

Oracle® VM
Manager User's Guide for Release 3.4

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Abstract

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Preface

The Oracle VM Manager User's Guide provides reference and task-based information for using the Oracle VM Manager Web Interface.

Audience

The Oracle VM Manager User's Guide is intended for system administrators and end users who want to learn how to provision and manage virtual machines using the Oracle VM Manager Web Interface. This book is designed to map directly onto the Oracle VM Manager Web Interface, as a result some simple steps may be repeated if the user interface provides the same options or views in more than one place. Ideally, you should identify the item that you need help with within the user interface and then use the table of contents to navigate to the relevant simple step in this book.

For more general descriptions of the design and architecture of the product, you should refer to the [Oracle VM Concepts Guide](#). For a basic guide to getting started with configuring your environment within the Oracle VM Manager Web Interface, refer to [Oracle VM Manager Getting Started Guide](#).

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 Paravirtual Drivers for Microsoft Windows Guide](#)
- [Oracle VM Web Services API Developer's Guide](#)
- [Oracle VM Security Guide](#)
- [Oracle VM Manager Third-Party Licensing Information](#)

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>

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:

Convention	Description
	<code>dd if=/dev/rdsd/c0t1d0s6 of=/dev/rst0 bs=10b \count=10000</code>
braces { }	Braces indicate required items: <code>.DEFINE {macro1}</code>
brackets []	Brackets indicate optional items: <code>cvtcrt <i>termname</i> [<i>outfile</i>]</code>
ellipses ...	Ellipses indicate an arbitrary number of similar items: <code>CHKVAL fieldname value1 value2 ... valueN</code>
<i>italics</i>	Italic type indicates a variable. Substitute a value for the variable: <code><i>library_name</i></code>
vertical line	A vertical line indicates a choice within braces or brackets: <code>FILE <i>filesize</i> [K M]</code>
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: <code>create Tag name=MyTag description="HR/'s VMs"</code>

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.

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that positively impacts our employees, customers, and partners, we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

Chapter 1 Using Oracle VM Manager

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Management for the Oracle VM environment is provided by [Oracle VM Manager](#), a transaction-based framework that also includes an integrated database, a web-based management user interface and a command line interface.

This book discusses using the Oracle VM Manager Web Interface. In this chapter we discuss how to access the web-based user interface, the general design and layout of the application and generic behaviors that can be applied to each section of the application as you make use of it.

Notably, the web-based user interface includes additional logic to help ensure that actions performed within Oracle VM Manager do not result in configurations that could cause future runtime errors. This additional logic is not available within the command line interface, which provides greater flexibility but requires a deeper understanding of object relationships. The Oracle VM Manager Web Interface helps to guide users toward configuring an Oracle VM environment consistently and with minimal chance of error.

1.1 Web Browser Requirements

The Oracle VM Manager user interface is supported in the following Web browsers:

- Microsoft Edge.
- Mozilla Firefox 8 and above.

- Apple Safari 6 and above, running on Mac OS X.
- Google Chrome 15 and above.



Note

The Microsoft Internet Explorer (IE) browser is no longer supported for Oracle VM Release 3.4.7 and beyond.

The Oracle VM Manager user interface is best used on client systems with a minimum screen resolution of at least 1024 x 768 pixels.

The Oracle VM Manager user interface is best used in an environment where no proxy server is configured between the client web-browser and the Oracle VM Manager host. Operations performed through the Oracle VM Manager user interface are synchronous and frequently depend on the completion of a previous operation. It is imperative that any environment that makes use of a proxy server between client web-browsers and the Oracle VM Manager host is configured in such a way that proxy timeouts take into account the length of time that it takes to perform some operations. Neglecting to configure a proxy server for this may cause unexpected behaviour within the Oracle VM Manager Web Interface. The length of time that an operation may take to complete is not fixed and is dependent on your own environment. For example, refreshing a large storage array takes longer than a smaller one.

1.2 Logging into Oracle VM Manager

To open the Login page of the Oracle VM Manager Web Interface, 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 the Oracle VM Manager Web Interface is listening (which is 7002 by default).



Note

In previous versions of Oracle VM Manager unencrypted HTTP traffic was permitted by default. HTTP access is now disabled by default and Oracle VM Manager uses Secure Sockets Layer (SSL) to encrypt all HTTP traffic. Therefore, you should always use *https* in the protocol section of your URI.



Important

You must ensure that if you are accessing Oracle VM Manager through a firewalled connection, the firewall is configured to allow TCP traffic on the port that Oracle VM Manager is using to listen for connections.

To connect to Oracle VM Manager on a host named example.com, use:

`https://example.com:7002/ovm/console`

Enter your Oracle VM Manager administration username 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.



Important

The Oracle VM Manager Web Interface makes use of cookies in order to store session data. Therefore, to successfully login and use the Oracle VM Manager Web Interface your web browser must accept cookies from the Oracle VM Manager host.

Now you are logged in, you can add Oracle VM Servers, add storage, create storage repositories and import resources into them, create [server pools](#), and create [virtual machines](#).

The user interface displays context sensitive information, relevant to the selection in the navigator and content panes.

1.3 User Preference Persistence

Oracle VM Manager is designed to store user preferences so that they are persistent for a user across successive sessions. The data for these preferences is stored within the Oracle VM Manager database and are related to the internal user ID associated with a particular set of login credentials. This design ensures that these preferences are persistent across sessions, regardless of the browser or client system used to access the Oracle VM Manager Web Interface. Preferences that are stored in this way include accessibility preferences as described in [Section 1.4, “Oracle VM Manager Accessibility Features”](#); and parameters that control the views presented on the Health tab, as described in [Chapter 2, Health Tab](#). A summary of the preferences that are stored is presented in the following list:

- Health – Status Overview – Number of Columns
- Health – Status Overview – Refresh Interval
- Health – Status Overview – Order By
- Health – Status Overview – Server Processor %
- Health – Status Overview – Server Memory %
- Health – Status Overview – VM Processor %
- Health – Error Conditions – Refresh Interval
- Health – Error Conditions – Include Acknowledged
- Health – Statistics – Refresh Interval
- Accessibility – Screen Reader
- Accessibility – High Contrast
- Accessibility – Large Fonts

These preferences are maintained transparently and are updated when a user modifies any of these options directly within the Oracle VM Manager Web Interface. There is no option to manually edit these preferences directly within the Oracle VM Manager Web Interface.

The Oracle VM Manager Web Interface loads these preference values at login and as components are created in the user interface. This means that if a user is logged in across multiple browsers, changes may not be reflected until a user logs out and back in. Furthermore, in the case that multiple clients make changes to the same preference, the last change made is the one that is persisted.

Preference settings are lost if Oracle VM Manager is reinstalled, even if the database is restored. This is because each preference is associated with an identifier for the associated user account and these identifiers are stored and managed by the underlying WebLogic server software. Preferences are unaffected by a database backup and restore operation.

1.4 Oracle VM Manager Accessibility Features

As part of the effort to make Oracle products, services, and supporting documentation accessible and usable to the disabled community, Oracle VM Manager Web Interface allows you to configure the following accessibility features:

- Support for Screen Reader.
- Support for High Contrast.
- Support for Large Fonts.

You can enable these features when logging in to the Oracle VM Manager Web Interface or you can set or change the accessibility options once you have logged in.

To enable accessibility options when logging in:

1. On the login page of the Oracle VM Manager Web Interface, click the arrow to expand **Accessibility Options**.
2. Select one or more check box from the following accessibility options:
 - [I use a screen reader.](#)
 - [I use high contrast.](#)
 - [I use large fonts.](#)
3. Alternatively, if you have already selected specific accessibility options during a previous session, you are able to restore these settings by ensuring that the '[Use saved accessibility options](#)' checkbox is checked.

To set or change accessibility options while you are logged in:

1. In the Global Links at the top of the right-hand-side of the Oracle VM Manager Web Interface, click **Settings**.
2. From the drop-down list, select from the following accessibility options:
 - [I use a screen reader.](#)
 - [I use high contrast.](#)
 - [I use large fonts.](#)

These settings are persistent across each user login, as described in [Section 1.3, “User Preference Persistence”](#). To ensure that the same settings are applied on each subsequent login you should ensure that the [Use saved accessibility options](#) checkbox is checked on the login page when you login.

