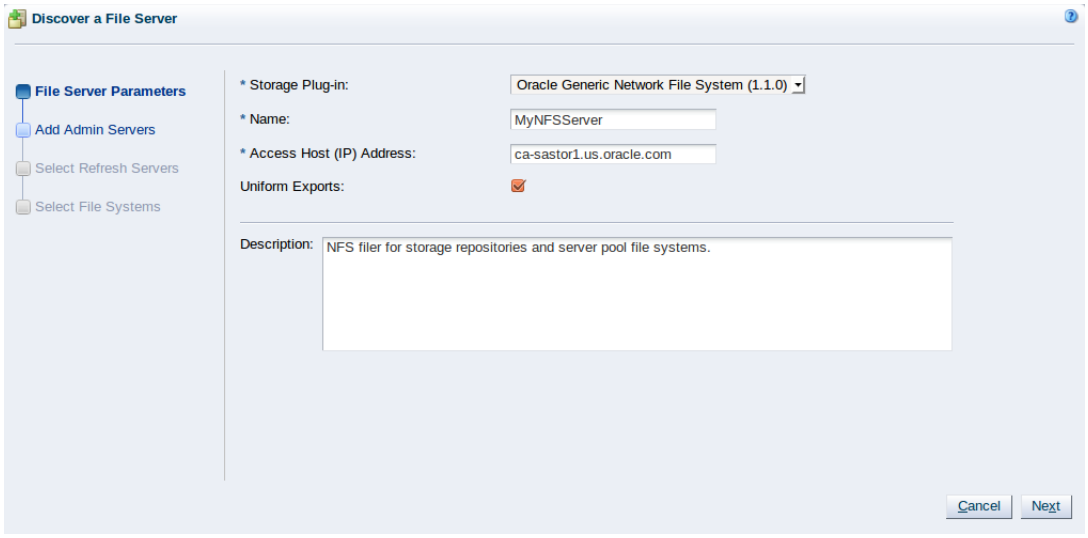
This example uses a *file server* storage type (an NFS share). Replace the IP address for that of your own file server.

To discover a file server:

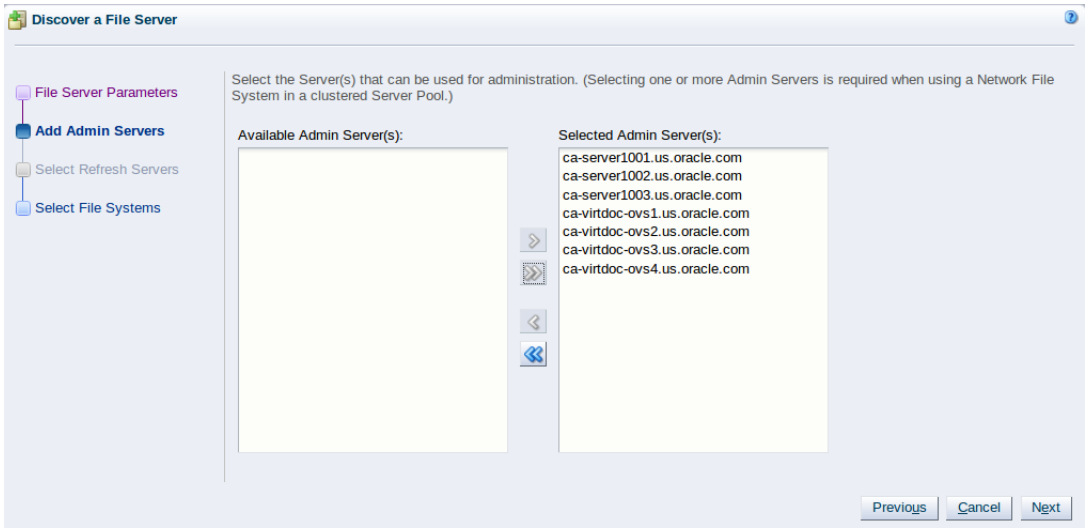
1. Click the **Storage** tab.
2. Select **Discover File Server** from the toolbar.



3. The **Discover a File Server** wizard is displayed. Select the Oracle VM Storage Connect plug-in for the storage type, in this case we are using the **Oracle Generic Network File System** Oracle VM Storage Connect plug-in. Enter a name for the storage, and the IP address of your file server, then click **Next**.

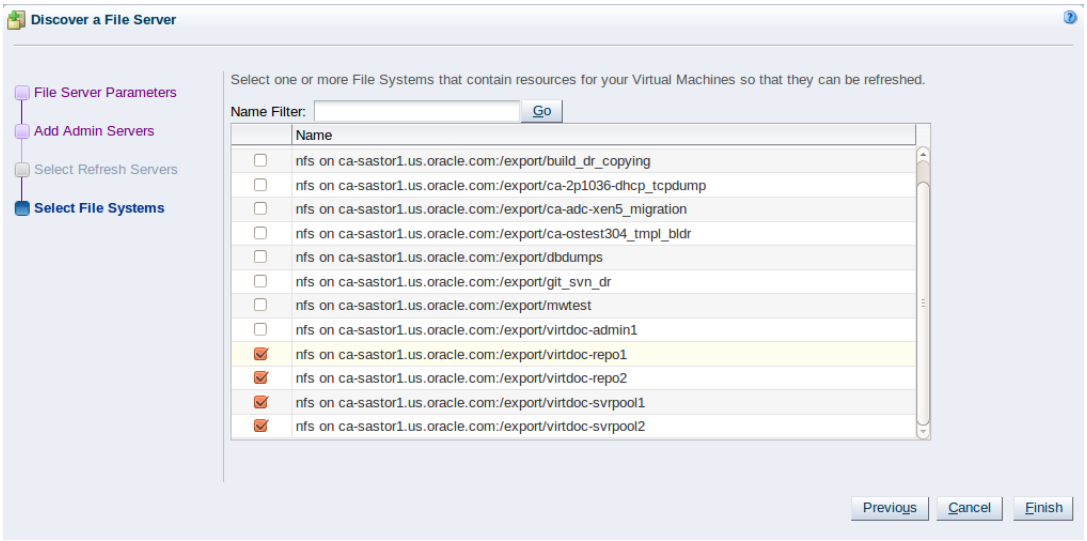


4. Assign one or more Oracle VM Servers to perform any required administration on the file server. Click **Next**.



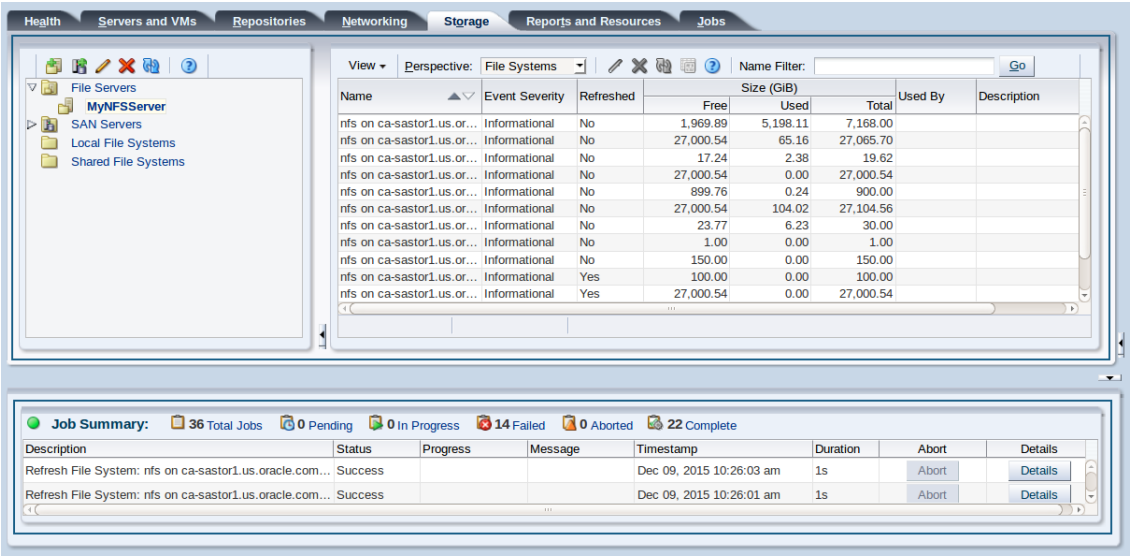
5. If any file systems on the file server contain existing virtual machine resources they are listed on this step of the wizard. Select the corresponding check box to discover the content of the selected file

systems. This allows Oracle VM Manager to add the existing resources to the system. Click **Finish** to complete the file server discovery.



At the end of the file server discovery a refresh operation is triggered to make sure all file systems available on the file server appear in Oracle VM Manager. When the operation is complete, the available file systems are displayed in the management pane when you select the file server.

You can change the name of the file systems by selecting the file system in the table and clicking **Edit File System** in the management pane toolbar.

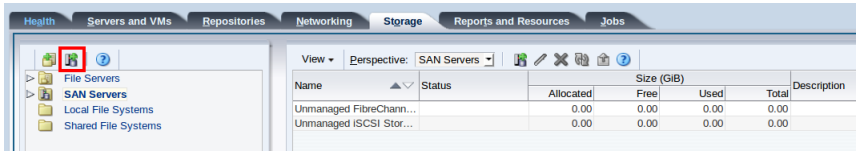


3.2 Discovering a SAN server (storage array)

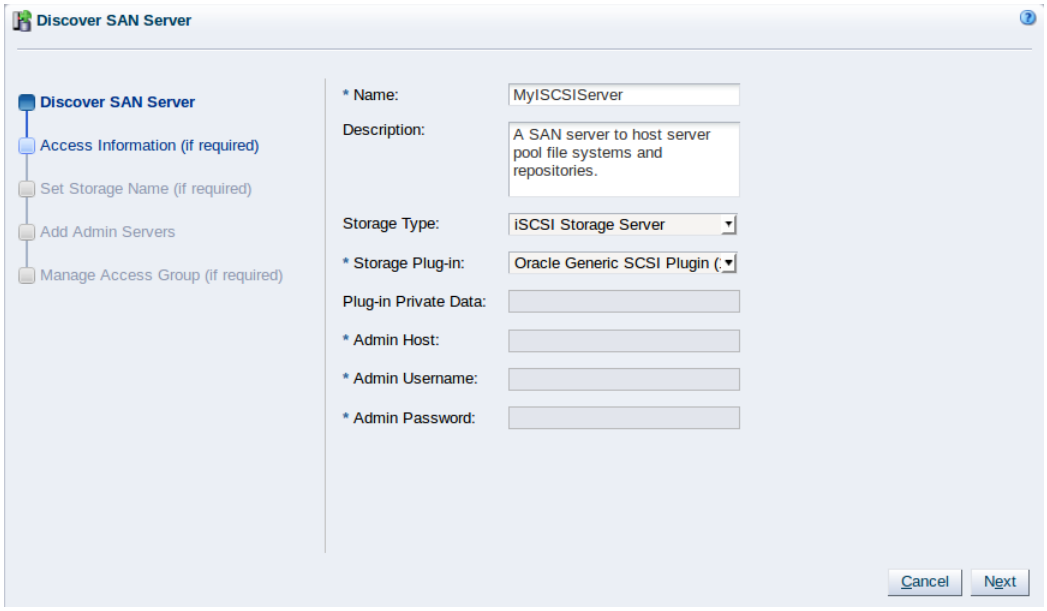
This example uses an iSCSI SAN server. Replace the information here for that of your own SAN server.

To discover a SAN server:

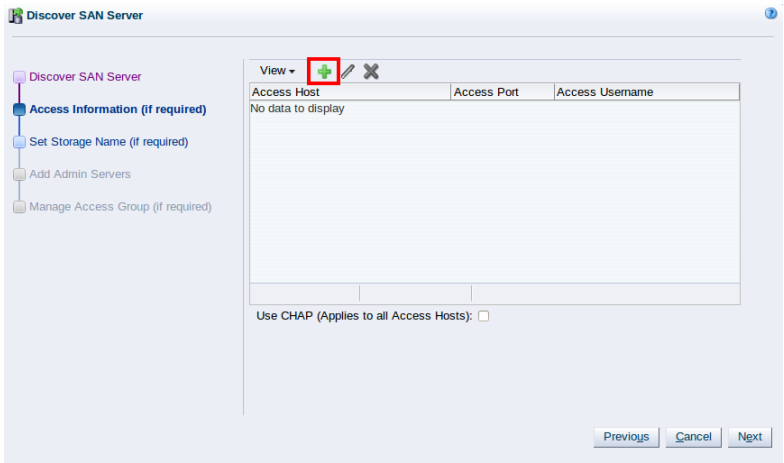
1. Click the **Storage** tab.
2. Click **Discover SAN Server** in the toolbar.



3. The **Discover SAN Server** wizard is displayed. Enter a name for the SAN server and optional description. Select **iSCSI Storage Server** from the **Storage Type** drop-down list, and the plug-in type for your SAN server, which in this example is **Oracle Generic SCSI Plugin**. Click **Next**.

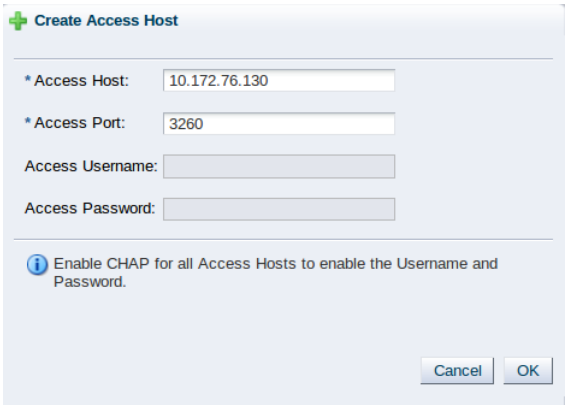


4. The **Access Information** step is displayed.

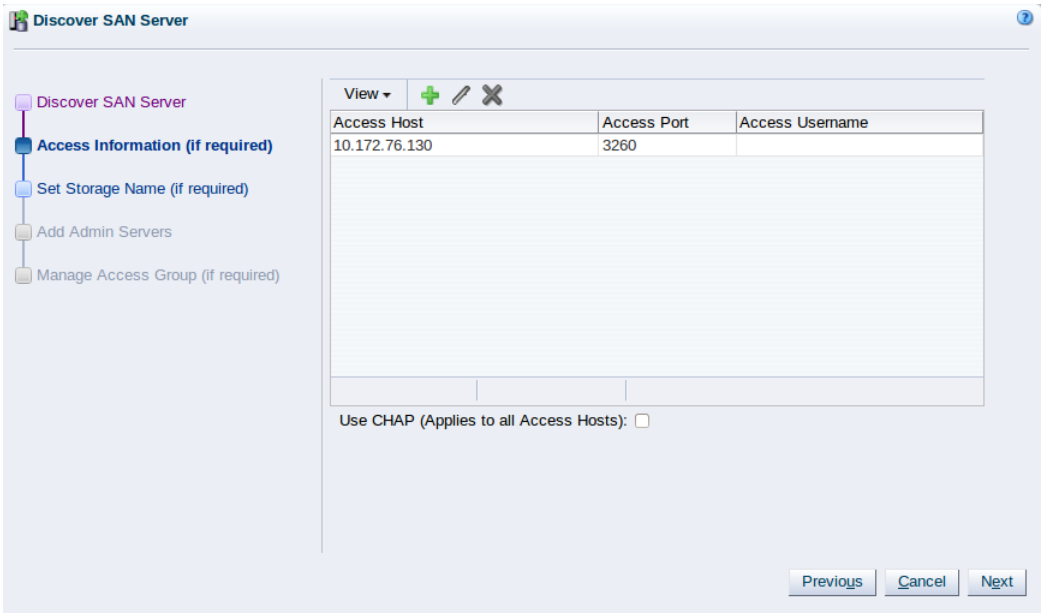


Enter one or more access hosts to create network paths to the storage. To add multiple paths (for *multipathing*), add multiple access hosts. Click **Create New Access Host** + to add access hosts for the SAN server.