1.5 Oracle VM Manager HTML Access Keys

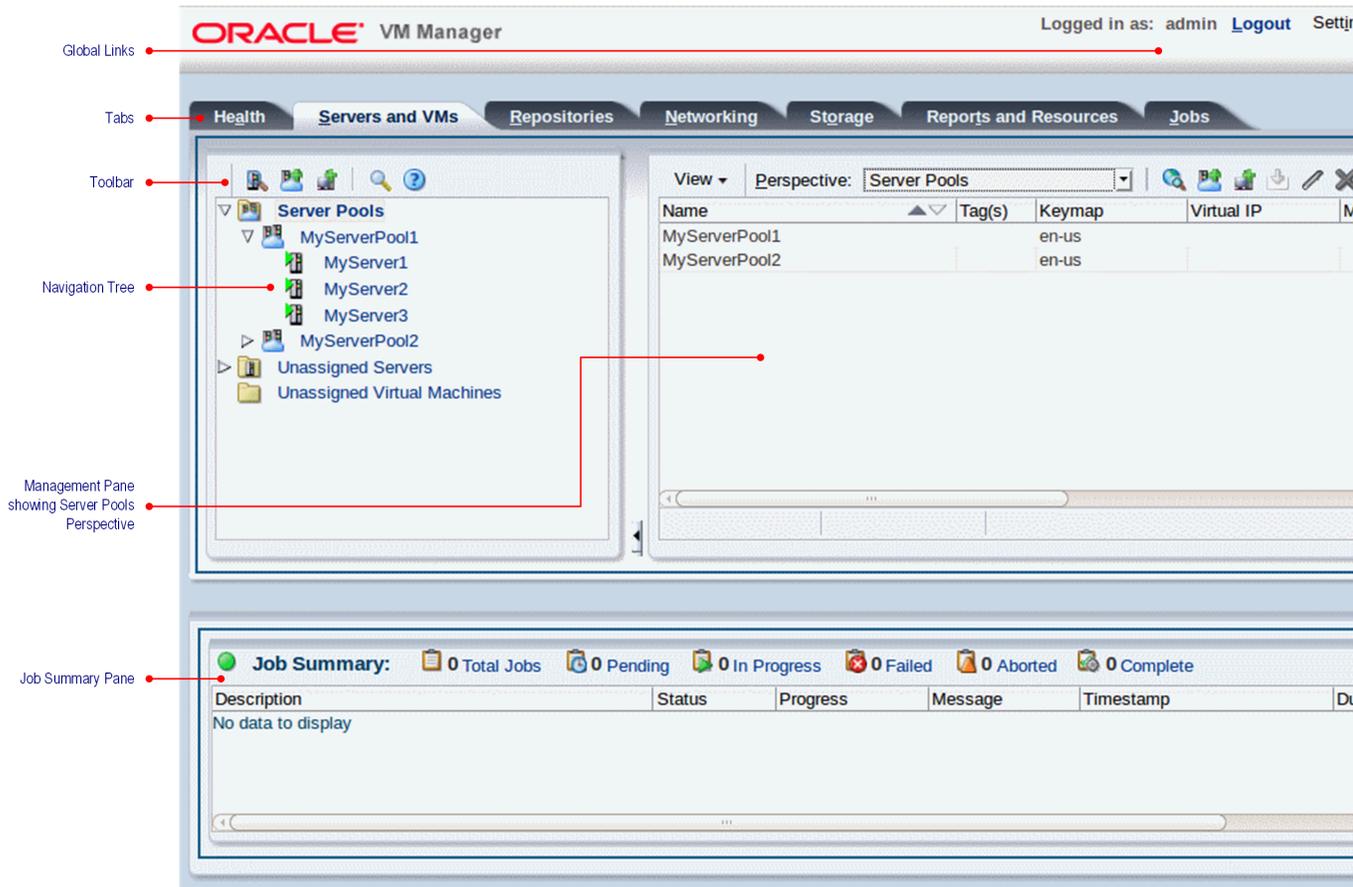
To access menus without using a mouse, you can use the HTML access keys. The shortcut key for a user interface item is shown as an underline of the shortcut key letter in the item name, for example, the shortcut key for the **Servers and VMs** tab is S, as that is the letter underlined in the tab text.

To access the shortcut key, enter the HTML access key for your browser, plus the access key letter. For example, to access a shortcut key on Microsoft Internet Explorer, press **Alt + [shortcut_key](#)** at the same time. See your web browser documentation to find the key combination to use for HTML access keys for your browser.

1.6 User Interface Overview

The Oracle VM Manager Web Interface provides a set of tabs, work areas (management panes), icons, and toolbars, for access to various functions and configuration screens. [Figure 1.1, “The Oracle VM Manager Web Interface”](#) shows the main components of the Oracle VM Manager Web Interface.

Figure 1.1 The Oracle VM Manager Web Interface



The components of the Oracle VM Manager Web Interface are described in more detail in [Table 1.1, “Oracle VM Manager Web Interface components”](#).

Table 1.1 Oracle VM Manager Web Interface components

User Interface Item	Description
Global Links	Contain navigation and resources which are relevant to the whole Oracle VM Manager Web Interface. See Section 1.7, “Using the Global Links” for information on each global link.
Tabs	The tabs available are Health, Servers and VMs, Repositories, Networking, Storage, Reports and Resources, Jobs, and Getting Started . See Section 1.10, “Using the Tabs” for information on each tab.
Toolbar	Allows quick access to a group of task icons. The icons in the toolbar change depending on the selected tab. See Section 1.10.5, “Toolbars” for information on the toolbar.

User Interface Item	Description
Navigation Pane	Contains the navigation tree. See Section 1.10.3, “Navigation Pane”
Navigation Tree	Shows hierarchy of physical and virtual components. Click on a component to open its default pane and related management panes. See Section 1.10.3, “Navigation Pane” for more information on the navigation tree.
Management Pane	Contains the management panes for the selected tab. The management panes change depending on the selected subtab or Perspective in the drop-down list in the management pane toolbar. The management panes that can be displayed are described in each tab. See Section 1.10.4, “Perspectives” for more information.
Job Summary Pane	<p>The Job Summary pane provides a summary of jobs; Total Jobs, Pending, In Progress, Failed, Aborted and Complete. Click an icon to open a dialog box showing the tasks. The dialog box lets you export a list of the jobs to a spreadsheet file, view details of a job, or abort a job. See Chapter 8, Jobs Tab for more information on jobs.</p> <p>The Job Summary pane also includes a status icon that indicates the readiness of Oracle VM Manager:</p> <ul style="list-style-type: none"> •  The icon is green when Oracle VM Manager is running normally and it is safe to perform any operations. •  The icon is yellow when Oracle VM Manager is either in the process of starting up or shutting down. During these periods it is not recommended that any actions are performed within Oracle VM Manager.

The sections that follow describe each set of controls and their relationship to one another, in more detail.

1.7 Using the Global Links

The global links are available on every page. The global links are as shown in [Table 1.2, “Global Link Item Descriptions”](#):

Table 1.2 Global Link Item Descriptions

Global Link	Description
Logged in as <i>username</i>	Displays the username of the user currently logged in.
Logout	Logs out of the Oracle VM Manager Web Interface and displays the Oracle VM Manager log in screen.
Settings	The drop-down list contains configurable accessibility options. See Section 1.4, “Oracle VM Manager Accessibility Features” for more information on the Settings menu.
Help	The drop-down list contains the Oracle VM Help, Getting Started, Oracle.com and About menu items. See Section 1.7.1, “Help Menu” for more information on the Help menu.

1.7.1 Help Menu

Use the **Help** menu to display the Oracle VM Manager online help, the Getting Started chapter of the online help, the product release number, and to go to Oracle's home page. The **Help** menu options are as shown in [Table 1.3, “Help Menu Options”](#).

Table 1.3 Help Menu Options

Help Menu Option	Icon	Description
Oracle VM Manager Help		Opens a new web browser window which contains the Oracle VM Manager online help system.
Getting Started		Opens a new web browser window which contains the Getting Started chapter of the online help system. Read this section to quickly get started using Oracle VM Manager.
Oracle.com		Opens a new web browser window which contains the Oracle home page.
About		Displays the About Oracle VM dialog box which contains the release number.

1.8 Find Icon

Click  to display the **Find** dialog box. Depending on the location of this icon within the Oracle VM Manager Web Interface, different search options are available. Each **Find** dialog contains three fields, **Type**, **Name** and **Result**. The **Type** field contains options relevant to the context in which the dialog has been displayed. For example, when you click  in the navigation pane of the **Servers and VMs** tab, the **Type** field contains options to search for:

- Server Pools
- Servers
- Assigned Servers
- Unassigned Servers
- Virtual Machines
- Assigned Virtual Machines
- Unassigned Virtual Machines

The **Name** field allows you to filter the search results based on the name of objects. You can use special searching options such as * and %. See [Section 1.16, "Name Filters"](#) for more about using the **Name** field to filter search results.

1.9 Help Icon

Click  to display context sensitive help about the tab, subtab, or dialog box. The help is displayed in a separate browser window.

1.10 Using the Tabs

Each tab defines different objects and functional areas of operations that can be performed in [Oracle VM Manager](#). When you select a tab the default management pane for that tab is displayed. The management pane change depending on the selected object in the navigation tree and the **Perspective** selected in the drop-down list in the management pane toolbar. The tabs in the Oracle VM Manager Web Interface are:

- [Chapter 2, Health Tab](#): to monitor the overall health and status of your virtualization environment and to view historical statistics such as memory and CPU usage.

- [Chapter 3, Servers and VMs Tab](#): to discover Oracle VM Servers, create and manage server pools and virtual machines, assign Oracle VM Servers to server pools, and create and configure virtual machines in server pools.
- [Chapter 4, Repositories Tab](#): to create and configure storage repositories and their content; virtual appliances, VM templates, ISO files, [virtual disks](#) and virtual machine configuration files.
- [Chapter 5, Networking Tab](#): to manage networks and their functions in your environment, create, edit and delete networks and [VLAN](#) groups, and create virtual NICs which can be used by [virtual machines](#).
- [Chapter 6, Storage Tab](#): to manage, discover and edit file servers and SAN servers (storage arrays), physical disks, access groups and volume groups.
- [Chapter 7, Reports and Resources Tab](#): to manage tags which can be used to identify and group objects within Oracle VM Manager, and to configure server update repositories for updates of the Oracle VM Servers being managed by Oracle VM Manager. This tab also contains preferences that control certain user interface behaviors.
- [Chapter 8, Jobs Tab](#): to get a global view on [jobs](#), to evaluate information on jobs completed or aborted, or to cancel a job in progress.