The **Create Access Host** dialog box is displayed.



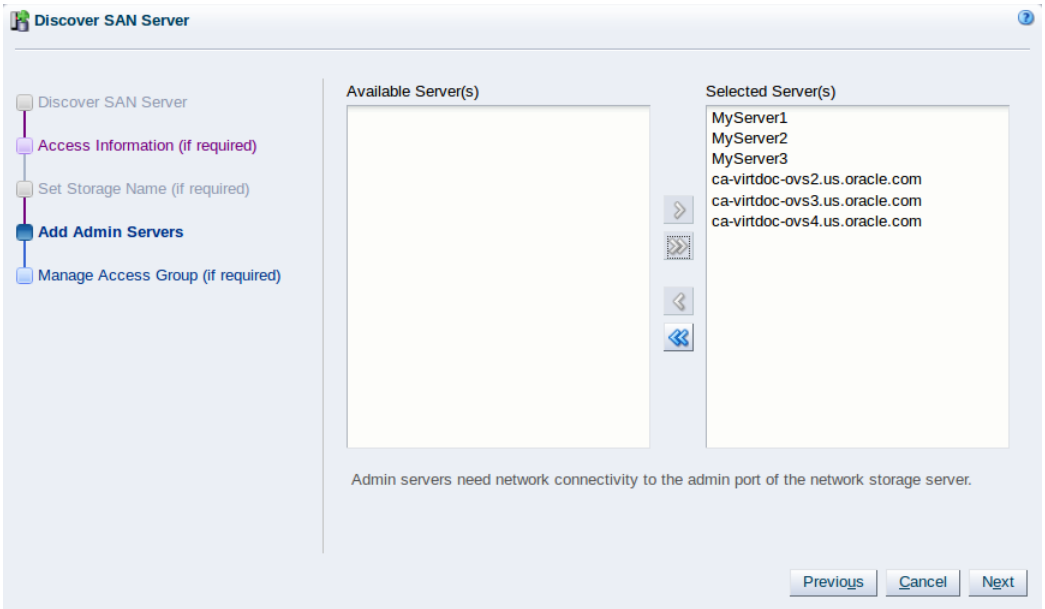
Enter the IP address and access port of the host that has access to the SAN server. Typically, this is the IP address of the SAN server and the default access port of `3260`. Click **OK**.



Repeat this step for each access host, for example, you may have access hosts such as 10.172.76.130, 10.172.76.131, 10.172.77.130, and 10.172.77.131 to enable multipathing. When you have entered all access hosts, click **Next**.

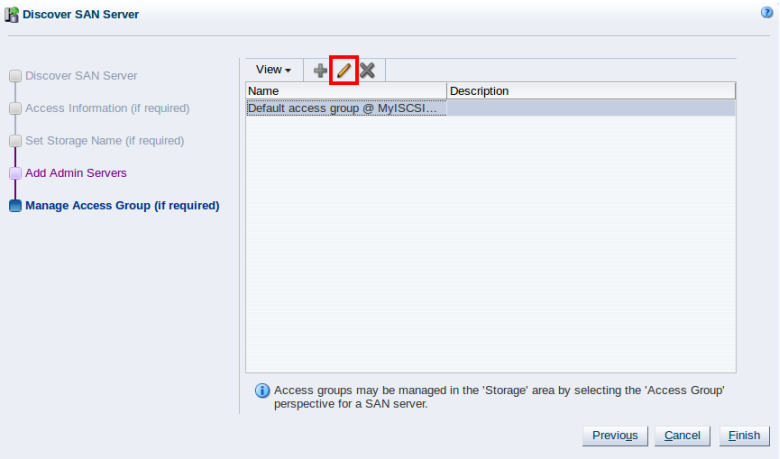
5. For most SAN servers the wizard moves straight to the **Add Admin Servers** step. However, if you have vendor-specific storage hardware with an admin host handling more than one storage array, such as certain HP EVAs and EMC arrays, enter the name of the array to be used for the new SAN server. The wizard recognizes this type of storage and displays the **Set Storage Name** step when applicable. Enter the storage name and click **Next**.

6. The **Add Admin Servers** step is displayed.

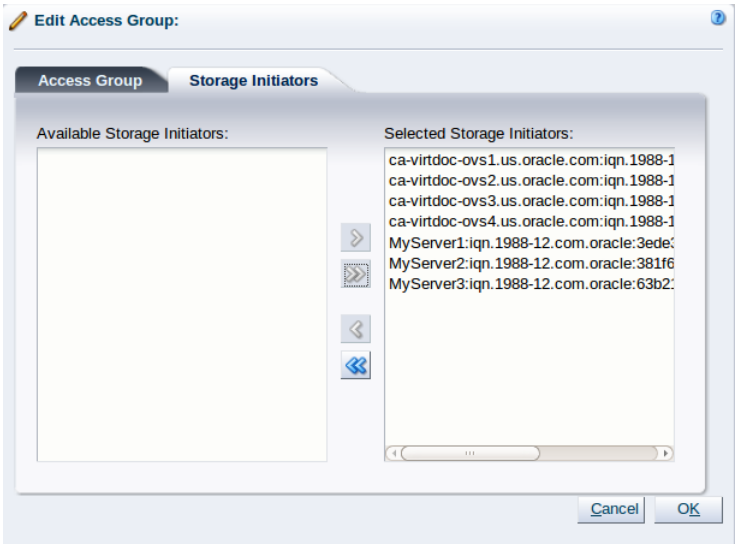


Use the arrow buttons to move the required Oracle VM Servers to the **Selected Servers** box. This selects which Oracle VM Servers are to be made available to perform Oracle VM related admin operations on the SAN server. Click **Next**.

7. The **Manage Access Group** step is displayed.



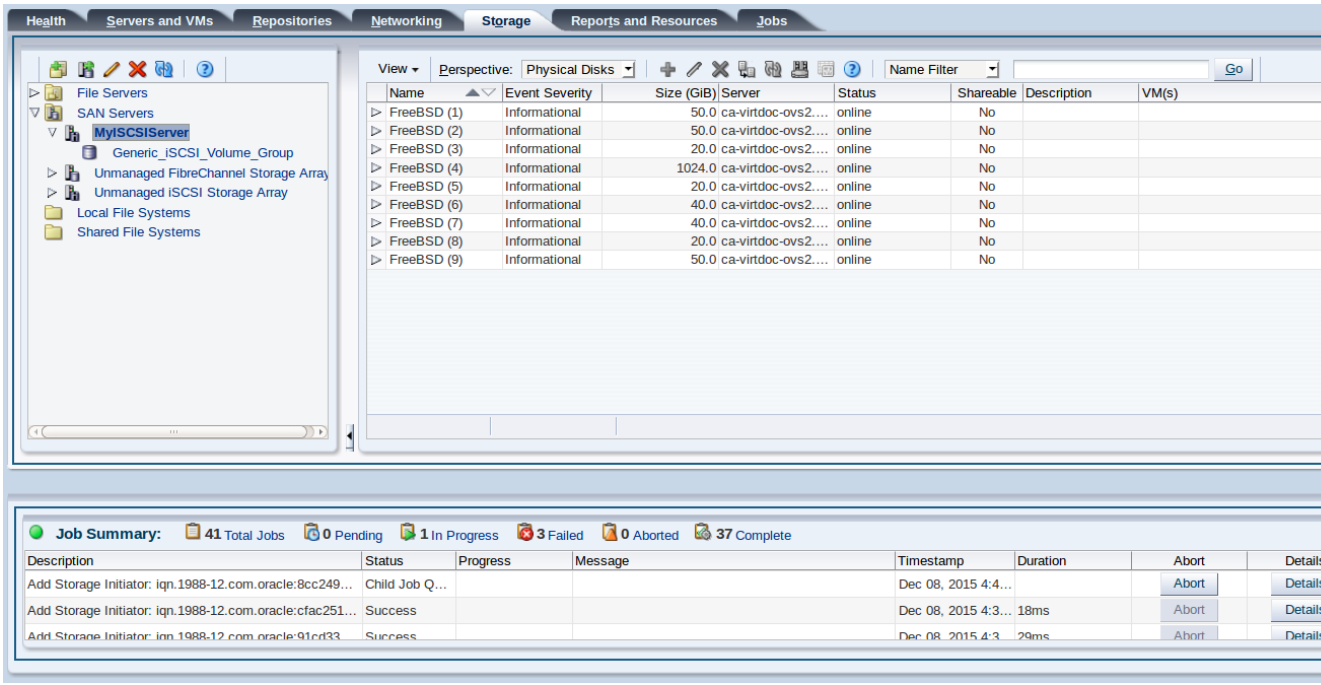
This example uses a generic ISCSI SAN server, so a default access group is created. Select the default access group in the table and click **Edit Access Group** , then select the **Storage Initiators** tab in the **Edit Access Group** dialog box.



Select and move the Oracle VM Servers into the **Selected Storage Initiators** box to add storage initiators to each Oracle VM Server. Click **OK**.

8. Click **Finish** to complete the SAN server discovery operation.

9. Select the SAN server in the navigation pane, and select **Physical Disks** from the **Perspective** drop-down list in the management pane. The list of physical disks on the server is listed in the table. These disks are automatically presented to the selected Oracle VM Servers.



Chapter 4 Create a Virtual Machine Network

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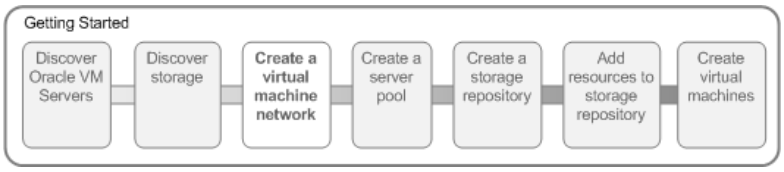


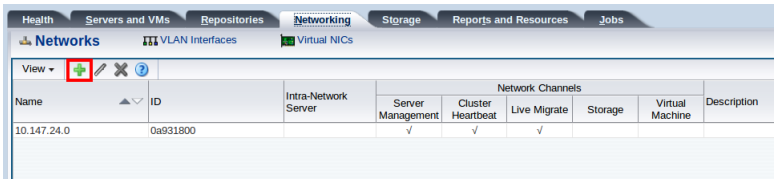
Oracle VM has a number of network functions: Server Management, Live Migrate, Cluster Heartbeat, Virtual Machine, and Storage. The Server Management, Live Migrate and Cluster Heartbeat roles are automatically assigned to the management network when you discover Oracle VM Servers. The Virtual Machine and Storage roles are not automatically created, and you must manually create these. The Storage role is only required for iSCSI-based storage, so for the purposes of the NFS-based storage used in this tutorial, is not required. We do, however, need to create a network with the Virtual Machine role. This can be assigned to the existing management network, or a new network can be created and the Virtual Machine role assigned to it. This tutorial shows you how to create a new network and assign the Virtual Machine role to it. See Understanding Networks for information on creating and configuring networks.

4.1 Creating a virtual machine network

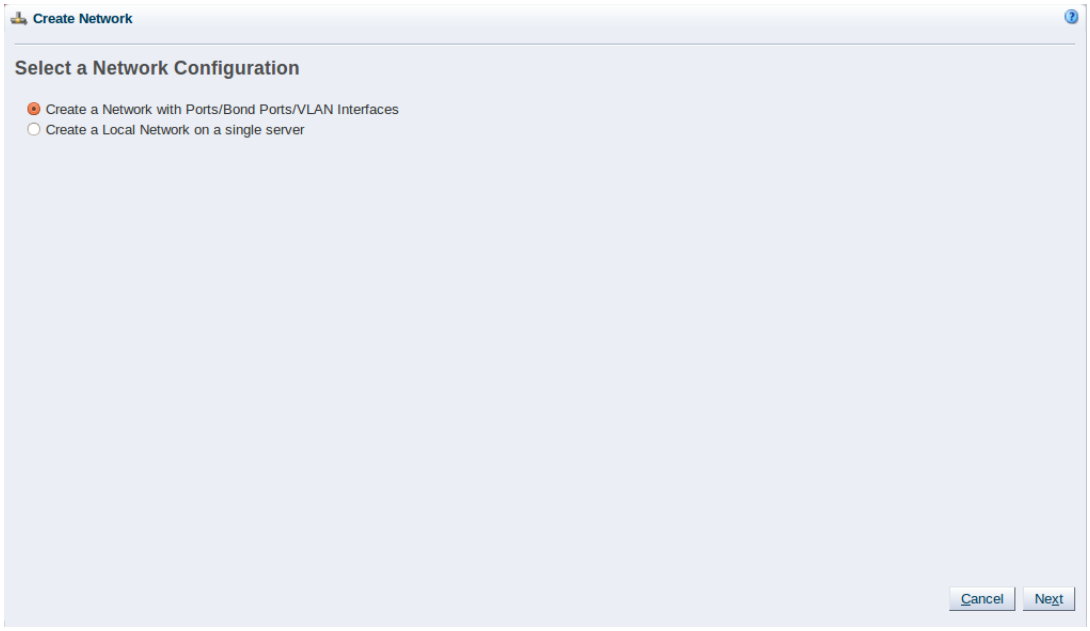
This example creates a virtual machine network using network interface cards (NICs) on the Oracle VM Servers discovered earlier. In this example we are using bonded Ethernet ports. Each Oracle VM Server should have a set of Ethernet ports to use for the virtual machine network. Oracle recommends at least two ports per Oracle VM Server, one for the management network, and one for a network with the Virtual Machine role. Replace the information in this example with that of your Oracle VM Servers and environment.