A **Getting Started** tab is also available if the **Getting Started** panel is displayed. This tab is described in more detail in [Section 1.10.1, “Getting Started Tab”](#).

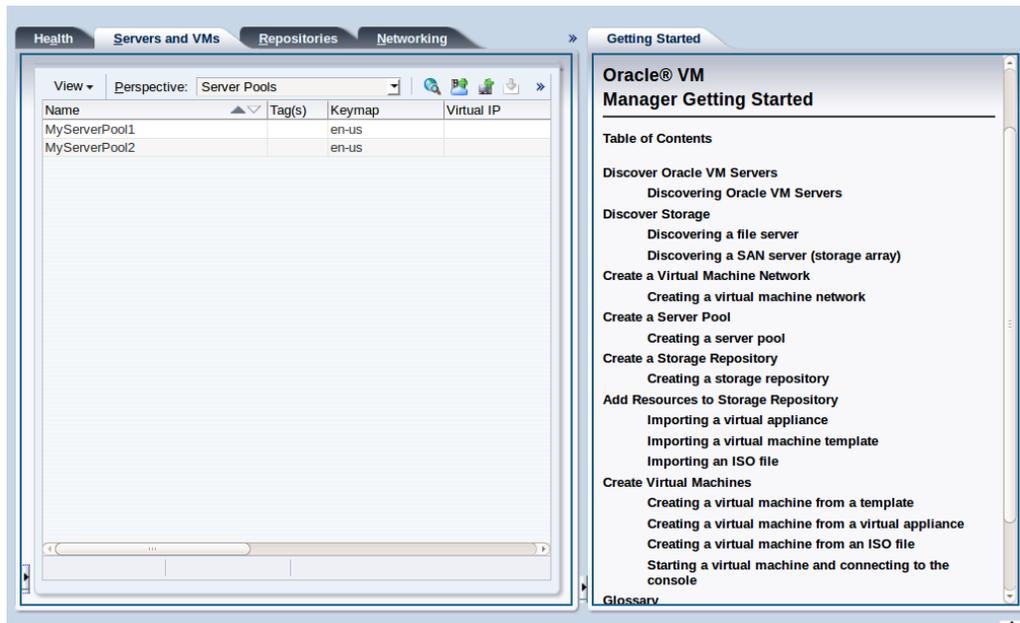
The order of the tabs is largely determined by frequency of use once your environment is completely configured. It is not indicative of the order in which you should attempt to configure the different elements within your environment. For an insight into the typical order in which configuration tasks should be performed for a fresh installation please refer to the information provided in the **Getting Started** tab, or to the [Oracle VM Manager Getting Started Guide](#).

1.10.1 Getting Started Tab

When you first log in to the Oracle VM Manager Web Interface the **Getting Started** tab is displayed on the right side of the management pane. The **Getting Started** tab contains a tutorial that describes how to get started with Oracle VM Manager, 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. To show or hide the tutorial, click the arrow to the right of the management pane.

[Figure 1.2, “Getting Started tab”](#) shows the **Getting Started** tab.

Figure 1.2 Getting Started tab



The information displayed in this tab is based on the content provided in the [Oracle VM Manager Getting Started Guide](#).

1.10.2 Subtabs

On some tabs, links are shown at the top of the tab. These links are referred to as subtabs. Each subtab displays its own management pane. Subtabs are usually used when no [navigation pane](#) is shown, and serve a similar purpose to [perspectives](#). Unlike perspectives, however, they do not display content about related object types, but are specific to a single configuration or management view within the Oracle VM Manager Web Interface. For example, subtabs are used on the **Tools and Resources** tab to distinguish between the configuration options available for different elements within Oracle VM Manager: **Tags**, **Server Update Groups** and **Preferences**. Each of these elements is self-contained and bears no specific relationship to the other.

1.10.3 Navigation Pane

Many of the views rendered for the different tabs available in the Oracle VM Manager Web Interface include a navigation pane, situated on the left hand side of the screen. The navigation pane is mostly used to organize objects that have a grouped relationships within Oracle VM Manager. These relationships are exposed in the form of a navigation tree.

The navigation tree shows the relationship between managed objects. These objects are both physical and virtual, and include Oracle VM Servers, server pools, virtual machines and so on, created using [Oracle VM Manager](#). For example, the relationships between server pools, Oracle VM Servers, and the virtual machines hosted on those Oracle VM Servers. The navigation tree presents each object type as a node. If an object type contains child elements, it is possible to expand the node to view the elements that it contains. In the navigation tree presented on the **Servers and VMs** tab, there is a parent object called **Server Pools**. If you have already defined a server pool within your environment, this node can be expanded to show the server pools that you have already defined. Since each server pool must contain one or more servers, the individual server pool entries in the navigation tree are also displayed as expandable nodes. By expanding any of these nodes it is possible to see a list of each server within the server pool.

For each item in the hierarchy of the navigation tree, a different view is displayed in the management pane. The content of the management pane changes, depending on the object you select in the navigation tree. This view can often be changed by selecting a particular perspective from the [Section 1.10.4, “Perspectives”](#) drop-down. Therefore, if you wish to see the virtual machines that are running on a particular server within a server pool, on the **Servers and VMs** tab you would expand the **Server Pools** node, expand the server pool entry that you are interested in and select the server that you wish to view. Finally, in the management pane, select the **Virtual Machines** perspective.



Note

The icons for objects in the Navigation Tree may vary depending on the object's event status. Usually the same icon is used but an event anomaly is highlighted using an overlay applied to the original icon. See [Section 1.11, “Object Icon Colors”](#) for more information.

1.10.4 Perspectives

If the tab that you are viewing includes a [navigation pane](#), it is more than likely that there are numerous perspectives associated with the item selected in the navigation tree. These perspectives are different views of information associated with each object stored within Oracle VM Manager. The perspectives are listed in a drop-down menu located in the toolbar at the top of the management pane. By selecting a particular perspective from the menu, the data in the management pane is updated to show the information relevant to the selected perspective. Furthermore, the [perspective toolbar](#) is updated to provide management and configuration options that are specific to the perspective that you are viewing.

1.10.4.1 Info Perspective

The Info perspective is common to many elements within the Oracle VM Manager Web Interface. This perspective always shows the individually configured parameters for an item that is currently selected in the navigation tree. Some of these configured parameters may be automatically populated through a discovery process, while others may have been configured manually during the creation of the object that is selected.

The Info perspective or dialog contains a perspective toolbar with the following options:

Table 1.4 Info Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Help		Displays context sensitive help.

1.10.4.2 Events Perspective

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...** perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 1.5 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.

3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 📄 to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 📄 .
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 📄 to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓ , or click **Acknowledge All** 📄 to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 📄 to clear all user acknowledgeable errors.

1.10.5 Toolbars

One or more toolbars may be displayed on a tab, depending on the tab, subtab or [perspective](#) that you are viewing. If a navigation pane is displayed, a toolbar is frequently displayed at the top of the navigation pane, referred to as the **navigation pane toolbar**. When viewing different perspectives a toolbar is positioned at the top of the management pane. This toolbar is called the **perspective toolbar**.

The toolbars are used to perform specific actions. Depending on the selected tab, the icons in the toolbars change. Furthermore, the icons in the perspective toolbar change depending on the perspective selected. Therefore, the toolbar options are context-sensitive and change depending on the part of the user interface that you are currently viewing. Many of the toolbar options are also available as right-click menu options.

In most cases, clicking on a toolbar icon results in the display of a dialog or wizard to guide you through the configuration or management task selected. The icons for each toolbar available on each tab and perspective within the user interface are summarized for each tab view throughout this guide.

1.10.6 Management Pane

The management pane is usually, but not always, presented in table format. Objects or elements are listed in rows, and information or fields of data related to an object or element is separated into columns. In some

cases information in the management pane may be simply presented as informational content listed in a form-like presentation.

Where the information in the management pane is presented as a table, it is often possible to sort the data in the table in ascending or descending format according to the different columns available. This is indicated on columns supporting sort functionality through the display of up and down arrow icons, which appear on mouse roll-over. Clicking on the up arrow icon for a column sorts in ascending order, while clicking on the down arrow icon sorts in descending order. Columns in a tabular view can be resized or rearranged through drag-and-drop style behavior.

A **View** menu that appears alongside the drop-down **Perspectives** menu at the top of the management pane provides alternative mechanisms to change sort order, the order of the fields presented in each column and to control which columns are displayed within a view.

Where additional information about an object or element is available, an additional expansion arrow is provided as a link alongside the item, usually on the left-hand side of a row when the data is presented in tabular format. Clicking on the expansion arrow expands the view for the selected element to display further information. Where this information is categorized according to related sub-elements, the expanded view may display tabs for the content related to each sub-element. Clicking through each of these tabs exposes the information related to each sub-element.

1.11 Object Icon Colors

The icon for an object may be one of three colors: gray, yellow or red. These colors represent the status of the object and the color meanings are listed in table [Table 1.6, “Object Icon Colors”](#).

Table 1.6 Object Icon Colors

Icon Color	Icon Example	Status
Gray		Normal. No warning or error events.
Yellow		The object has a warning event associated with it.
Red		The object has an error event associated with it.
Blue		The object is in an unknown state.

To see the events associated with an object, select the object in the navigation tree. Select **Events** in the management pane's **Perspective** drop-down list. All the events for that object is listed in the table.