To create a virtual machine network:

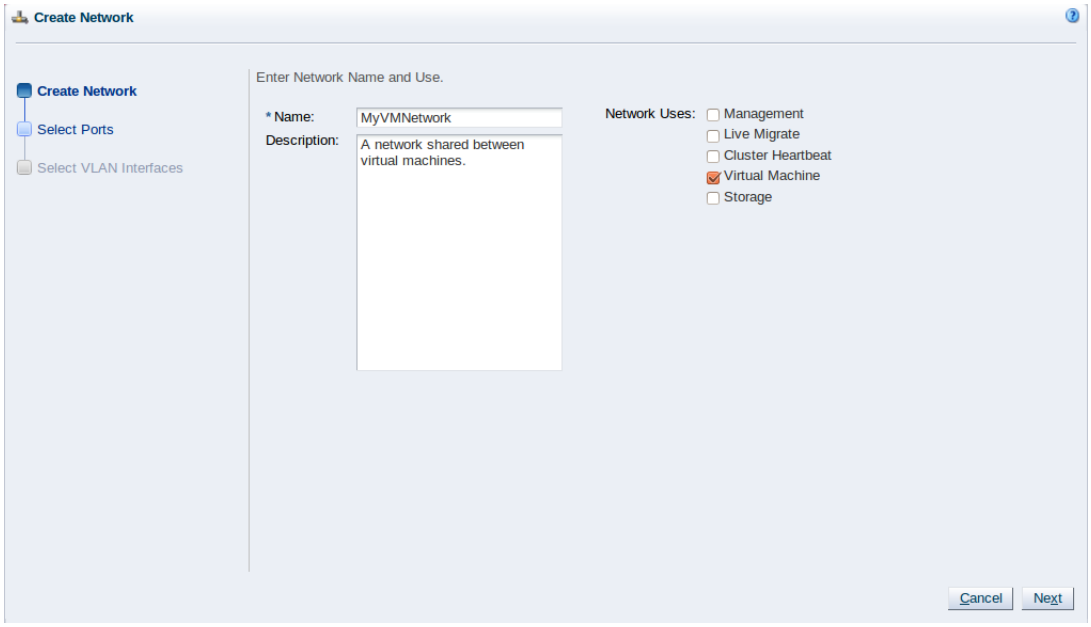
1. Click the **Networking** tab, then the **Networks** subtab.



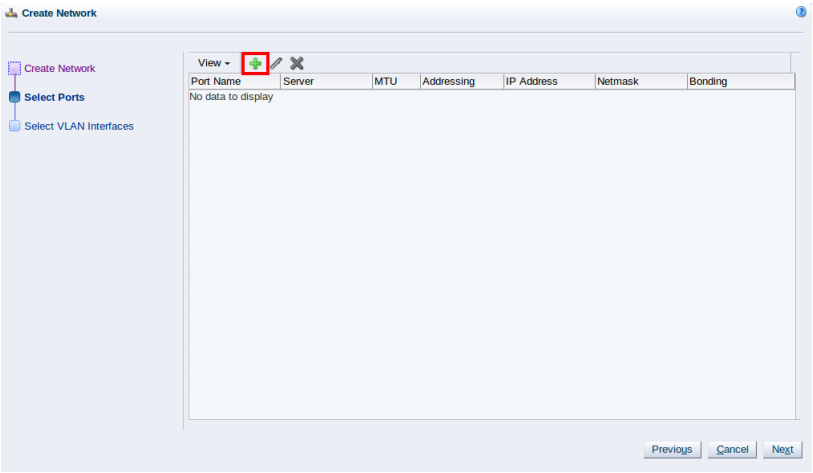
2. Click **Create New Network...** in the toolbar to start the **Create Network** wizard. In this example we use the Ethernet ports on each Oracle VM Server to create a network for virtual machine traffic. Select **Create a network with Ports/Bond Ports/VLAN Interfaces** and click **Next**.



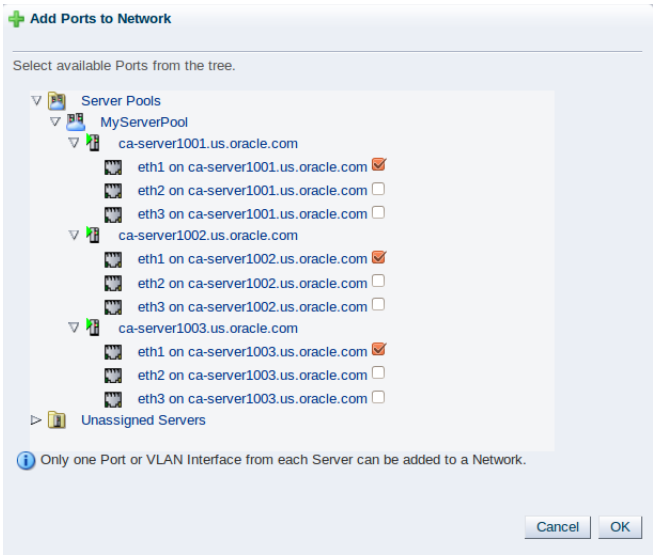
3. At the **Create Network** step of the wizard, enter a name for the network and select the network functions. The **Network Uses** fields are where you decide which network functions are to be assigned to the network. Select **Virtual Machine** and click **Next**.



4. At the **Select Ports** step of the wizard, we need to add an Ethernet port from each Oracle VM Server and add them to the network. Click **Add New Ports...** .

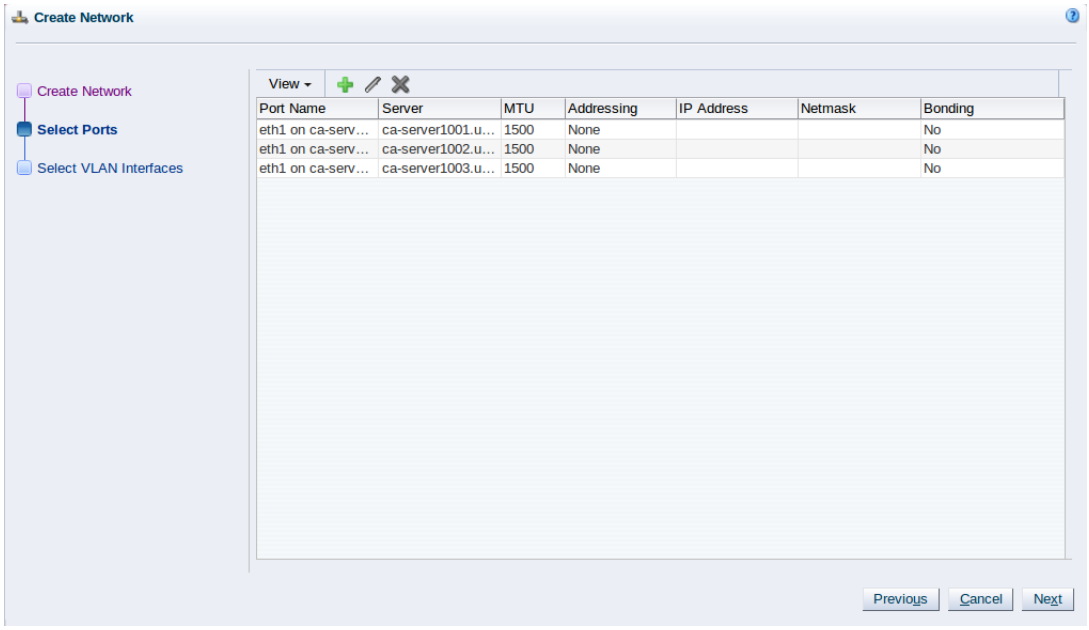


5. The **Add Ports to Network** dialog box is displayed.

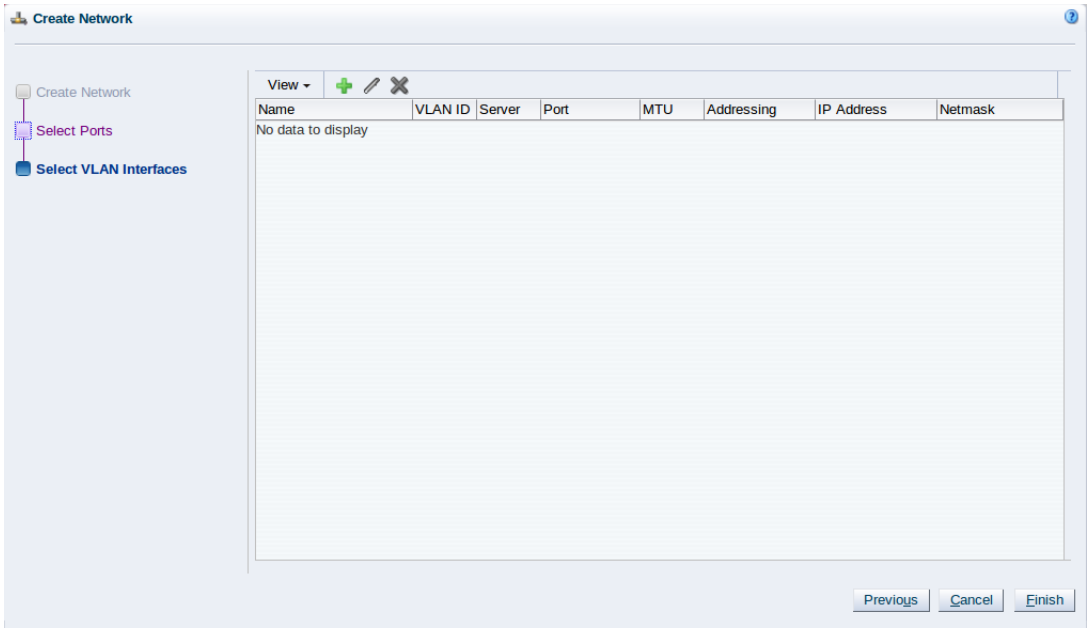


   Expand the **Unassigned Servers** folder until you see all the ports for each Oracle VM Server. Select a free port to use on each Oracle VM Server for the network and click **OK**.

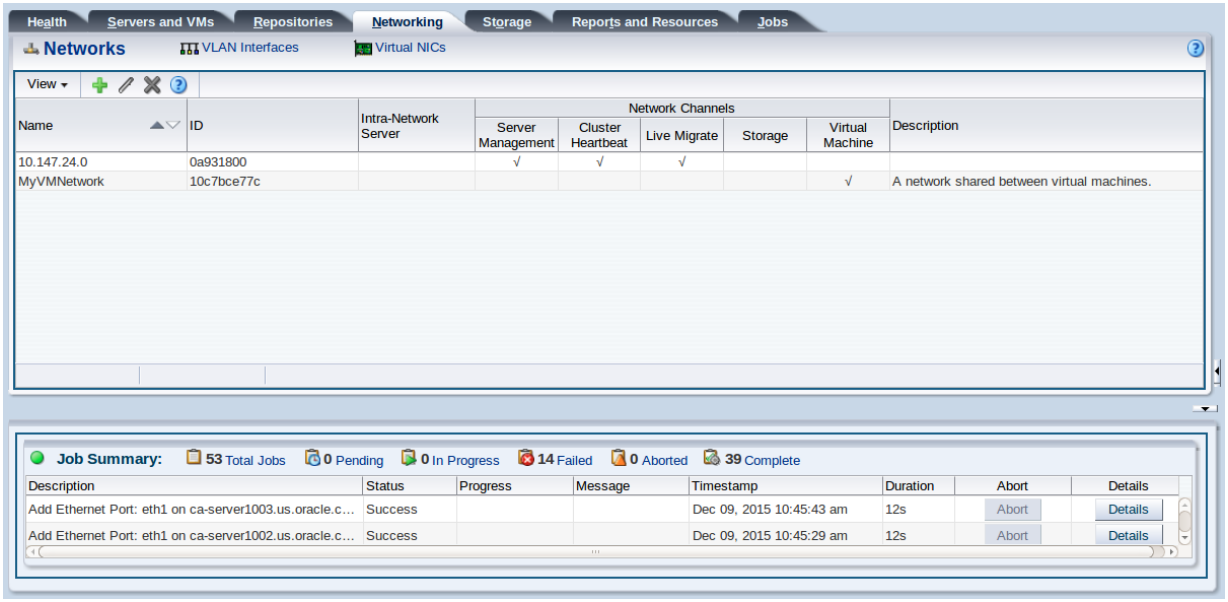
6. The **Select Ports** step of the wizard is displayed again. Click **Next**.



7. The **Select VLAN Interfaces** step of the wizard is displayed. In this example we are not using VLAN interfaces, so click **Finish** to create the network.



The virtual machine network is created and listed in the table. This virtual machine network is ready to use when creating virtual machines.


Health
Servers and VMs
Repositories
Networking
Storage
Reports and Resources
Jobs
Networks
VLAN Interfaces
Virtual NICs
View
Name
ID
Intra-Network Server
Network Channels
Server Management
Cluster Heartbeat
Live Migrate
Storage
Virtual Machine
Description
10.147.24.0
0a931800
MyVMNetwork
10c7bce77c
A network shared between virtual machines.
Job Summary:
53 Total Jobs
0 Pending
0 In Progress
14 Failed
0 Aborted
39 Complete
Description
Status
Progress
Message
Timestamp
Duration
Abort
Details
Add Ethernet Port: eth1 on ca-server1003.us.oracle.c…
Success
Dec 09, 2015 10:45:43 am
12s
Abort
Details
Add Ethernet Port: eth1 on ca-server1002.us.oracle.c…
Success
Dec 09, 2015 10:45:29 am
12s
Abort
Details

Chapter 5 Create a Server Pool

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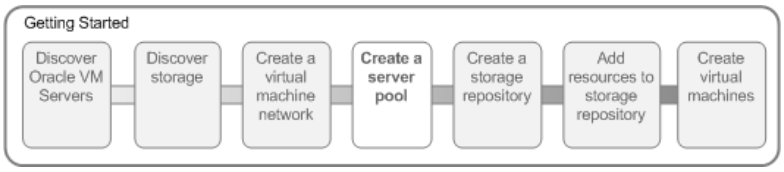


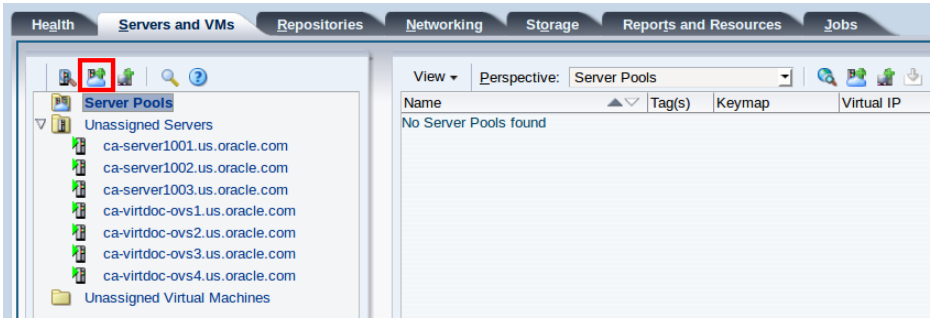
A *server pool* contains a group of *Oracle VM Servers*, which as a group perform *virtual machine* management tasks, such as *High Availability* (HA), implementation of resource and power management policies, access to networking, storage and repositories.

5.1 Creating a server pool

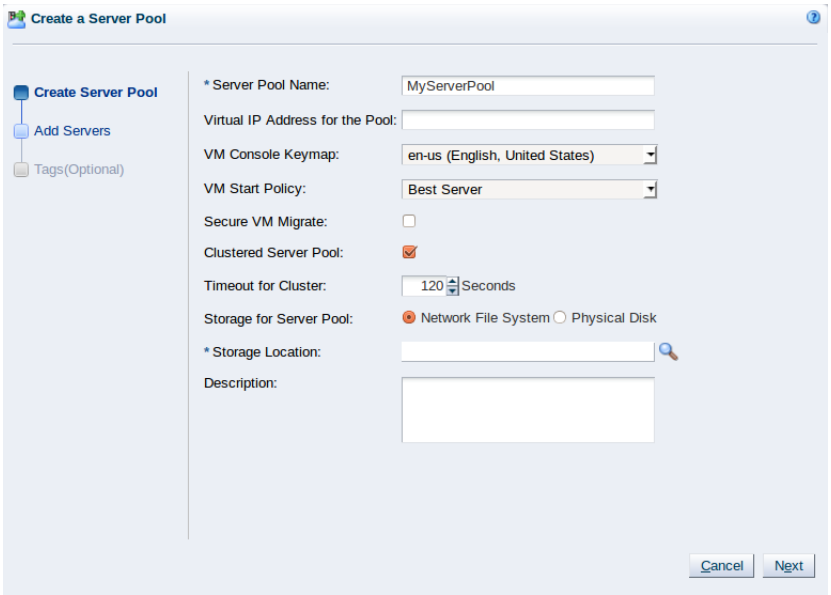
This example creates a server pool using the discovered Oracle VM Servers, and the server pool file system on the file system-based storage (NFS server). You need an IP address to use as the virtual IP address to enable clustering and HA. Replace the server pool information in this example with that of your environment.

To create a server pool:

1. Click the **Servers and VMs** tab.
2. Click **Create Server Pool** in the toolbar.



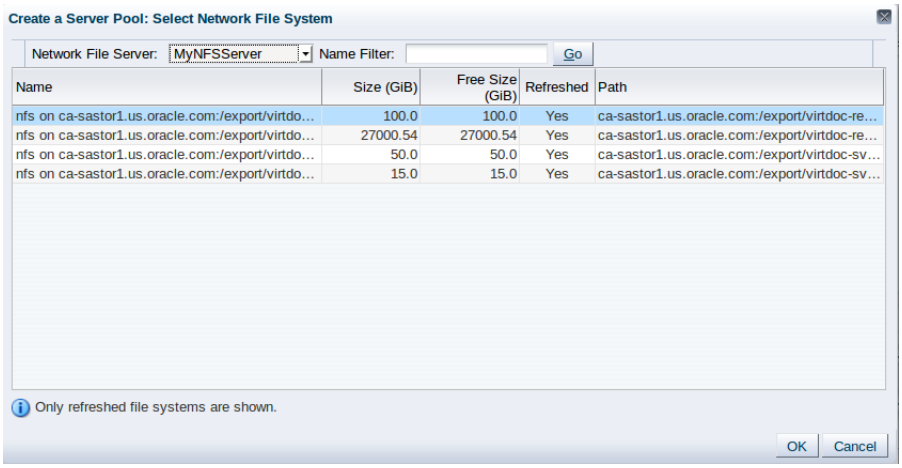
3. The **Create a Server Pool** wizard is displayed. Enter the server pool information.



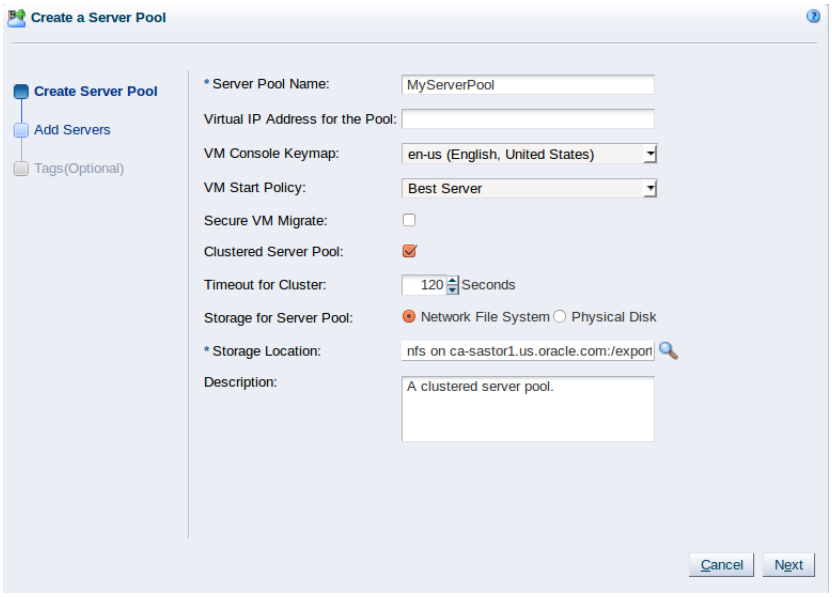
Enter a name for the server pool. Note that you may also enter a virtual IP address for the server pool, however this is only used if all of the servers within the server pool belong to a release prior to Oracle VM Server Release 3.4.1.

Select **Clustered Server Pool** to enable clustering of the Oracle VM Servers in the server pool, which is required to enable HA.

The *server pool file system* is used to hold the server pool and cluster data, and is also used for cluster heartbeating. If you are using a file server for the server pool file system, select **Network File System** as the storage type to use for the server pool. If you are using a physical disk on a storage array as the server pool file system, select **Physical Disk** as the storage type. Click **Storage Location** to search for the server pool file system.

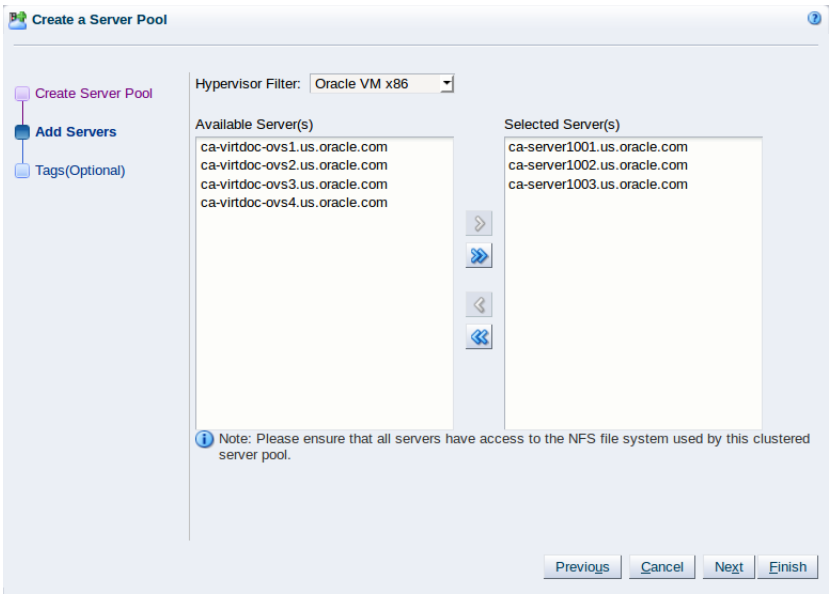


Select the file system to use for the server pool file system and click **OK**.

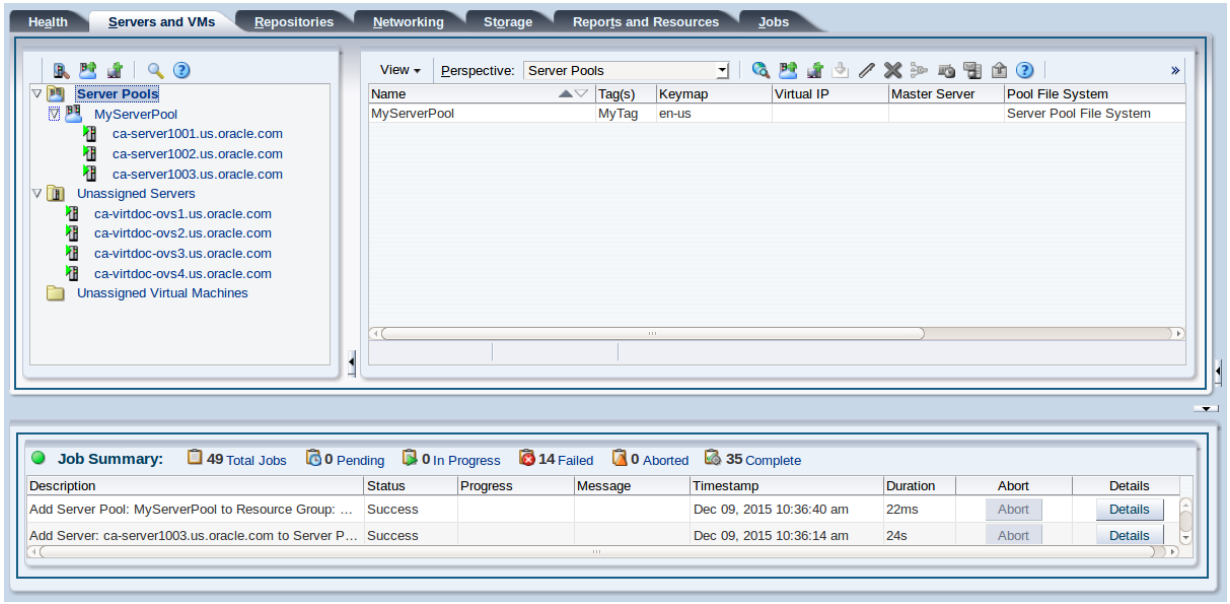


Click **Next** to add Oracle VM Servers to the server pool.

4. The **Add Servers** step of the wizard is displayed. The **Hypervisor Filter** field allows you to specify the hypervisor type to use for the server pool. Add Oracle VM Servers to the **Selected Servers** column and click **Finish**.



The Oracle VM Servers are added to the server pool and ready to use to create virtual machines.



For more information on creating server pools and adding Oracle VM Servers, see Create Server Pool and Edit Server Pool .

The next step is to create a storage repository to use for virtual machine resources.

Chapter 6 Create a Storage Repository

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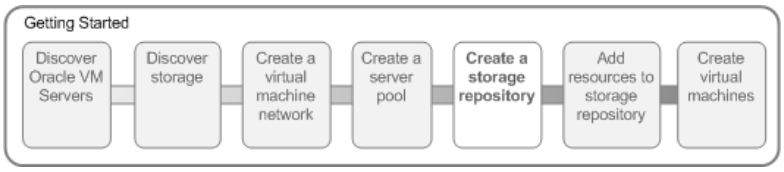


A storage repository is where Oracle VM resources may reside on the storage you registered in Chapter 3, *Discover Storage*. Resources include *virtual machines*, *templates* for virtual machine creation, virtual machine *virtual appliances*, ISO files (DVD image files), shared virtual disks, and so on.

You use Oracle VM Manager to create and configure storage repositories, and to present one or more storage repositories to Oracle VM Servers. When the storage repository is accessible, you can start adding storage resources and building virtual machines with those resources.

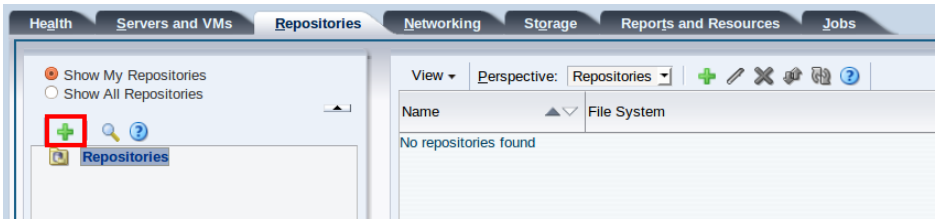
For more information about storage repositories, see Understanding Repositories.

6.1 Creating a storage repository

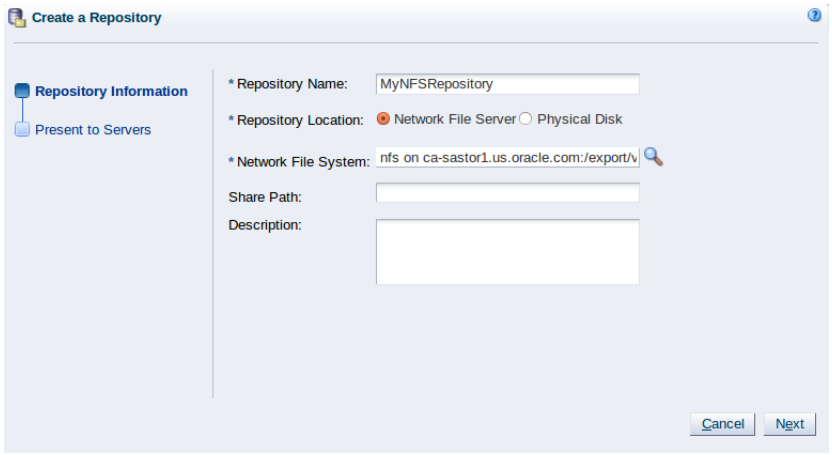
This example creates a storage repository to store virtual machine resources using an NFS file server. We use the larger of the file systems on our repository. Replace the file server and other names used in this example with that of your own environment.

To create a storage repository:

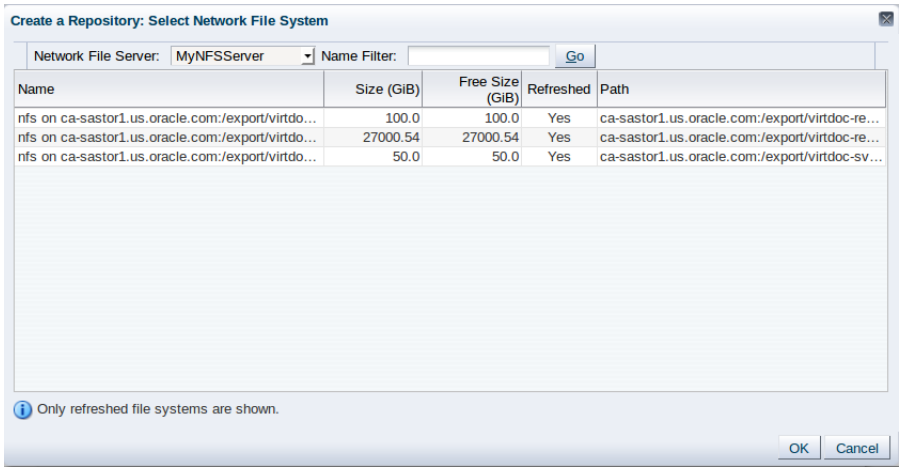
1. Click the **Repositories** tab.
2. Select **Create New Repository...** from the toolbar.