1.12 Changing Default UI Behaviour

[Oracle VM Manager](#) makes use of certain default values while performing particular operations or while presenting particular screens within the UI. The default values should be sufficient for the majority of environments, however there are particular cases where changing these default values may improve usability.

Default Oracle VM Manager parameters can be easily edited from within Oracle VM Manager Web Interface by clicking on the **Tools and Resources** tab and then clicking on the **Preferences** link in the toolbar.

The configuration parameters can be changed with instant effect. No restart of Oracle VM Manager is required.

See [Section 7.4, “Preferences”](#) for more information about the parameters available, their meaning and how to set them.

1.13 Drag and Drop

You can drag and drop one or more Oracle VM Servers (either from the table in the management pane, or from the navigation tree) to another [server pool](#), or the **Unassigned Servers** folder in the navigation tree. Any [virtual machines](#) on an Oracle VM Server must be [migrated](#) or [moved](#) before moving an Oracle VM Server.

You can also drag and drop one or more virtual machines from the table in the management pane to a server pool, an Oracle VM Server or to the **Unassigned Virtual Machines** folder in the navigation tree. When you drag and drop multiple virtual machines to a server pool, the placement strategies for the virtual machines depend on the Oracle VM Server roles, and server pool policies such as [Distributed Resource Scheduler \(DRS\)](#) and [Distributed Power Management \(DPM\)](#). See [What are Server Roles?](#) in the [Oracle VM Concepts Guide](#) for information on Oracle VM Server roles, and [What are Server Pool Policies?](#) in the [Oracle VM Concepts Guide](#) for information on server pool policies. See [Section 3.5.2.11, "Migrate or Move Virtual Machines"](#) for more information on migrating virtual machines.

All drag and drop operations are performed serially, and not concurrently, so one job is submitted and performed at a time. For example, when migrating multiple virtual machines, one virtual machine is migrated, then the next, and so on.



Tip

When selecting items to drag and drop, you may find that the items are more easily movable when you select an area of blank space in the item that you wish to drag. Otherwise it is possible that your browser may determine that you are attempting to highlight the text or icon for the item.

1.14 Right-Click Action Menus

You can right-click on many elements within in a tab's management pane and within the navigation tree to bring up the action menu. The right-click action menu options are context-sensitive, and change to display actions related to the selected element. For example, if you click the **Servers and VMs** tab and select a [server pool](#) in the navigation tree and then right-click on an Oracle VM Server in the management pane table, the action menu for the Oracle VM Server is displayed.

Many of the toolbar options are also available as right-click menu options. See [Section 1.10.5, "Toolbars"](#) for more information on the toolbar.

1.15 Multi-Select Functionality

The Oracle VM Manager Web Interface allows you to select multiple objects from the management pane tables and perform actions on all selected objects at one time. Multi-select functionality supports all commonly used selection options and shortcuts. For instance, selecting the first object in the table, holding down the **Shift** key and selecting the last object in the table can be used to select all objects. Alternately, once you have selected any object within the table, you can use the **Ctrl+A** keyboard shortcut to select all remaining objects. To select individual objects, you can hold down the **Ctrl** key while clicking on the objects upon which you want to perform an action.

You can use the toolbar options or the right-click action menu options to perform an action on multiple selected objects. When an action affects multiple objects, the confirmation dialog for the action lists all of the objects that are affected.

All multi-select operations are performed serially, and not concurrently, so one job is submitted and performed at a time. For example, when starting multiple virtual machines, one virtual machine is started, then the next, and so on.

1.16 Name Filters

In many of the tab management panes and in some of the dialog boxes within the Oracle VM Manager Web Interface there is an option to provide a **Name Filter**. For large deployments where many items pertaining to the current view may be listed, it can be difficult to find and select the objects against which you want to perform an action. The **Name Filter** field is designed to make this process easier by allowing you to specify search criteria to filter the displayed results.

In tab management panes, the **Name Filter** field is positioned just below the tabs alongside the toolbar. In the **Find** dialog available on many tabs, this field is labelled **Name**.

The input field is case-insensitive and accepts wild card characters such as * (multiple character variations) and ? (single character variation). For example, a typical filter used in the **Select File Systems** dialog may look like this: *nfs*vol?/repo**.

A submit button marked 'Go' is presented to the right of the **Name Filter** input field. Click on this button to trigger the filter action. Alternatively, while the **Name Filter** input field has focus, you are able to hit the Enter or Return key on your keyboard to trigger the filter action.

1.17 Tags and Tag Filters

[Oracle VM Manager](#) provides the ability to create tags which can be used to identify and group together objects. This functionality makes it easier to quickly limit views of objects and to perform batch operations against objects sharing a common tag. Tags are managed within the **Tags** subtab on the **Reports and Resources** tab within the Oracle VM Manager Web Interface. Management of tags is discussed in more detail in [Section 7.2, "Tags"](#).

Once tags have been created within Oracle VM Manager it is possible to assign them to various components or objects. This can be done by either editing existing objects and adding tags within the dialog that appears, or during the creation of a new object. For instance, to add a tag to an existing Oracle VM Server you should locate the Oracle VM Server on the **Servers and VMs** tab and select the option to edit the Oracle VM Server. In the dialog that appears, click on the **Tags** tab and assign the tags that you wish to use to identify the Oracle VM Server in future.

Tags can be reused across objects of different types. For instance, the same tag used to identify a particular set of Oracle VM Servers can also be used to group a set of virtual machines together. To see all objects that share the same tag, you can click on the **Find Components** icon on the **Tags** subtab on the **Reports and Resources** tab.

The **Find Components** feature supports multi-select functionality, allowing you to search for components that are tagged by a number of separate tag names. Furthermore, the **Find Components** dialog allows you to filter results by object type, by selecting a particular object type from the **Show Types** drop-down selector.

Many screens within the Oracle VM Manager Web Interface provide the option to use a **Tag Filter**. This feature takes the form of a drop-down box listing the available tags that can be used to form a filter. Selecting a tag limits the view in the current screen to objects sharing the same tag. On a screen that also provides the **Name Filter** option, it is possible to switch between the filter types by selecting the appropriate filter type from the drop-down menu.

When a view is limited using the **Tag Filter** function, batch operations can be performed on all items listed by using shortcut keys such as **Ctrl + a** to select all items before selecting the operation that you wish to execute.

1.18 VM Name Filters

In the **Physical Disks** view of a management pane there is an option to provide a **VM Name Filter**. The **VM Name Filter** field allows you to specify search criteria to filter the displayed results using virtual machine names.

In **Physical Disk** views, the **VM Name Filter** field is positioned just below the tabs alongside the Toolbar.

The input field is case-insensitive and accepts wild card characters such as * (multiple character variations) and ? (single character variation).

A submit button marked 'Go' is presented to the right of the **VM Name Filter** input field. Click on this button to trigger the filter action. Alternatively, while the **VM Name Filter** input field has focus, you are able to hit the Enter or Return key on your keyboard to trigger the filter action.

1.19 Case Sensitivity

The values you enter in UI fields are case sensitive, unless explicitly stated in this Guide. For example, entering `MyServer` in a field is not the same as entering `myserver`. The UI treats these strings as case sensitive, and are considered different.

Chapter 2 Health Tab

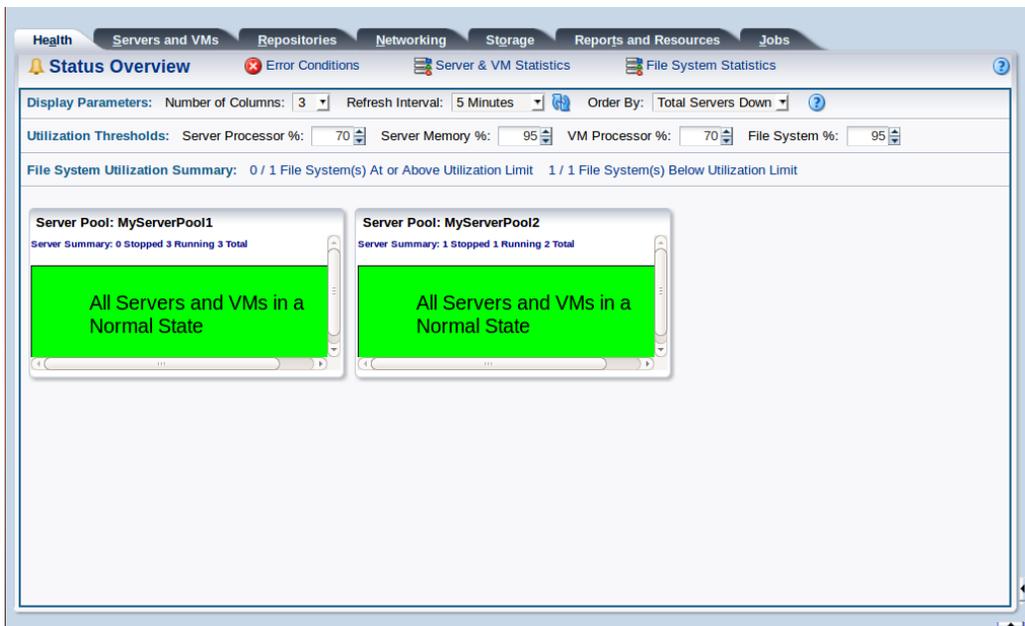
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Use the **Health** tab to monitor the overall health and status of your Oracle VM environment, and to view historical statistics such as memory and CPU usage. The System Statistics Collection service must be enabled for information to be updated on this tab. See [Section 7.4, “Preferences”](#) for information on how to configure this service.