3. In the **Create a Data Repository** dialog box, enter information about the repository.



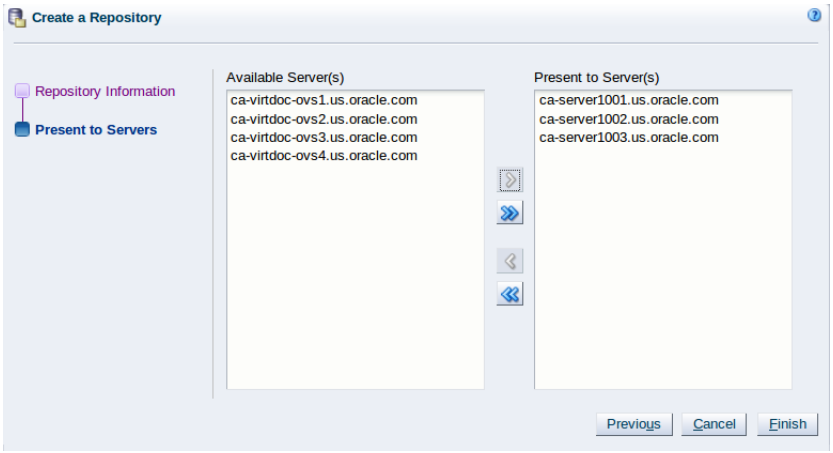
Enter a name for the repository. If you are using a file server for the repository, select **Network File Server** as the storage type to use for the **Repository Location**. If you are using a physical disk on a storage array for the repository, select **Physical Disk** as the storage type. Click to search for the storage location to use.



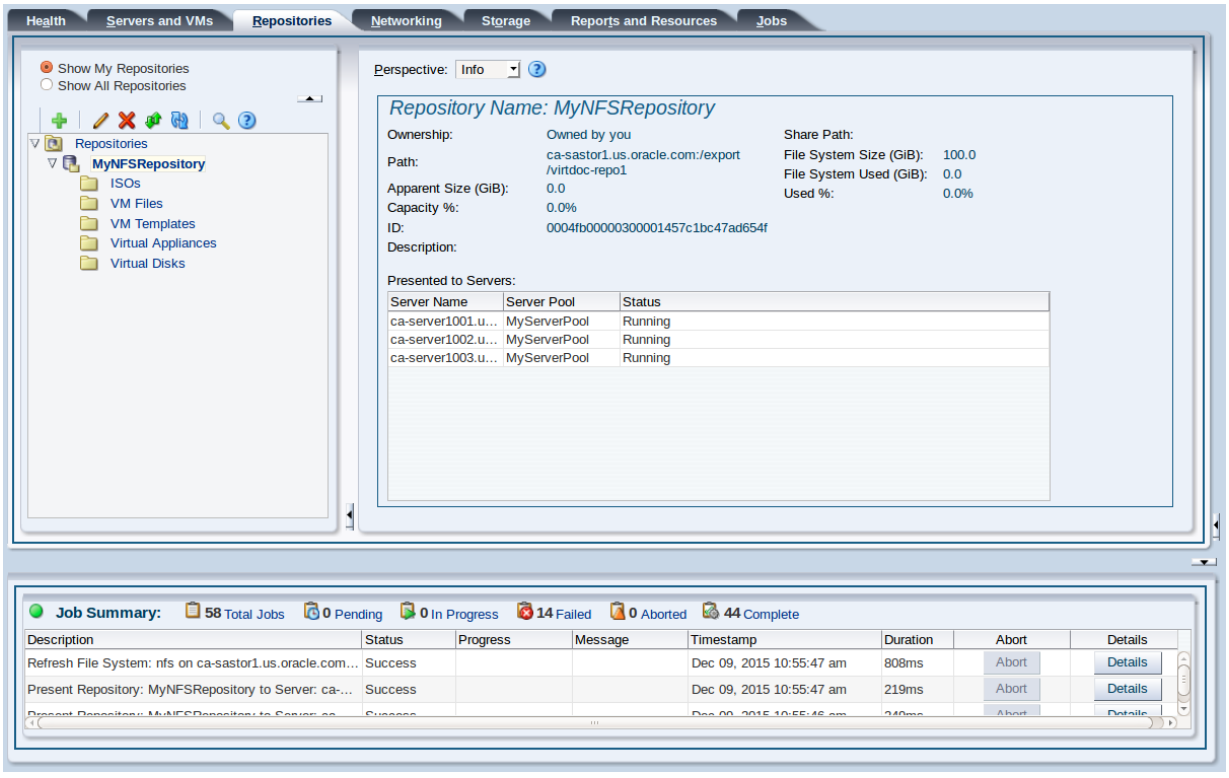
Select a file system in the table and click **OK**.

Click **Next** to present the new the new storage repository to Oracle VM Servers.

4. To enable your Oracle VM Servers to use the repository, you must *present* it to the Oracle VM Servers. Select the Oracle VM Servers and move them to the **Present to Server(s)** column and click **Finish**.



The repository is listed in the **Repositories** tab. To see information about the repository, expand the **Repositories** folder.



Chapter 7 Add Resources to Storage Repository

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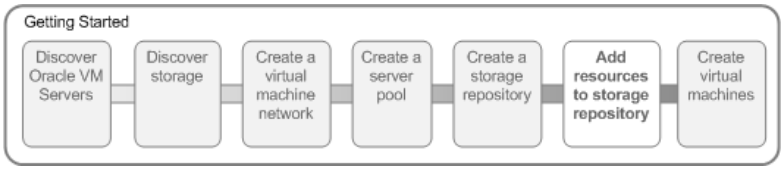


Virtual machines require some form of installation media, whether it be a *virtual machine template*, virtual disk, ISO file, or mounted ISO file. Different *domain* types may require different installation source files. You can read about the different installation media in How is a Guest OS Installed on a Virtual Machine?.

The following examples show you how to import a *virtual appliance*, a virtual machine template, and an ISO file which are used in later steps to create virtual machines. A virtual machine template contains virtual machine configuration information, virtual disks that contain the operating system and any application software, packaged as an Oracle VM template file. A virtual appliance is similar to a virtual machine template, but in the open standard Open Virtualization Format (OVF) format. Older Oracle VM template files were packaged as Oracle VM template files, and the more recent templates are packaged in OVF format as virtual appliances. An operating system ISO file is an image of the CDROM or DVD used to perform an operating system installation.

In this tutorial we use a virtual appliance, a virtual machine template and an Oracle Linux ISO file downloaded from the Oracle Software Delivery Cloud:

https://edelivery.oracle.com/linux

To complete all the examples in this tutorial, download an Oracle VM template, either in the OVF format or as an Oracle VM template. Also download an ISO file of the Oracle Linux operating system. Uncompress (unzip) the Oracle VM template file so that it is in the *template*.tgz format, not the downloaded *template*.zip format. If you downloaded an Oracle VM template in OVF format, uncompress (unzip) the file so that it is in the *template*.ova format. Save the template files and ISO file on a web server. Templates and other installation media must be available on a web server, ftp server or NFS share before being imported into Oracle VM Manager.

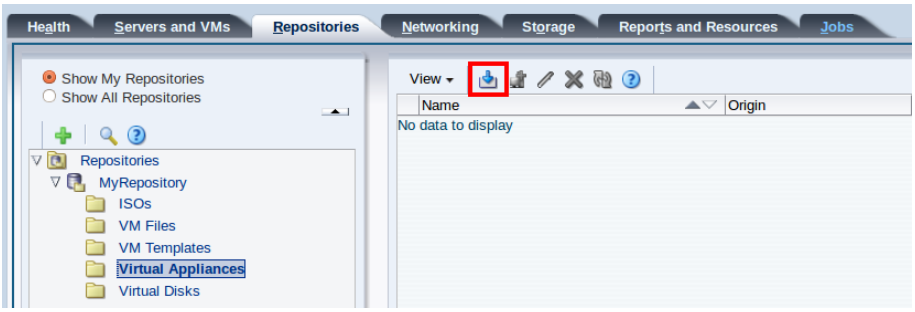
7.1 Importing a virtual appliance

This example shows you how to import a *virtual appliance*. If you downloaded an Oracle VM template from the Oracle Software Delivery Cloud which contains a *template*.ova file, you should use this procedure to import the virtual appliance. A virtual appliance is the most recent format that Oracle uses to publish Oracle VM templates. Replace the name and URL of the following example with that of your virtual appliance.

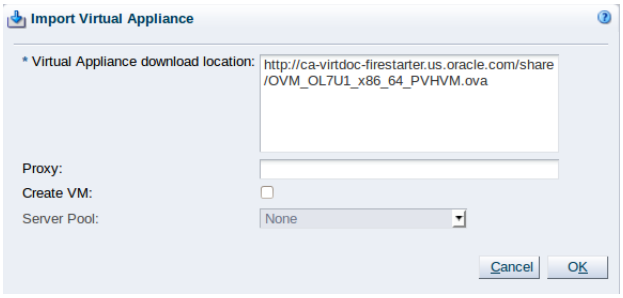
To import a virtual appliance:

1. Click the **Repositories** tab. Select the repository in which to import the virtual appliance. Click **Virtual Appliances** in the navigation tree.

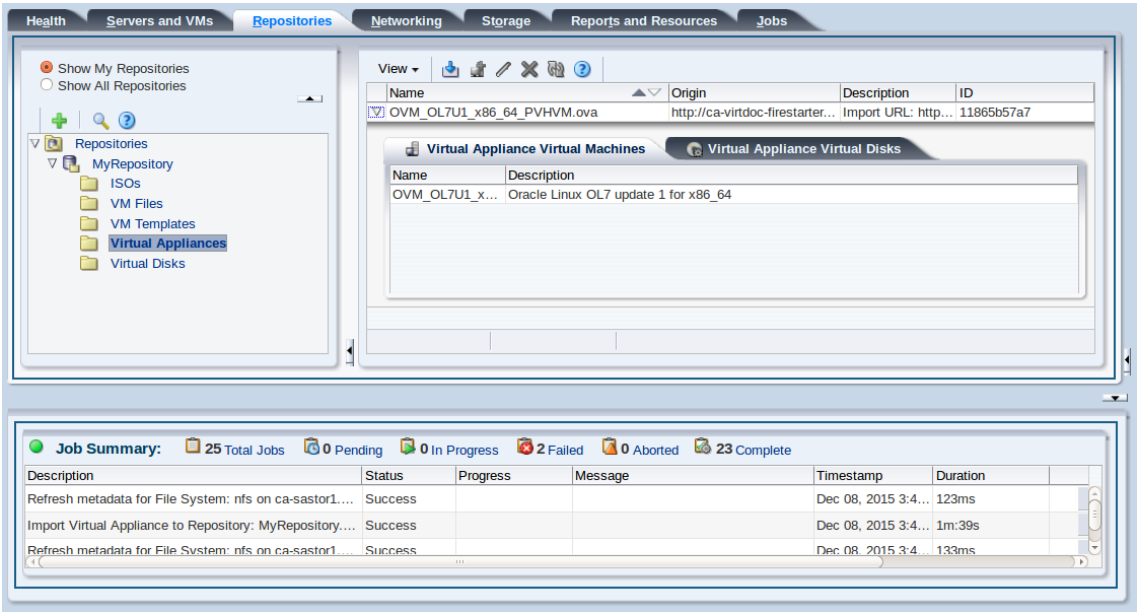
2. Click **Import Virtual Appliance...** in the management pane toolbar.



3. The **Import Virtual Appliance** dialog box is displayed. Enter the URL to the virtual appliance you downloaded and stored on a web server, and the IP address or hostname of an optional proxy server to use when importing the virtual appliance. Click **OK** to import the virtual appliance.



The import job can take some time to complete. When the import job is complete, the new virtual appliance is listed in the table.



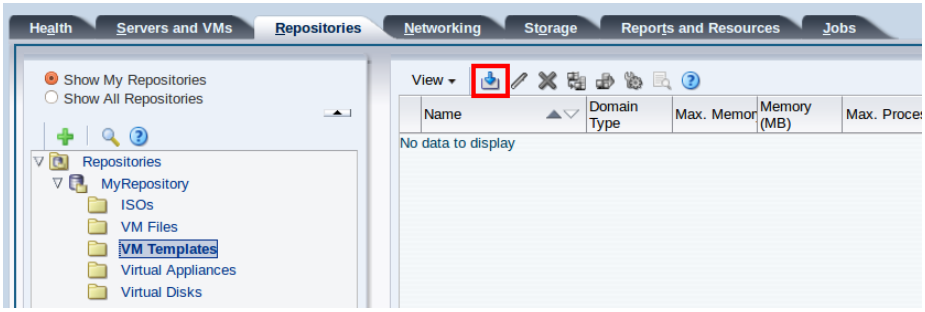
7.2 Importing a virtual machine template

This example shows you how to import a *virtual machine template*. If you downloaded an Oracle VM template from the Oracle Software Delivery Cloud which contains an *template*.tgz file, you should use this procedure to import the template. This format of a template is the older format used by Oracle to publish Oracle VM templates. Replace the name and URL of the template with that of your template.

To import a virtual machine template:

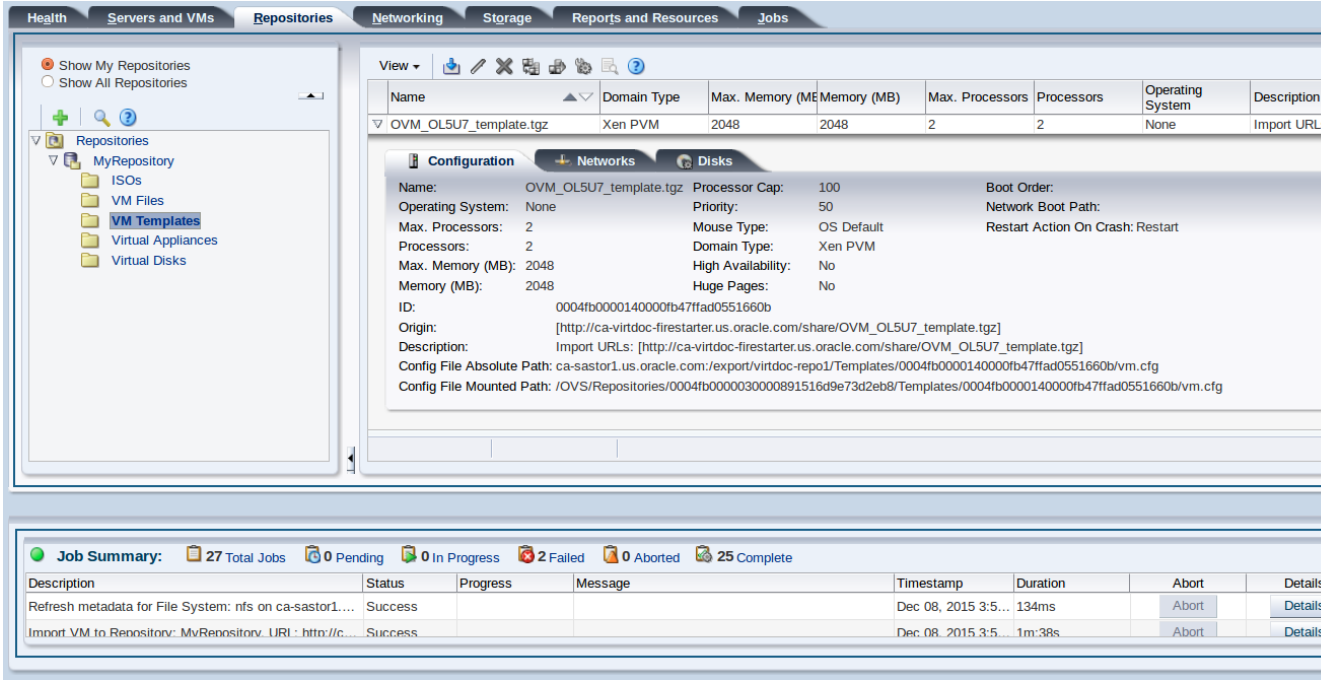
1. Click the **Repositories** tab. Select the repository in which to import the template. Select **VM Templates** in the navigation tree.

2. Click **Import VM Template...** in the management pane toolbar.



3. The **Import VM Template** dialog box is displayed. Enter the URL to the template you downloaded and stored on a web server, and the IP address or hostname of an optional proxy server to use when importing the template. Click **OK** to import the template.

The import job can take some time to complete. When the import job is complete, the new template is listed in the table.



7.3 Importing an ISO file

This example shows you how to import the Oracle Linux ISO file you downloaded from the Oracle Software Delivery Cloud. Replace the name and URL of the ISO file with that of your file.

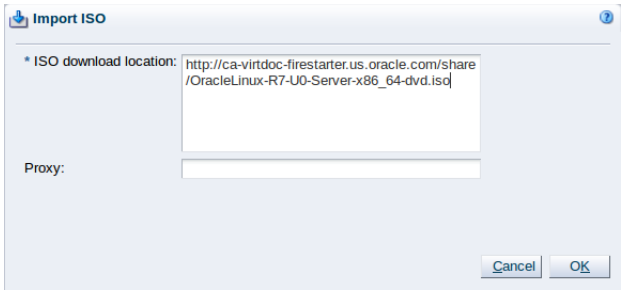
To import an ISO file:

1. Click the **Repositories** tab. Select the repository in which to import the ISO file. Select **ISOs** in the navigation tree.

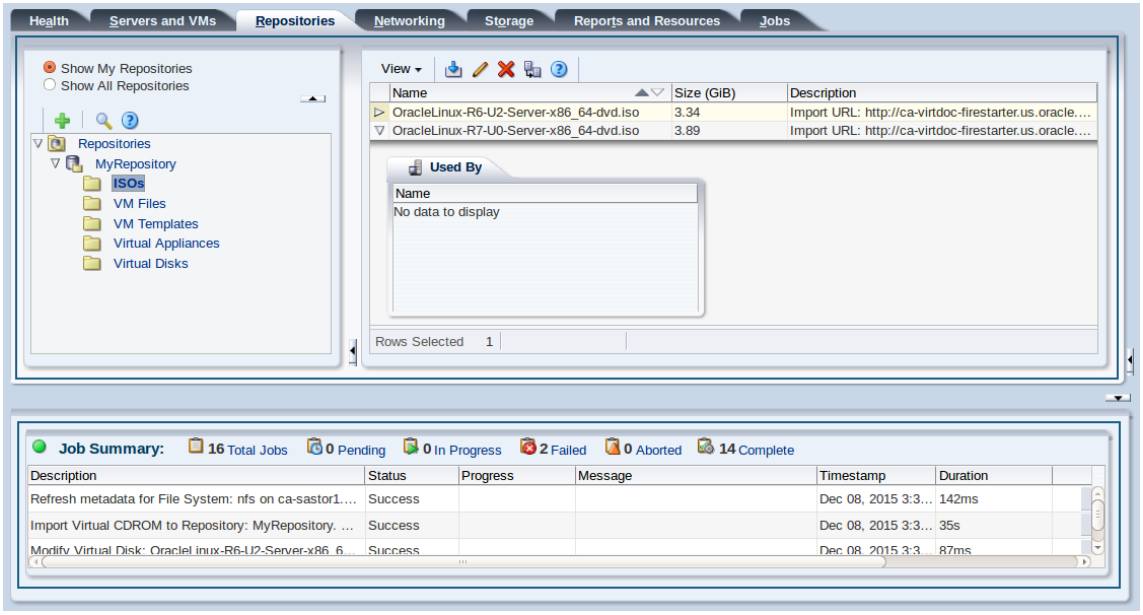
2. Click **Import ISO...** in the management pane toolbar.

3. The **Import ISO** dialog box is displayed.

   Enter the URL to the ISO file you want to import, and the IP address or hostname of an optional proxy server to use when importing the ISO file. Click **OK** to import the ISO file.



   The import job can take some time to complete. When the import job is complete, the ISO file appears in the table.



See Understanding Repositories for information on importing, managing and using virtual machine resources.

Chapter 8 Create Virtual Machines

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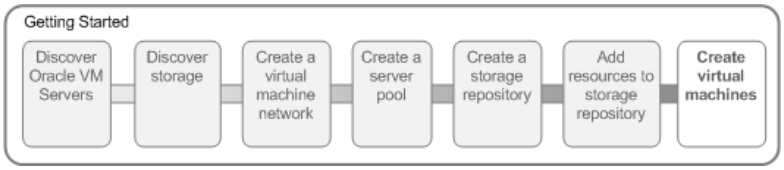


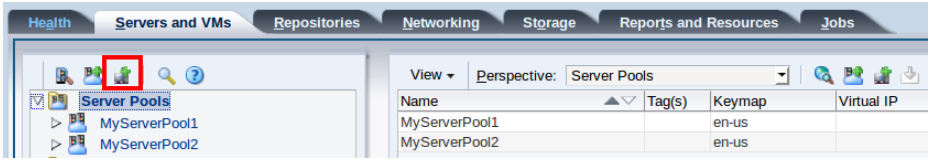
When you have a *virtual machine template* (either as an Oracle VM template or an *virtual appliance*), or an ISO file that contains an the installation files for an operating system, you can create a *virtual machine*. If you use a virtual machine template, you need to *clone* the template to create a virtual machine. If you use the OVF template format, you first need to create an Oracle VM template from the OVF file, then use that template to clone a virtual machine. If you use an installation source ISO file, you can create a virtual machine directly from the ISO file. The examples in this tutorial first use a template, a virtual appliance, and then an ISO file to create virtual machines. A final example shows you how to start a virtual machine and connect to the virtual machine's console.

8.1 Creating a virtual machine from a template

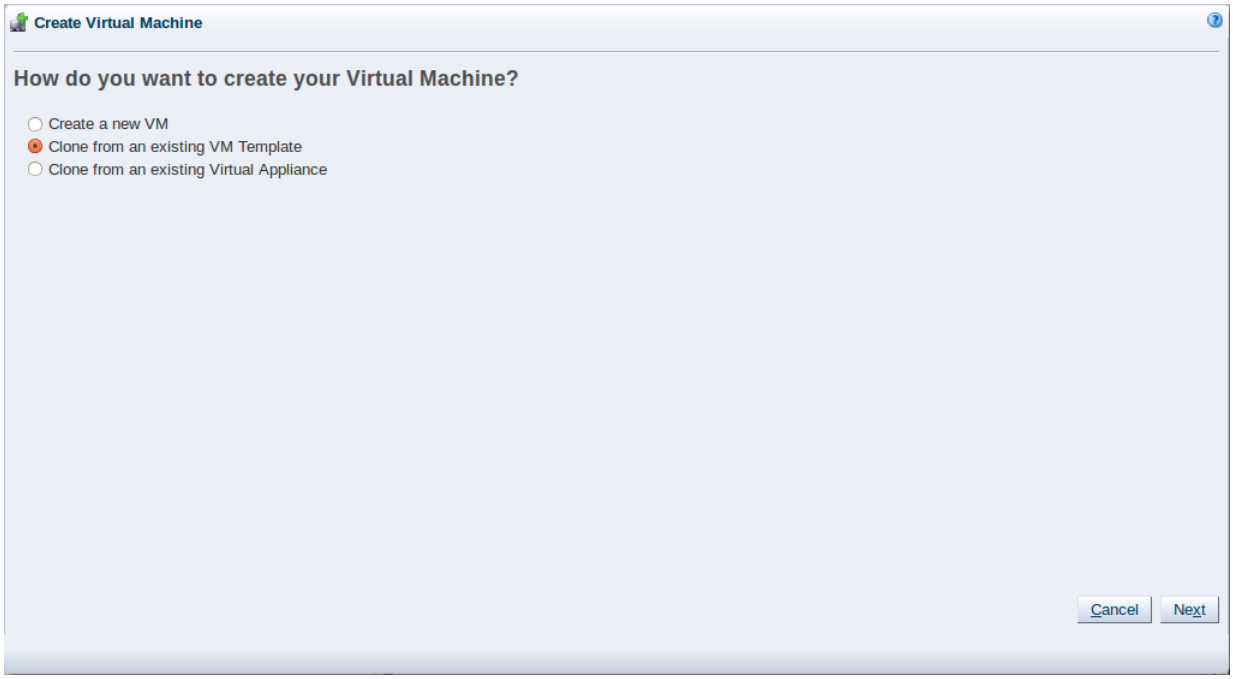
This example uses the virtual machine template you imported in Section 7.2, “Importing a virtual machine template” to create a virtual machine, and deploy it in the server pool.

To create a virtual machine from a template:

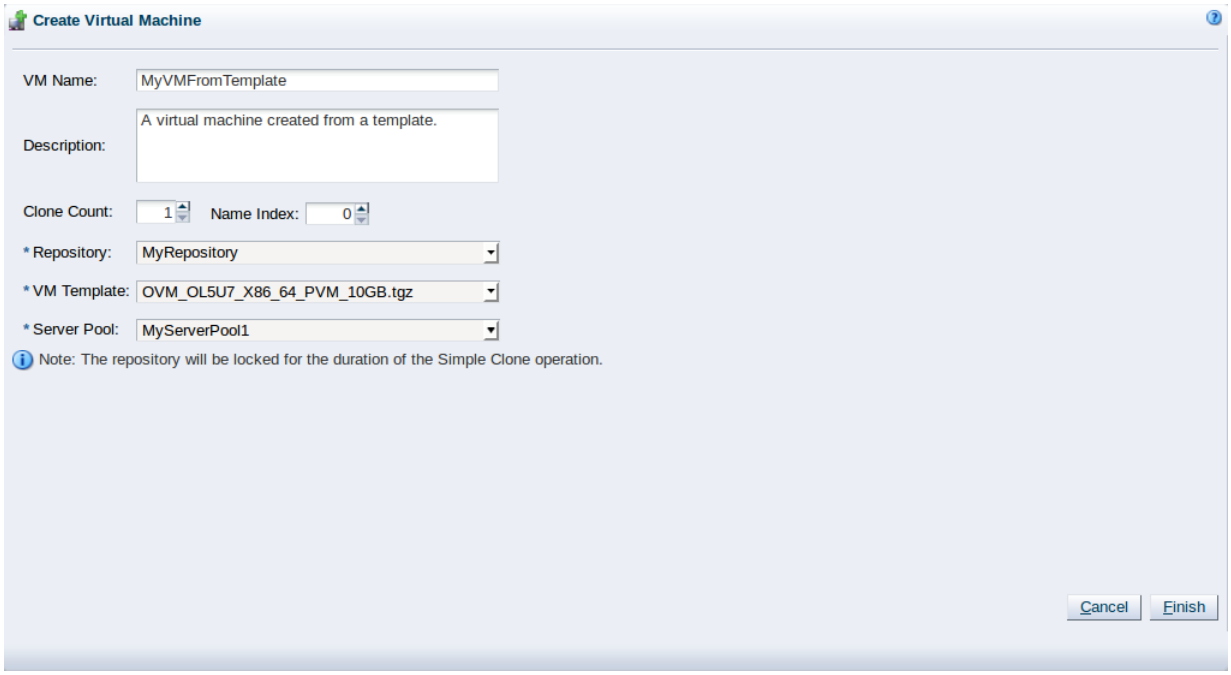
1. Click the **Servers and VMs** tab.
2. Click **Create Virtual Machine** in the toolbar.



3. The **Create Virtual Machine** wizard is displayed. Select the **Clone from an existing VM Template** option and then click **Next**.



4. The **Create Virtual Machine** wizard prompts you to specify details for the virtual machine.



Enter the number of virtual machines to create from the template in the **Clone Count** field. Select the storage repository in which to store the virtual machine files. Select the virtual machine template from the **VM Template** field. Enter a name for the virtual machine(s) in the VM Name field. Select the server pool on which to deploy the virtual machine(s) from the **Server Pool** field. Click **Finish**.

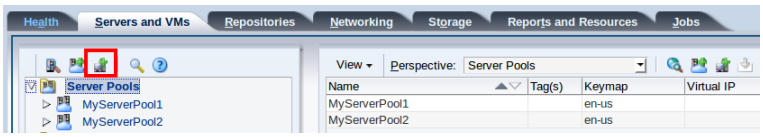
The template is cloned to create one or more virtual machines. The cloning job may take some time. When the clone job is completed, the virtual machine is deployed to an Oracle VM Server in the server pool. To see the virtual machine, select the server pool in the navigation pane and select **Virtual Machines** from the **Perspective** drop-down list in the management pane toolbar.

8.2 Creating a virtual machine from a virtual appliance

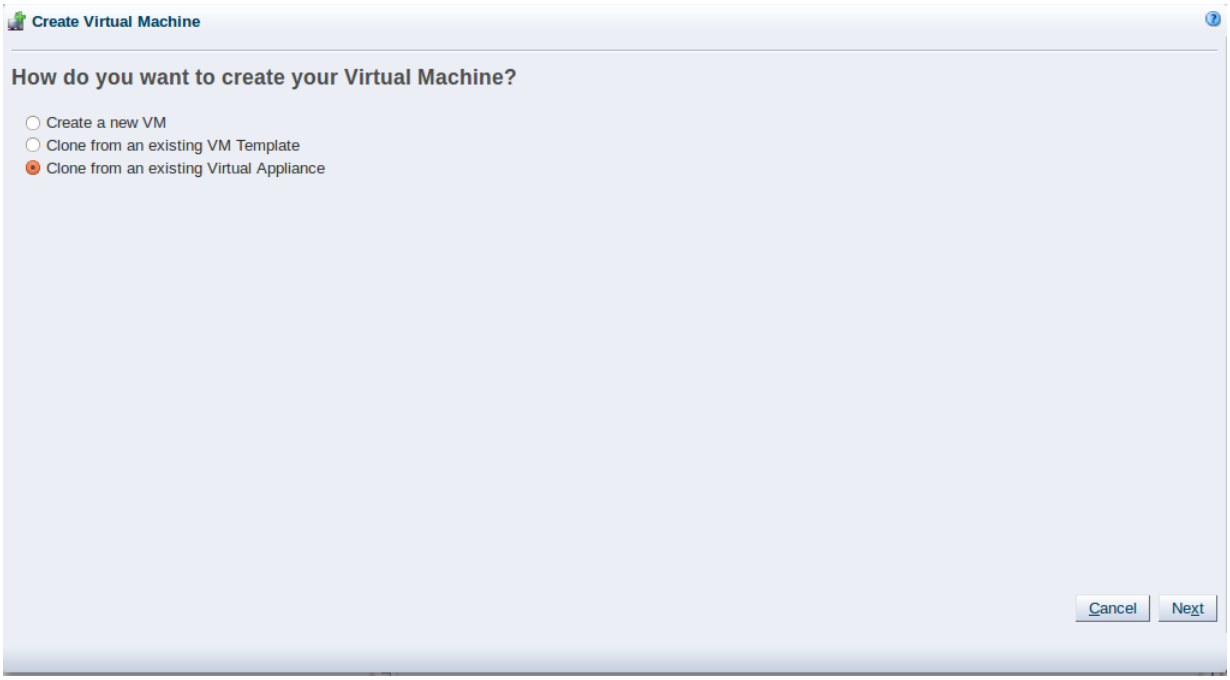
This example uses the virtual appliance you imported in Section 7.1, “Importing a virtual appliance” to create a virtual machine, and deploy it in the server pool.