Figure 2.1, “Health tab” shows the **Health** tab.

Figure 2.1 Health tab



The **Health** tab contains the subtabs set out in [Table 2.1, “Health Subtabs”](#).

Table 2.1 Health Subtabs

Subtab	Description
Status Overview	Displays information about each server pool, Oracle VM Server summary, and the number of Oracle VM Servers that are running or stopped.
Error Conditions	Displays an up-to-date view of all error conditions and warnings.
Server and VM Statistics	Displays historical statistics for your Oracle VM Servers and virtual machines.
File System Statistics	Displays utilization statistics for file systems that are in use by Oracle VM Servers within the environment..

 [Section 1.9, "Help Icon"](#) displays context sensitive help about the **Health** tab.

2.1 Status Overview

The dashboard displays information about each [server pool](#), Oracle VM Server summary, and the number of Oracle VM Servers that are running or stopped. Note that information is not displayed for Oracle VM Servers or virtual machines that are not assigned to a server pool.

A green, yellow, or red status is displayed for each server pool:

Green: All Oracle VM Servers and virtual machines are in a normal state.

Yellow: One or more Oracle VM Server(s) has a CPU or memory utilization above the specified limit. One or more virtual machine(s) has a CPU utilization above the specified limit. One or more file systems has a utilization above the specified limit. Click the hyperlink to view detailed information. See [Section 2.1.2, "Detailed Information Dialog"](#) for more information on this dialog.

Red: One or more Oracle VM Server(s) has unacknowledged [events](#) indicating a down state that needs operator attention. Click the hyperlink to view detailed information.

The information displayed here is dependent on the statistics collection facility being enabled. If this facility is disabled, a message is displayed to indicate that statistics for health monitoring are unavailable and that the statistics collection facility must be enabled if you wish to use this feature in the future. More information on enabling and configuring the statistics collection facility is available in [Section 7.4, "Preferences"](#). Also note that statistics collection is an asynchronous and periodic service, so the information displayed on the **Health** tab is not in real time, but is dependent on the statistics collection and file system statistics intervals that are configured for this service.

2.1.1 Toolbar

This section contains the toolbar options in the **Status Overview** subtab of the **Health** tab.

Display Parameters

The **Display Parameters** options allow you to control how the information in the **Status Overview** subtab is displayed. The following options are available:

- **Number of Columns:** Sets the number of columns displayed. Select between 1 to 10 columns.
- **Refresh Interval:** Sets the interval between which the statistics are refreshed. Select 30 seconds, 1, 2, 5 or 10 minutes. The default setting is 5 minutes.
- **Order By:** Sets the sort order for the information. Sort by **Total Servers Down**, **Total VMs Down**, or **Alphabetically**.

These settings are persistent across each user login, as described in [Section 1.3, “User Preference Persistence”](#).

Utilization Thresholds

The **Utilization Thresholds** options at the top of the panel allows you to set the parameters available to trigger different health warnings. The following options are available:

- **Server Processor %:** Sets the percentage of processor utilization on an Oracle VM Server to trigger a warning. The default setting is 70%. Note that this setting does not apply to Unassigned Servers.
- **Server Memory %:** Sets the percentage of memory utilization on an Oracle VM Server to trigger a warning. The default setting is 95%. Note that this setting does not apply to Unassigned Servers.
- **VM Processor %:** Sets the percentage of processor utilization for a virtual machine to trigger a warning. The default setting is 70%. Note that this setting does not apply to Unassigned Virtual Machines.
- **File System %:** Sets the percentage of file system utilization for an Oracle VM Server to trigger a warning. The default setting is 95%.

These settings are persistent across each user login, as described in [Section 1.3, “User Preference Persistence”](#).

File System Utilization Summary

The **File System Utilization Summary** toolbar provides two links to allow you to view information about file systems that are either above or below the utilization threshold. The link text indicates the number of file systems that are being monitored and the number of these that are either above or below the utilization threshold. Clicking on either link provides a listing of the file systems that match the criteria specified by the link text.

The information displayed in the resulting dialog lists the file systems in a tabulated format. The following columns are presented:

- **Name:** The name of the file system, as stored in Oracle VM Manager.
- **Storage Device:** The name of the storage device where the file system is located. This column is not displayed if the storage type is a file server.
- **Total Size (GiB):** The total size of the file system measured in gibibytes.
- **Available Size (GiB):** The amount of free or available space on the file system measured in gibibytes.
- **Used Size (GiB):** The amount of space that is currently used on the file system measured in gibibytes.
- **Utilization (%):** The calculated percentage of space currently used on the file system.
- **Last Refreshed:** The date and time when the last file system statistics were collected and refreshed.

Note that if **System Statistics Collection** is disabled as described in [Section 7.4, “Preferences”](#), a message notifying you that the service is disabled and not available for health monitoring is displayed in this toolbar instead.

2.1.2 Detailed Information Dialog

When a **Yellow** or **Red** status is shown for a server pool in the **Status Overview** dashboard, the message appears as a hyperlink that opens a dialog containing more detailed information to describe the incident that needs attention. This dialog provides facilities to discover events leading up to an incident.

The dialog toolbar includes various icons to help you resolve any issues. Select the item in the table that you wish to act on. Click the **Events** icon  to view more information about the events within the log related to the item that you are working with. You may need to acknowledge particular events in order to resolve an issue. See [Section 1.10.4.2, “Events Perspective”](#) for information on acknowledging events.

2.2 Error Conditions

The **Error Conditions** subtab displays an up-to-date view of all error conditions and warnings.

The table view in the **Error Conditions** subtab includes the following fields:

- **Severity:** The severity level assigned to the error event.
- **Timestamp:** The date and time the error event occurred.
- **Modify Time:** The last recorded date and time the error event was modified.
- **Name:** The name of the object associated with the error event.
- **Category:** The category of the object associated with the error event.
- **Type:** The type of error event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the error event.
- **Acknowledged:** Whether the error event has been acknowledged.
- **User Acknowledgeable:** Whether the error event can be acknowledged by the user.

Alongside each event entry in the table, there is an arrow that allows you to expand the view for each entry. This displays the full **Description** for the event.

2.2.1 Toolbar

The **Error Conditions** subtab of the **Health** tab includes the toolbar items:

- **View:** Controls the columns to display, and the sort order of columns.
- **Refresh Interval:** Sets the interval between which the statistics are refreshed. Select 30 seconds, 1, 2, 5 or 10 minutes. The default setting is 5 minutes.
- **Refresh Now:** The  icon refreshes the statistical information.
- **Include Acknowledged:** Provides an option to view acknowledged error events. To see a history of acknowledged events, select **Yes** in the drop-down list. The default setting is **No**.

2.3 Server and VM Statistics

Oracle VM Manager periodically collects vital statistics such as memory and CPU usage. Select the **Server and VM Statistics** subtab of the **Health** tab to view historical statistics for your Oracle VM Servers and virtual machines. Note that statistics collection is an asynchronous and periodic service, so the information displayed on the **Health** tab is not in real time, but is dependent on the statistics collection interval that is configured for this service. Furthermore, the historical period over which you are able to view this data is limited to the statistics collection hold time value configured for this service. Views of different statistical information are provided by clicking on elements in the navigation pane.



Note

You can disable statistics collection in Oracle VM Manager from the **Preferences** subtab of the **Reports and Resources** tab. For more information about disabling statistic collection, and the implications of doing so, see [Section 7.4, “Preferences”](#).

2.3.1 Toolbar

The navigation pane toolbar on the **Statistics** subtab of the **Health** tab, includes the following item:

- [Find Icon](#)

2.3.2 Server Pools Folder

By clicking on the **Server Pools** folder in the navigation tree in the navigation pane, you can view the following statistical information about server pools:

- **Server Pool Name:** The name of the server pool. The following columns are available, presenting information for each server pool:
 - **Processors:**
 - **Server Total:** Total number of processors of all Oracle VM Servers in the server pool.
 - **VM Allocated:** Total number of processors available for use by virtual machines in the server pool.
 - **VM Used:** Total number of processors in use by virtual machines in the server pool.
 - **Memory (GiB):**
 - **Total:** Total amount of memory, in [GiB](#), in the server pool.
 - **Configured:** Total amount of memory, in GiB, available for use by virtual machines in the server pool.
 - **Used:** Total amount of memory, in GiB, in use by virtual machines in the server pool.
 - **Last Refreshed:** The date and time when the last server pool statistics were collected and refreshed.

The toolbar items include:

Table 2.2 Server Pools Folder Statistics Toolbar Icon Options

Toolbar Option	Icon	Description
View		A drop down which controls the columns to display, and the sort order of columns.
Refresh Interval		Sets the interval between which the statistics are refreshed. Select 30 seconds, 1, 2, 5 or 10 minutes. The default setting is 5 minutes. These settings are persistent across each user login, as described in Section 1.3, “User Preference Persistence” .
Refresh View Now		Refreshes the statistical information.

2.3.3 Server Pool Item

By expanding the **Server Pools** node in the navigation pane, you can click on individual server pools. Clicking on a server pool displays the following statistical data:

- **Server Name:** The name of the Oracle VM Server. The following columns are available, presenting information for each Oracle VM Server:

- **Processors:**

- **Utilization (%):** The percentage of total processors in use on the Oracle VM Server.
- **Total:** The number of processors available on the Oracle VM Server.

- **Memory (GiB):**

- **Utilization (%):** The percentage of total memory in use on the Oracle VM Server.
- **Total:** The memory, in [GiB](#), on the Oracle VM Server.
- **Usable by VMs:** The memory, in GiB, available for use on the Oracle VM Server.


Note

Usable memory is a calculated value. As a result it is possible for the sum of the usable memory value and the used memory value to be greater than the total memory.

- **Used:** The memory, in GiB, in use by the operating system, its processes, and virtual machine management.
- **Last Refreshed:** The date and time when the last server statistics were collected and refreshed. This field may appear blank if no statistics have been collected. This may occur if the server is stopped.

The toolbar items include:

Table 2.3 Server Pool Item Statistics Toolbar Icon Options

Toolbar Option	Icon	Description
View		A drop down which controls the columns to display, and the sort order of columns.
Refresh Interval		Sets the interval between which the statistics are refreshed. Select 30 seconds, 1, 2, 5 or 10 minutes. The default setting is 5 minutes. These settings are persistent across each user login, as described in Section 1.3, "User Preference Persistence" .
Refresh View Now		Refreshes the statistical information.
Line Graph		Opens a dialog containing a line graph view of the statistics as they are refreshed.

2.3.3.1 Server Line Graph

Oracle VM Server statistics are displayed for running Oracle VM Servers using the **Server Statistics** dialog.

To display statistics on a running Oracle VM Server:

1. Click the **Health** tab.
2. Select the server pool in which the Oracle VM Server resides in the navigation tree. Alternatively, select the **Unassigned Servers** folder.

3. Select the Oracle VM Server in the management pane table, and click **Line Graph**  in the management pane toolbar.
4. Select the number of minutes for which to display statistics for the Oracle VM Server in the **Display From** field. You can either enter the number of minutes, or use the arrows to incrementally change the minutes. You can enter between 1 minute, and the maximum number of minutes for which statistics are held. This upper limit is set using the **Preferences** subtab of the **Reports and Resources** tab. See [Section 7.4, “Preferences”](#) for more information on setting the maximum time for which statistics are held.

Set the refresh interval using the **Refresh Interval** drop down.

The Processor Utilization and Memory Utilization for the Oracle VM Server is displayed in the line graphs.

Click **OK** to close the dialog.

2.3.4 Server Item

By expanding a **Server Pool** item in the navigation tree, you can select Oracle VM Servers in the server pool. Clicking on an Oracle VM Server displays the following statistical data:

- **Virtual Machine Name:** The name of the virtual machine. The following columns are available, presenting information for each virtual machine:
 - **Processors:**
 - **Configured:** The number of processors set in the virtual machine.
 - **Current:** The number of processors in use by the virtual machine.
 - **Utilization (%):** The percentage of the total processors in use by the virtual machine.
 - **Memory (GiB):**
 - **Configured:** The amount of memory, in GiB, set for the virtual machine.
 - **Used:** The memory, in GiB, in use by the virtual machine.
 - **Last Refreshed:** The date and time when the last virtual machine statistics were collected and refreshed. This field may appear blank if no statistics have been collected. This may occur if a virtual machine is stopped.

The toolbar items include:

Table 2.4 Server Item Statistics Toolbar Icon Options

Toolbar Option	Icon	Description
View		A drop down which controls the columns to display, and the sort order of columns.
Refresh Interval		Sets the interval between which the statistics are refreshed. Select 30 seconds, 1, 2, 5 or 10 minutes. The default setting is 5 minutes.
Refresh View Now		Refreshes the statistical information.
Line Graph		Opens a dialog containing a line graph view of the statistics as they are refreshed.

2.3.4.1 Virtual Machine Line Graph

Virtual machine statistics for processor utilization are displayed for running virtual machines using the **Virtual Machine Statistics** dialog.

To display statistics on a running virtual machine:

1. Click the **Health** tab.
2. Select the Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select the virtual machine in the management pane, and click **Line Graph**  in the management pane toolbar.
4. Select the number of minutes for which to display statistics for the virtual machine in the **Display From** field. You can either enter the number of minutes, or use the arrows to incrementally change the minutes. You can enter between 1 minute, and the maximum number of minutes for which statistics are held. This upper limit is set using the **Preferences** subtab of the **Reports and Resources** tab. See [Section 7.4, "Preferences"](#) for more information on setting the maximum time for which statistics are held.

Set the refresh interval using the **Refresh Interval** drop down.

The Processor Utilization for the virtual machine is displayed in the line graph.

Click **OK** to close the dialog.

2.3.5 Unassigned Servers Folder

By clicking on the **Unassigned Servers** folder in the navigation tree, you can view the following statistical information:

- **Server Name:** The name of the Oracle VM Server. The following columns are available, presenting information for each Oracle VM Server:
 - **Processors:**
 - **Utilization (%):** The percentage of total processors in use on the Oracle VM Server.
 - **Total:** The number of processors available on the Oracle VM Server.
 - **Memory (GiB):**
 - **Utilization (%):** The percentage of total memory in use on the Oracle VM Server.
 - **Total:** The memory, in [GiB](#), on the Oracle VM Server.
 - **Usable by VMs:** The memory, in GiB, available for use on the Oracle VM Server.



Note

Usable memory is a calculated value. As a result it is possible for the sum of the usable memory value and the used memory value to be greater than the total memory.

- **Used:** The memory, in GiB, in use by the operating system, its processes, and virtual machine management.

- **Last Refreshed:** The date and time when the last server statistics were collected and refreshed. This field may appear blank if no statistics have been collected. This may occur if the server is stopped.

The toolbar items include:

Table 2.5 Unassigned Servers Folder Statistics Toolbar Icon Options

Toolbar Option	Icon	Description
View		A drop down which controls the columns to display, and the sort order of columns.
Refresh Interval		Sets the interval between which the statistics are refreshed. Select 30 seconds, 1, 2, 5 or 10 minutes. The default setting is 5 minutes.
Refresh View Now		Refreshes the statistical information.
Line Graph		Opens a dialog containing a line graph view of the statistics as they are refreshed.

2.3.5.1 Server Line Graph

Oracle VM Server statistics are displayed for running Oracle VM Servers using the **Server Statistics** dialog.

To display statistics on a running Oracle VM Server:

1. Click the **Health** tab.
2. Select the server pool in which the Oracle VM Server resides in the navigation tree. Alternatively, select the **Unassigned Servers** folder.
3. Select the Oracle VM Server in the management pane table, and click **Line Graph**  in the management pane toolbar.
4. Select the number of minutes for which to display statistics for the Oracle VM Server in the **Display From** field. You can either enter the number of minutes, or use the arrows to incrementally change the minutes. You can enter between 1 minute, and the maximum number of minutes for which statistics are held. This upper limit is set using the **Preferences** subtab of the **Reports and Resources** tab. See [Section 7.4, “Preferences”](#) for more information on setting the maximum time for which statistics are held.

Set the refresh interval using the **Refresh Interval** drop down.

The Processor Utilization and Memory Utilization for the Oracle VM Server is displayed in the line graphs.

Click **OK** to close the dialog.

2.3.6 Unassigned Servers Item

By expanding the **Unassigned Servers** folder in the navigation tree, you can select Oracle VM Servers that are not part of a server pool. Clicking on an Oracle VM Server displays the following statistical data:

- **Virtual Machine Name:** The name of the virtual machine. The following columns are available, presenting information for each virtual machine:
 - **Processors:**

- **Configured:** The number of processors set in the virtual machine.
- **Current:** The number of processors in use by the virtual machine.
- **Utilization (%):** The percentage of the total processors in use by the virtual machine.
- **Memory (GiB):**
 - **Configured:** The amount of memory, in GiB, set for the virtual machine.
 - **Used:** The memory, in GiB, in use by the virtual machine.
- **Last Refreshed:** The date and time when the last virtual machine statistics were collected and refreshed. This field may appear blank if no statistics have been collected. This may occur if a virtual machine is stopped.

The toolbar items include:

Table 2.6 Unassigned Servers Item Statistics Toolbar Icon Options

Toolbar Option	Icon	Description
View		A drop down which controls the columns to display, and the sort order of columns.
Refresh Interval		Sets the interval between which the statistics are refreshed. Select 30 seconds, 1, 2, 5 or 10 minutes. The default setting is 5 minutes.
Refresh View Now		Refreshes the statistical information.
Line Graph		Opens a dialog containing a line graph view of the statistics as they are refreshed.

2.3.6.1 Virtual Machine Line Graph

Virtual machine statistics for processor utilization are displayed for running virtual machines using the **Virtual Machine Statistics** dialog.

To display statistics on a running virtual machine:

1. Click the **Health** tab.
2. Select the Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select the virtual machine in the management pane, and click **Line Graph**  in the management pane toolbar.
4. Select the number of minutes for which to display statistics for the virtual machine in the **Display From** field. You can either enter the number of minutes, or use the arrows to incrementally change the minutes. You can enter between 1 minute, and the maximum number of minutes for which statistics are held. This upper limit is set using the **Preferences** subtab of the **Reports and Resources** tab. See [Section 7.4, "Preferences"](#) for more information on setting the maximum time for which statistics are held.

Set the refresh interval using the **Refresh Interval** drop down.

The Processor Utilization for the virtual machine is displayed in the line graph.

Click **OK** to close the dialog.