To create a virtual machine from a virtual appliance:

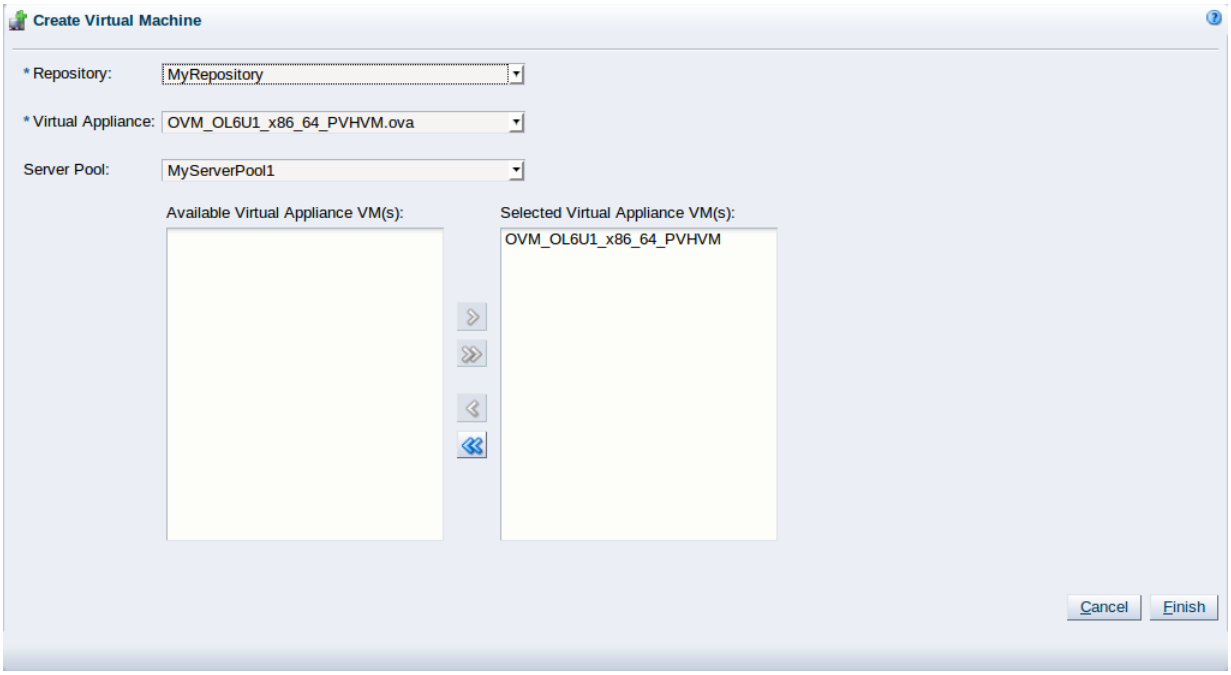
1. Click the **Servers and VMs** tab.
2. Click **Create Virtual Machine** in the toolbar.



3. The **Create Virtual Machine** wizard is displayed. Select the **Clone from an existing Virtual Appliance** option and then click **Next**.



4. The **Create Virtual Machine** wizard prompts you to specify details for the virtual machine.



Select the repository in which to create the virtual machine configuration files from the **Repository** menu. Select the virtual appliance from which you want to create the virtual machine from the **Virtual Appliance** menu. Select the server pool in which you want to deploy the virtual machine from the **Server Pool** menu. Select the virtual machines that you want to create from the **Available Virtual Appliance VM(s)** column. Confirm the virtual machines in the **Selected Virtual Appliance VM(s)** column. Click **Finish**.

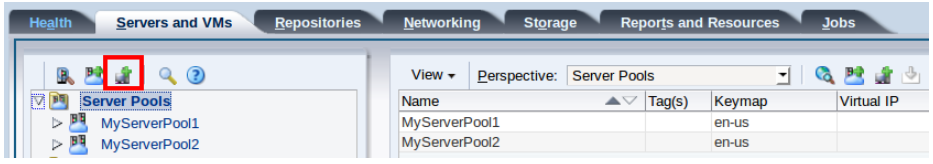
Oracle VM Manager creates one or more virtual machines from the selected virtual appliance(s). The job to create the virtual machine may take some time. When the job is completed, Oracle VM Manager deploys the virtual machines to the server pool you specified. If you did not specify a server pool, the virtual machines are deployed to the **Unassigned Virtual Machines** folder in the **Servers and VMs** tab. You can then migrate each virtual machine to a compatible server or server pool.

8.3 Creating a virtual machine from an ISO file

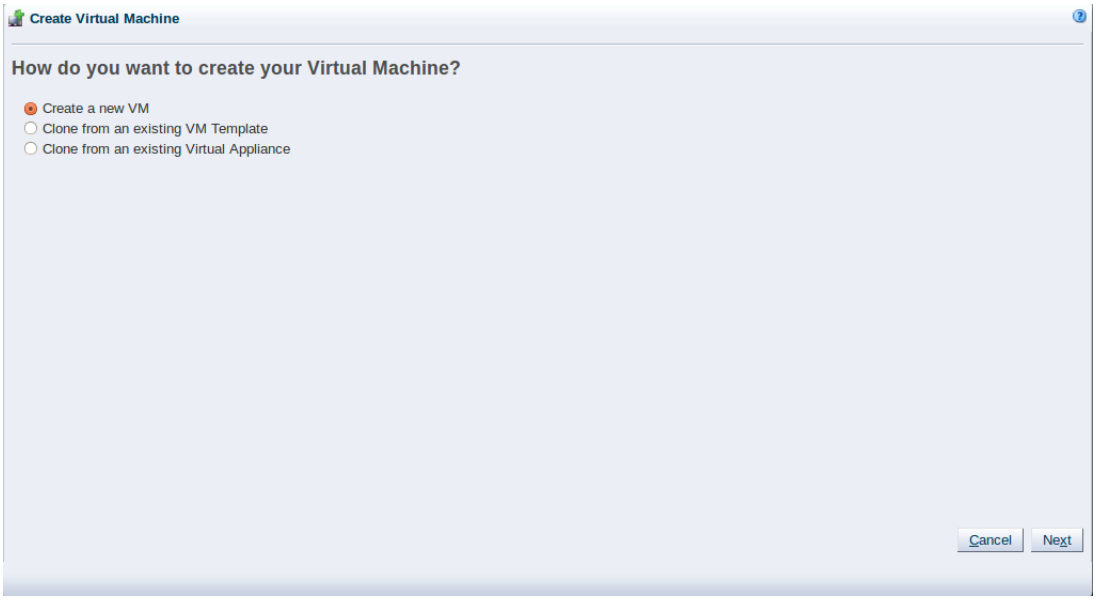
This example uses the ISO file you imported in Section 7.3, “Importing an ISO file” to create a virtual machine, and deploy it in the server pool.

To create a virtual machine from an ISO file:

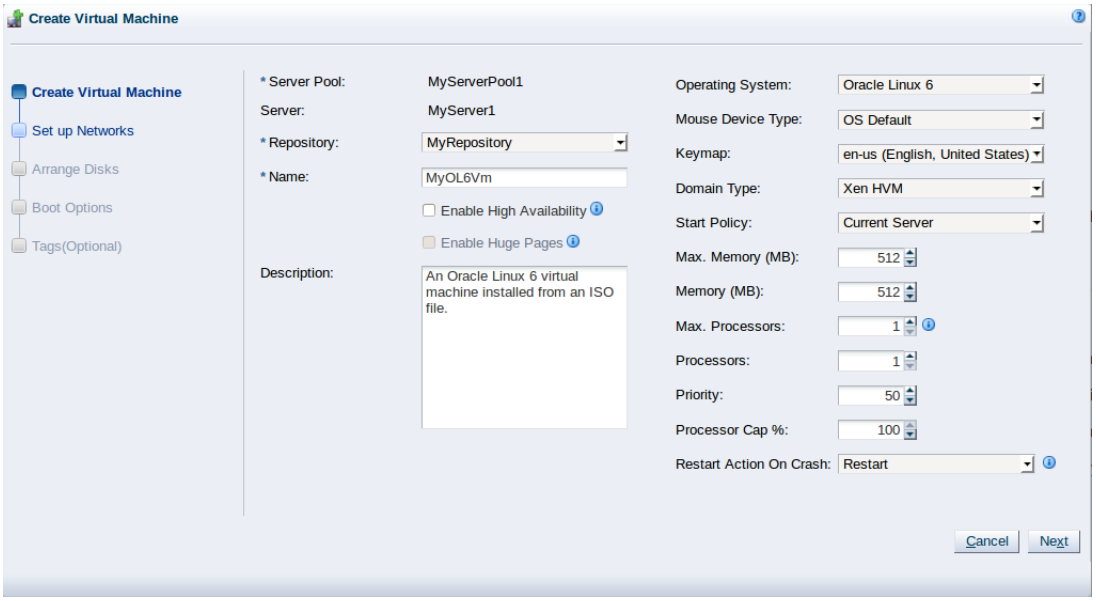
1. Click the **Servers and VMs** tab.
2. Click **Create Virtual Machine** in the toolbar.



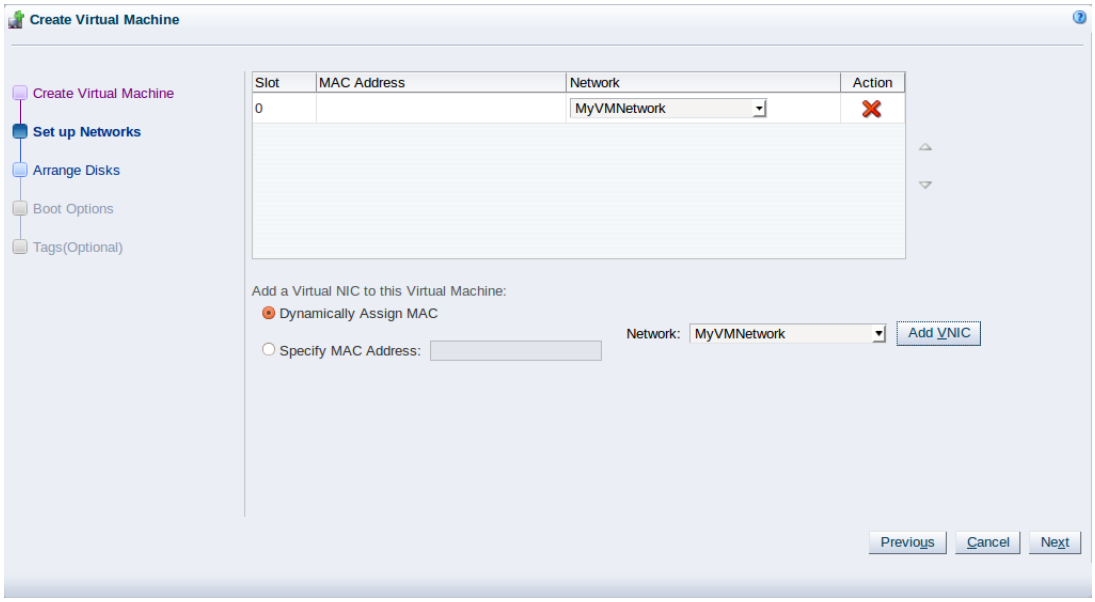
3. The **Create Virtual Machine** wizard is displayed. Select the **Create a new VM** option and then click **Next**.



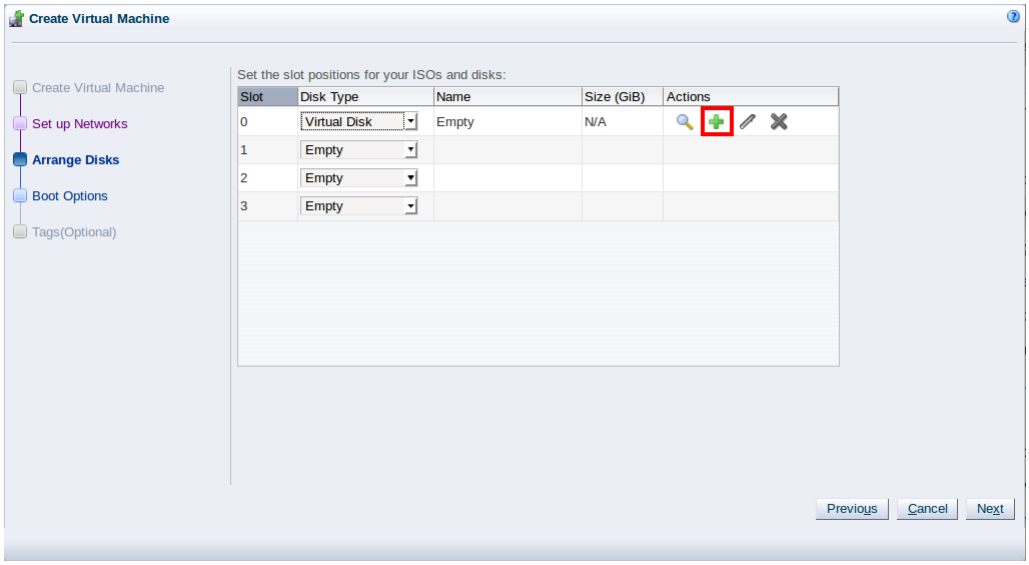
4. The **Create Virtual Machine** wizard is displayed. In the **Create Virtual Machine** step, select the server pool you created earlier, the repository you created as the location to store the virtual machine configuration file, and enter a name for the virtual machine. Click **Next**.



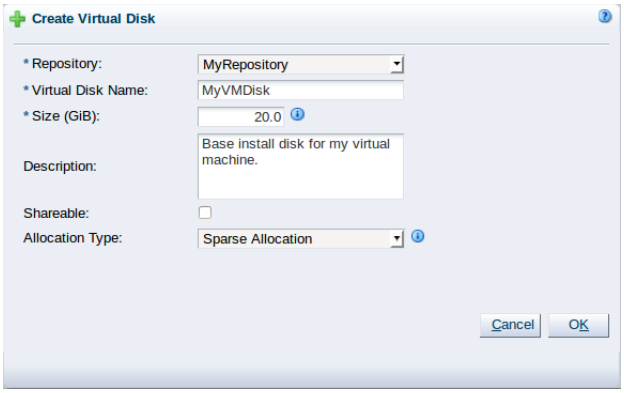
5. In the **Setup Networks** step, add one or more VNICs to the virtual machine. To dynamically create a VNIC, select the **Dynamically Assign Mac** check box and click **Add VNIC**. The VNIC is added to the virtual machine, and a MAC address is assigned when the create virtual machine job is submitted. Click **Next**.