2.3.7 Unassigned Virtual Machines Folder

By clicking on the **Unassigned Virtual Machines** folder in the navigation tree, you can view the following statistical information:

- **Virtual Machine Name:** The name of the virtual machine. The following columns are available, presenting information for each virtual machine:
 - **Processors:**
 - **Configured:** The number of processors set in the virtual machine.
 - **Current:** The number of processors in use by the virtual machine.
 - **Utilization (%):** The percentage of the total processors in use by the virtual machine.
 - **Memory (GiB):**
 - **Configured:** The amount of memory, in GiB, set for the virtual machine.
 - **Used:** The memory, in GiB, in use by the virtual machine.
 - **Last Refreshed:** The date and time when the last virtual machine statistics were collected and refreshed. This field may appear blank if no statistics have been collected. This may occur if a virtual machine is stopped.

The toolbar items include:

Table 2.7 Unassigned Virtual Machines Folder Statistics Toolbar Icon Options

Toolbar Option	Icon	Description
View		A drop down which controls the columns to display, and the sort order of columns.
Refresh Interval		Sets the interval between which the statistics are refreshed. Select 30 seconds, 1, 2, 5 or 10 minutes. The default setting is 5 minutes.
Refresh View Now		Refreshes the statistical information.
Line Graph		Opens a dialog containing a line graph view of the statistics as they are refreshed.

2.3.7.1 Virtual Machine Line Graph

Virtual machine statistics for processor utilization are displayed for running virtual machines using the **Virtual Machine Statistics** dialog.

To display statistics on a running virtual machine:

1. Click the **Health** tab.
2. Select the Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select the virtual machine in the management pane, and click **Line Graph**  in the management pane toolbar.

- Select the number of minutes for which to display statistics for the virtual machine in the **Display From** field. You can either enter the number of minutes, or use the arrows to incrementally change the minutes. You can enter between 1 minute, and the maximum number of minutes for which statistics are held. This upper limit is set using the **Preferences** subtab of the **Reports and Resources** tab. See [Section 7.4, “Preferences”](#) for more information on setting the maximum time for which statistics are held.

Set the refresh interval using the **Refresh Interval** drop down.

The Processor Utilization for the virtual machine is displayed in the line graph.

Click **OK** to close the dialog.

2.4 File System Statistics

Oracle VM Manager periodically collects vital statistics about file system utilization. Select the **File System Statistics** subtab of the **Health** tab to view the current statistics reported for each file system in use by your Oracle VM Servers. Statistics are only collected for file systems that are mounted within your Oracle VM environment for the purpose of hosting a repository.

Note that statistics collection is an asynchronous and periodic service, so the information displayed on the **Health** tab is not in real time, but is dependent on the file system statistics collection interval that is configured for this service. Furthermore, the historical period over which you are able to view this data is limited to the statistics collection hold time value configured for this service.

Statistics for file systems are organized by the storage where they are hosted. There are top-level nodes for File Servers, Local File Systems and Shared File Systems. You can expand these nodes in the navigation pane to list all of the storage for which file system statistics are available. Clicking on a storage node in the navigation pane updates the management pane to display the file systems available for that storage node and displays the relevant statistics.



Note

You can disable statistics collection in Oracle VM Manager from the **Preferences** subtab of the **Reports and Resources** tab. For more information about disabling statistic collection, and the implications of doing so, see [Section 7.4, “Preferences”](#).

The toolbar at the top of the management pane provides the following options:

Table 2.8 File System Statistics Toolbar Icon Options

Toolbar Option	Icon	Description
View		A drop down which controls the columns to display, and the sort order of columns.
Refresh Interval		Sets the interval between which the statistics are refreshed. Select 70 seconds, 2, 5 or 10 minutes. The default setting is 2 minutes.
Refresh View Now		Refreshes the statistical information.
Line Graph		Opens a dialog containing a line graph view of the statistics as they are refreshed.

The table displayed in the management pane for any file server or storage entity includes the following columns:

- **Name:** The name of the file system, as stored in Oracle VM Manager.

- **Storage Device:** The name of the storage device where the file system is located. This column is not displayed if the storage type is a file server.
- **Total Size (GiB):** The total size of the file system measured in gibibytes.
- **Available Size (GiB):** The amount of free or available space on the file system measured in gibibytes.
- **Used Size (GiB):** The amount of space that is currently used on the file system measured in gibibytes.
- **Utilization (%):** The calculated percentage of space currently used on the file system.
- **Last Refreshed:** The date and time when the last file system statistics were collected and refreshed.

2.4.1 File System Statistics Line Graph

Statistics for file system utilization are displayed for using the **File System Statistics** dialog.

To display statistics on a file system:

1. Click the **Health** tab.
2. Select the **File System Statistics** subtab of the **Health** tab.
3. Select the file system in the management pane, and click **Line Graph**  in the management pane toolbar.
4. Select the number of minutes for which to display statistics for the file system in the **Display From** field. You can either enter the number of minutes, or use the arrows to incrementally change the minutes. You can enter between 70 seconds and 10 minutes.

Set the refresh interval using the **Refresh Interval** drop down.

The File System utilization is displayed in the line graph.

Click **OK** to close the dialog.

Chapter 3 Servers and VMs Tab

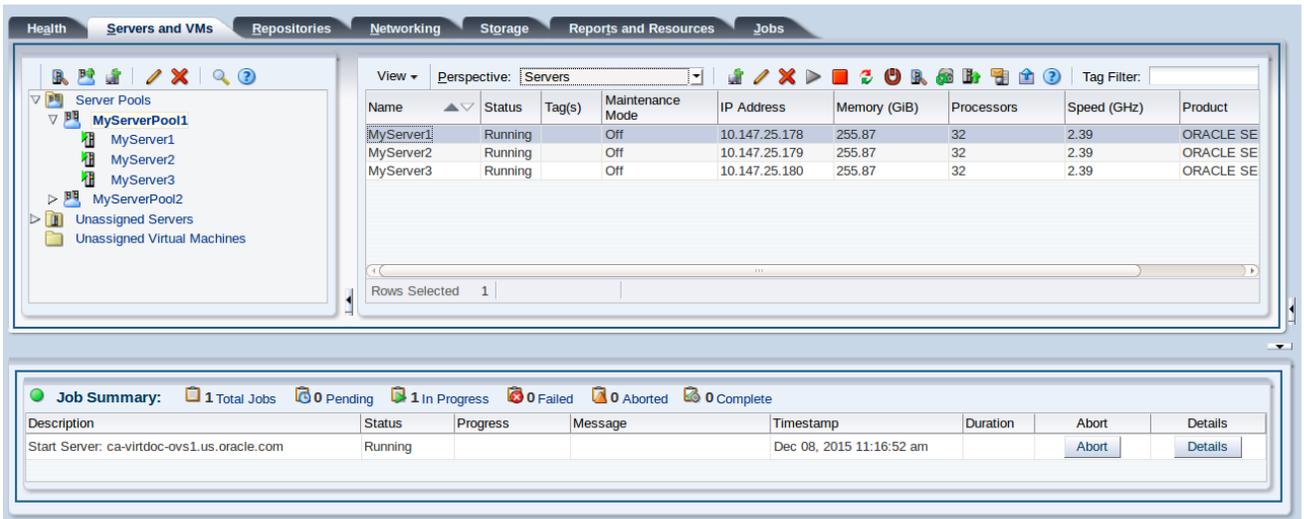
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Use the **Servers and VMs** tab to discover Oracle VM Servers, create and manage server pools and virtual machines, assign Oracle VM Servers to server pools, and create and configure virtual machines in server pools.

Figure 3.1, “Servers and VMs tab” shows the **Servers and VMs** tab.

Figure 3.1 Servers and VMs tab



The **Servers and VMs** tab contains the **Perspectives** set out in [Table 3.1, “Servers and VMs Tab Perspective”](#). The **Perspectives** available in any particular view vary depending on the item selected in the navigation tree. This table provides a quick reference for all of the available perspectives in the **Servers and VMs** tab. Each perspective provides a different view of your configuration and also includes its own toolbar.

Table 3.1 Servers and VMs Tab Perspective

Management Pane Perspective	Description
Server Pools	<p>Displays information about the server pools. Use this tab to edit server pool policies, add or remove Oracle VM Servers from a server pool, edit information about a server pool, and delete a server pool.</p> <p>Select the Server Pools folder in the navigation tree and then select Server Pool in the Perspective drop-down list to display this pane.</p> <p>For more information about managing server pool, see Section 3.3.1, “Server Pools Perspective” .</p>
Server Processor Compatibility	<p>Displays information about the server processor compatibility groups defined for selected Oracle VM Servers with compatible processors for virtual machine migration. You can perform actions on the server processor compatibility groups using the tab's toolbar, such as create, edit and delete.</p> <p>Select the Server Pools folder in the navigation tree and then select Server Processor Compatibility in the Perspective drop-down list to display this pane.</p> <p>See Section 3.3.2, “Server Processor Compatibility Perspective” for information on server processor compatibility groups.</p>
Servers	<p>Lists the Oracle VM Servers in the server pool. You can perform actions on the Oracle VM Servers using the tab's toolbar, such as start, stop, and edit. You can also use the tab's toolbar to discover an Oracle VM Server and create a virtual machine on a selected Oracle VM Server. When an Oracle VM Server is</p>