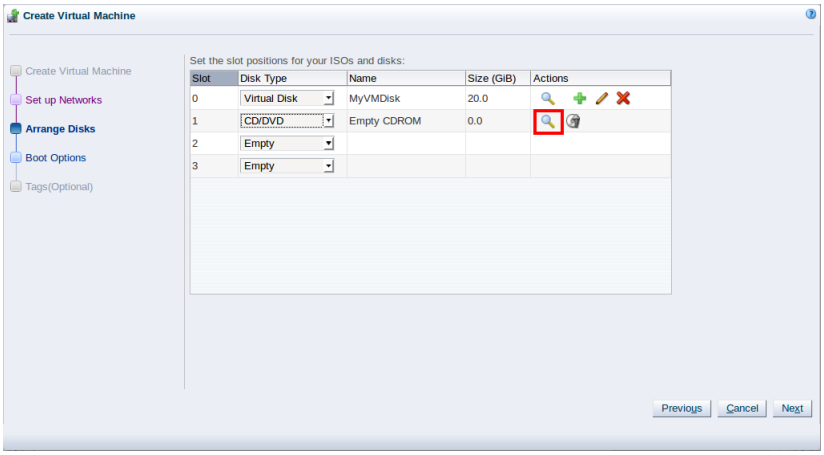
6. In the **Arrange Disks** step, create a virtual disk to use as the virtual machine's hard disk and select the ISO to use to create the virtual machine. For slot **0**, select **Virtual Disk** from the **Disk Type** drop-down list. Click **Create a Virtual Disk** ✚ .



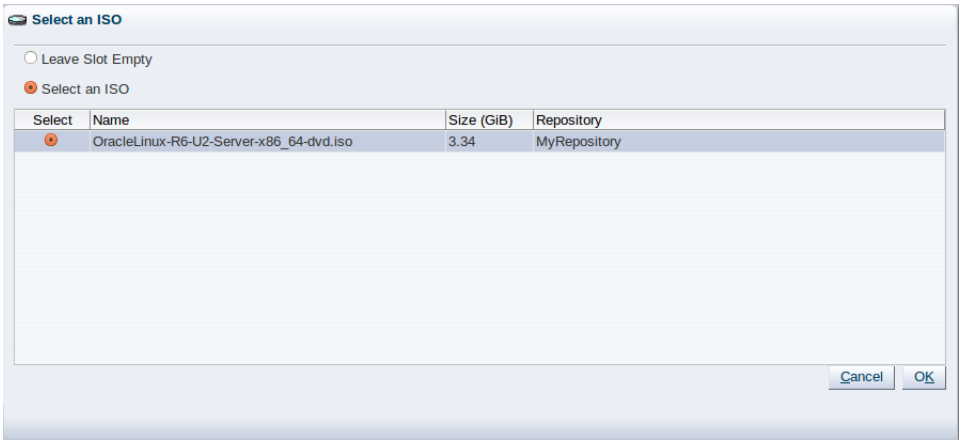
The **Create Virtual Disk** dialog box is displayed. Select the repository on which to create the virtual disk, enter a name for the disk, and enter the size of the disk. Click **OK**.



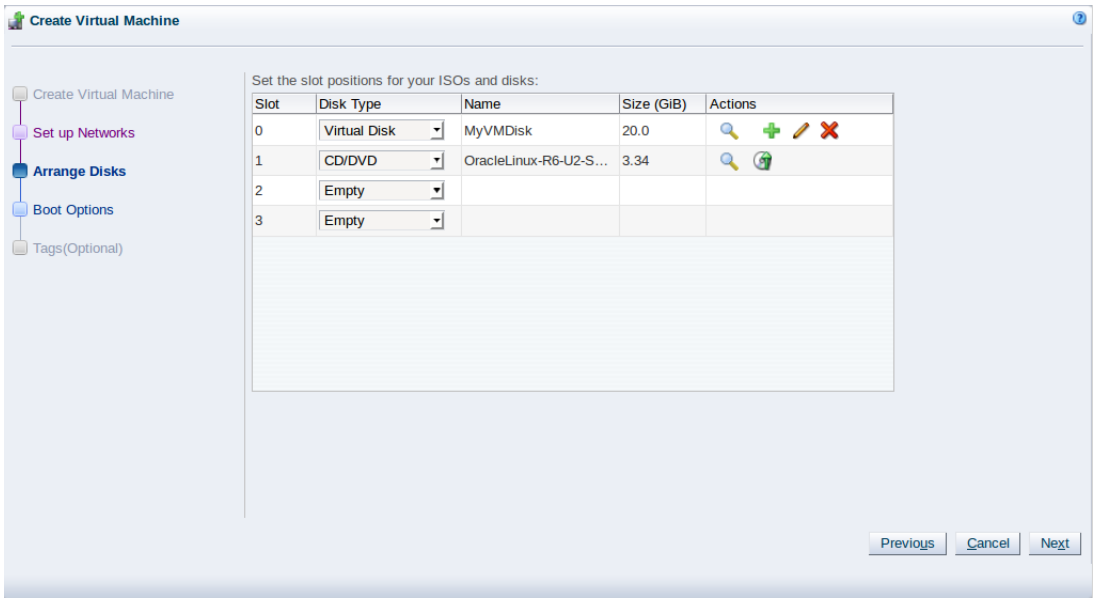
For slot **1** select **CD/DVD** from the **Disk Type** drop-down list. Click **Select a Virtual Machine Disk** .



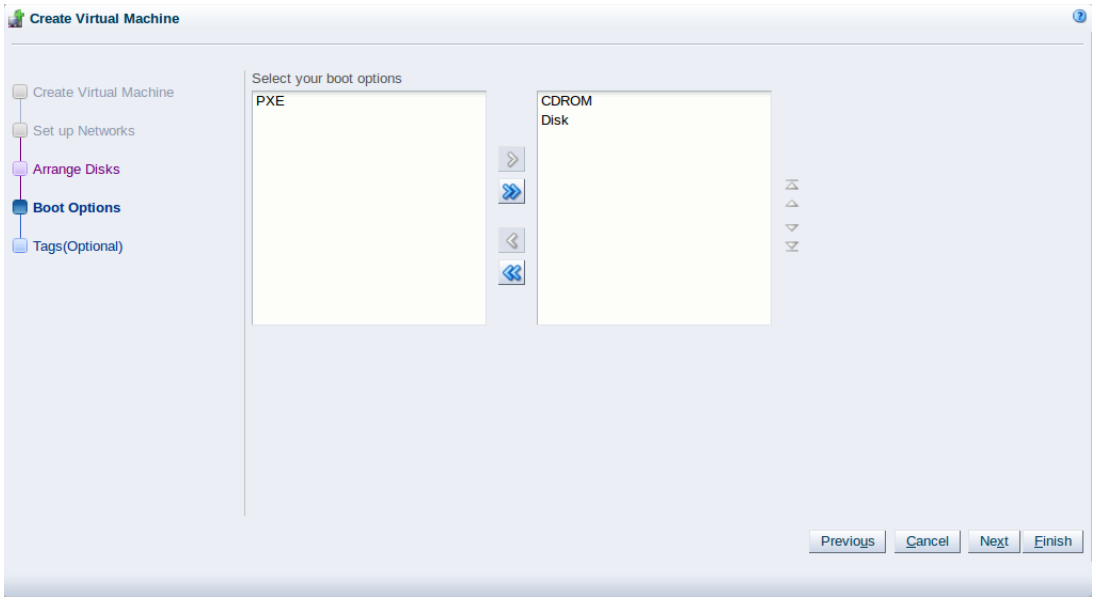
The **Select an ISO** dialog box is displayed. Select the ISO file and click **OK**.



You have now created a virtual disk to use as the virtual machine's hard disk, and added the ISO file which contains the operating system to be installed. Click **Next**.



7. In the **Boot Options** step, select the boot media and order for your virtual machine. Click **Finish**.



The virtual machine is created and deployed to an Oracle VM Server in the server pool. To see the virtual machine, select the server pool in the navigation pane and select **Virtual Machines** from the **Perspective** drop-down list in the management pane toolbar.

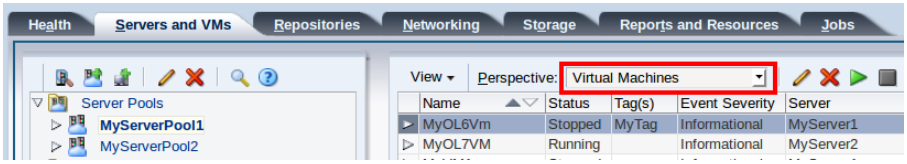
8.4 Starting a virtual machine and connecting to the console

When a virtual machine is created, it is deployed to the server pool in a *stopped* state. This step of the tutorial starts the virtual machine created with an ISO file, and logs into the virtual machine console.

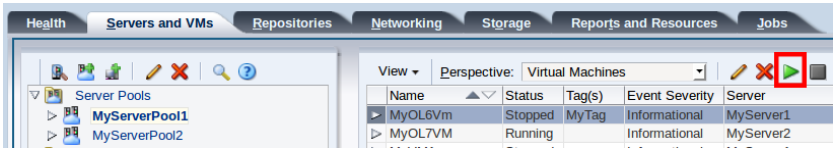
To start a virtual machine and connect to the console:

1. Click the **Servers and VMs** tab. Select the server pool in which the virtual machine is deployed in the navigation pane.

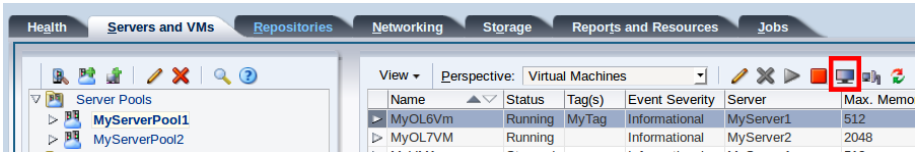
2. From the **Perspective** field in the management pane, select **Virtual Machines** from the drop-down list.



3. Select the virtual machine in the table and click **Start** ▶ in the management pane toolbar.

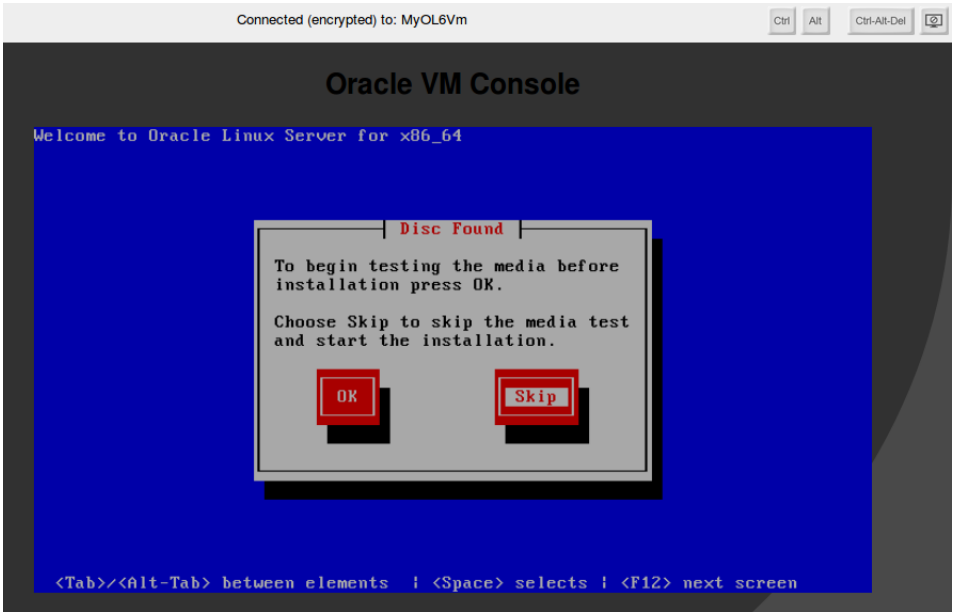


4. When the virtual machine is running, you can connect to the virtual machine's console and log in, if required. To connect to the console, click **Launch Console** 🖥 in the management pane toolbar.



5. The virtual machine console is displayed. Log in and interact with the virtual machine as you would through any other VNC session.

   This example shows the initial installation screen for the virtual machine created with the Oracle Linux operating system ISO file.



See Create Virtual Machine for more information on creating virtual machines.

Glossary

C

clone
: The action or result of making an exact copy of an object. The object may be a virtual machine, virtual machine template, ISO file, or virtual disk. Cloning is similar to copying and maintains the integrity of the original object, while creating a new object based on the original. A clone customizer may be used to define cloning options to specify details of where the object components may reside when cloned, such as in a different storage repository.

D

discover
: The process of adding systems as objects within Oracle VM Manager is known as *discovery*. When you add Oracle VM Servers and storage to your Oracle VM environment, Oracle VM Manager uses the information provided to connect to the resource and perform verification. During this process, information is usually exchanged between the server and the manager. In the case of an Oracle VM Server, Oracle VM Manager obtains information about the server, its network connectivity and any storage that is already attached to the server. Depending on your hardware and networking configuration, external storage may be automatically detected during discovery of Oracle VM Servers. This is always the case with local OCFS2 storage on an Oracle VM Server.

  While storage can be automatically discovered during the process of discovering Oracle VM Servers, you may need to perform storage discovery for resources that are not already attached to any of your Oracle VM Servers. It is important that storage is configured outside of the Oracle VM environment prior to discovery. Depending on the storage type, you can perform different storage discovery operations from within Oracle VM Manager.

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.

  See Also: *control domain*

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*

  See Also: *control domain*

domU
: An unprivileged domain with no direct access to the hardware or device drivers. Each domU is started by dom0.

H

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.

M

multipath
: The technique of creating more than one physical path between the server CPU and its storage devices. It results in better fault tolerance and performance enhancement. Oracle VM supports multipath I/O out of the box. Oracle VM Servers are installed with multipathing enabled because it is a requirement for SAN disks to be discovered by Oracle VM Manager

O

OCFS2
: Oracle Cluster File System (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 Manager
: Oracle VM Manager is the management platform, which offers an easy-to-use, web-browser interface as well as a command-line interface (CLI). Oracle VM Manager tracks and manages the resources available in your virtual environment and allows you to easily manage Oracle VM Server pools. Oracle VM Manager lets you manage the 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. Oracle VM Manager also lets you manage 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 guest operation systems (such as Linux, Solaris, and Windows) to run on one physical machine. Includes Oracle VM Agent to enable communication with Oracle VM Manager.

  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 (LDOM). 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 appliance
: A package created as a single .ova (Open Virtualization Format Archive) file or a set of .ovf (Open Virtualization Format) and .img (disk image) files. Virtual appliances contain one or more virtual machines and include the virtual disks and the inter-connectivity between the virtual machines.

  In previous releases, virtual appliances were known as assemblies.

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.

virtual machine template
: A template of a virtual machine. Contains basic configuration information such as the number of CPUs, memory size, hard disk size, and network interface card (NIC). Create virtual machines based on a virtual machine template using Oracle VM Manager.