Management Pane Perspective	Description
	<p>discovered, it is listed in the Unassigned Servers folder. When an Oracle VM Server is added to a server pool, it is listed in the Server Pools folder.</p> <p>Select a server pool in the navigation tree and then select Servers in the Perspective drop-down list to display this pane.</p> <p>See Section 3.4.2, “Servers Perspective”.</p>
Virtual Machines	<p>Displays information about the virtual machines in the server pool, or on the Oracle VM Server. You can perform actions on the virtual machines using the tab's toolbar, such as start, stop, edit, migrate and clone.</p> <p>Use the Name Filter input field to specify search criteria to filter the displayed results. See Section 1.16, “Name Filters” for more information.</p> <p>Select a server pool or Oracle VM Server in the navigation tree and then select Virtual Machines in the Perspective drop-down list to display this pane.</p> <p>The Virtual Machines pane is also displayed when you select the Unassigned Virtual Machines folder in the navigation tree.</p> <p>See Section 3.4.3, “Virtual Machines Perspective”.</p>
Anti-Affinity Group	<p>Displays information about the anti-affinity groups defined to keep selected virtual machines on separate Oracle VM Servers. You can perform actions on the anti-affinity groups using the tab's toolbar, such as create, edit and delete.</p> <p>Select a server pool in the navigation tree and then select Anti-Affinity Group in the Perspective drop-down list to display this pane.</p> <p>See Section 3.4.4, “Anti-Affinity Groups Perspective” for information on anti-affinity groups.</p>
Policies	<p>Displays information about server pool power and resource management policies; Distributed Resource Scheduler (DRS), or Distributed Power Management (DPM). You can define or edit a policy for the server pool using the tab's toolbar.</p> <p>Select a server pool in the navigation tree and then select Policies in the Perspective drop-down list to display this pane.</p> <p>See What are Server Pool Policies? in the Oracle VM Concepts Guide for more information on these server pool policies.</p> <p>See Section 3.4.5, “Policies Perspective”.</p>
Server Update Repositories	<p>Displays information about the update repositories to update the software on Oracle VM Servers. These repositories override the global repositories set in the Tools and Resources tab. You can perform actions on the update repositories using the tab's toolbar, such as create, edit and delete.</p> <p>Select a server pool in the navigation tree and then select Server Update Repositories in the Perspective drop-down list to display this pane. See Section 3.4.6, “Server Update Repositories Perspective” for information</p>

Management Pane Perspective	Description
	<p>on using the update repositories to override the global repositories. See Section 7.3, “Server Update Groups” for information on the global repositories.</p>
Ethernet Ports	<p>Lists the Ethernet ports on the selected Oracle VM Server that can be used for network bridges. Use this tab to edit the type of addressing (none, DHCP or static IP address) used for the Ethernet port.</p> <p>Select an Oracle VM Server in the navigation tree and then select Ethernet Ports in the Perspective drop-down list to display this pane.</p> <p>For more information on network bridges, see Network Bridges in the <i>Oracle VM Concepts Guide</i>.</p>
Bond Ports	<p>Lists the bonded Ethernet ports on the selected Oracle VM Server. Use this tab to create, edit and delete bonds on Ethernet ports.</p> <div data-bbox="560 724 625 808" style="display: inline-block; vertical-align: middle;"> </div> <div data-bbox="738 724 1474 871" style="display: inline-block; vertical-align: middle; margin-left: 10px;"> <p>Note</p> <p>While Oracle VM Manager uses the Linux terminology, Oracle Solaris users should understand port bonding to be equivalent to data link aggregation.</p> </div> <p>Select an Oracle VM Server in the navigation tree and then select Bond Ports in the Perspective drop-down list to display this pane.</p> <p>For more information on network bonding, see How is Network Bonding Used in Oracle VM? in the <i>Oracle VM Concepts Guide</i>.</p>
Physical Disks	<p>Lists the local storage available on the selected Oracle VM Server. Use this tab to edit, rescan, clone, refresh, delete, display servers using a physical disk, and display events for local storage. You can also use this tab to create or delete an OCFS2 file system on local storage.</p> <p>Use the Name Filter input field to specify search criteria to filter the displayed results. See Section 1.16, “Name Filters” for more information.</p> <p>Select an Oracle VM Server in the navigation tree and then select Physical Disks in the Perspective drop-down list to display this pane.</p> <p>For more information on local storage, see Local Storage in the <i>Oracle VM Concepts Guide</i>.</p>
Storage Initiators	<p>Lists the storage initiators available on the Oracle VM Server in your environment. Use this tab to view access groups for selected storage initiators.</p> <p>Select an Oracle VM Server in the navigation tree and then select Storage Initiators in the Perspective drop-down list to display this pane.</p>
Control Domains	<p>Displays information about the control domain, such as CPU, memory, operating system and Oracle VM Agent version. A control domain is an Oracle Solaris concept, and is also known as dom0 on an x86 host. You can also use this tab to view which version of Oracle VM Server the server is running before and after an upgrade using the server update repository.</p> <p>Select an Oracle VM Server in the navigation tree and then select Control Domains in the Perspective drop-down list to display this pane.</p>

Management Pane Perspective	Description
	See Section 3.4.2.10, "Update Server" for more information on Oracle VM Server update management.
Repository Exports	<p>List the export file servers used by backup and restore applications to access OCFS2 file systems. Use this tab to create, edit and delete repository export file servers.</p> <p>Select an Oracle VM Server in the navigation tree and then select Repository Exports in the Perspective drop-down list to display this pane.</p>
Info	<p>Displays a high-level view of the selected object. The Info pane contents change to reflect information about the object selected in the navigation tree. You can use this pane to view information about repositories in your environment.</p> <p>Select Info in the Perspective drop-down list to display the Info pane.</p>
Events	<p>Events are displayed for each object in the navigation tree and displays event related to that object.</p> <p>Select Events in the Perspective drop-down list to display the Events pane.</p>

3.1 Toolbar

The navigation pane includes its own toolbar that provides quick access to the most commonly used configuration tools for the **Servers and VMs** tab. Clicking on any of the icons provided in the toolbar opens a dialog or wizard that can guide you through the configuration process for that item. The following tools are available in this toolbar:

-  [Discover Servers](#)
-  [Create Server Pool](#)
-  [Create Virtual Machine](#)
-  [Find Icon](#)
-  [Help Icon](#)

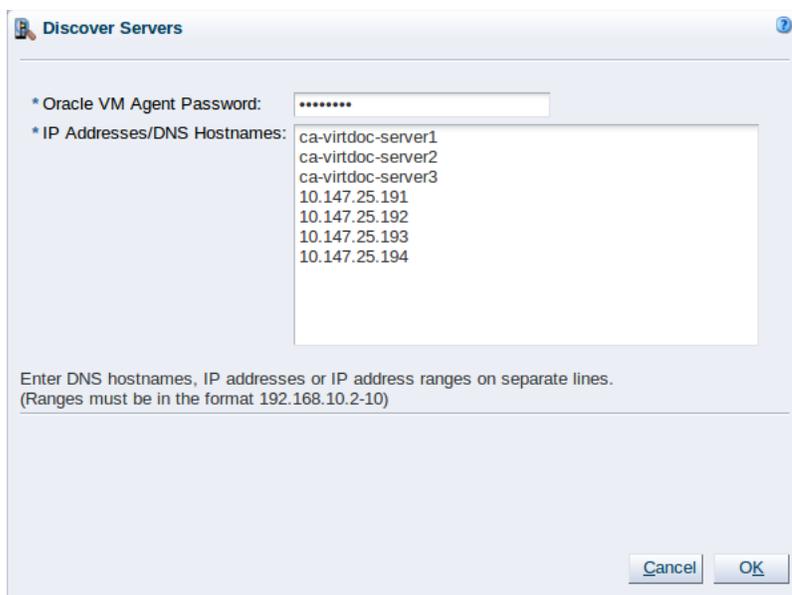
3.1.1 Discover Servers

When an Oracle VM Server is installed and starts up, it listens for Oracle VM Manager server pool discovery events. Before you can add an Oracle VM Server to a server pool, it must first be discovered.

The **Discover Servers**  icon is available on the **Servers and VMs** tab and is used to open the **Discover Servers** wizard that guides you through the server discovery process.

To discover Oracle VM Servers:

1. Click **Discover Servers**  in the toolbar. The **Discover Servers** dialog box is displayed.



2. Enter information about the Oracle VM Server(s) to be discovered:

- **Oracle VM Agent Password:** The password to connect to the Oracle VM Agent. It is advisable that the password is the same on all Oracle VM Servers to avoid authentication issues for the Oracle VM Manager.

An incorrect password results in an error message, notifying you of an 'Unauthorized access attempt'.

- **IP Addresses/DNS Hostnames:** Enter the IP address(es), IP ranges or DNS hostnames of the Oracle VM Server(s) to be discovered. You can paste a list of multiple IP addresses or multiple DNS hostnames. If you enter an IP range it must be in the format 192.168.10.2-10. For example, if you enter 192.168.10.2-4 Oracle VM Manager performs discovery for 192.168.10.2, 192.168.10.3 and 192.168.10.4. IP addresses, IP ranges and DNS host names must be entered on separate lines.



Note

Invalid entries may result in a job that fails to complete and may need to be aborted. See [Section 8.1.5, "Abort Jobs"](#) for information on aborting a job. Servers are discovered sequentially, even when you have listed multiple IP addresses or an entire range. This operation is performed as a serial process.



Important

Do not use Oracle VM Manager Release 3.4 to discover or interact with any instances of Oracle VM Server earlier than Release 3.2.10.

If you discover an instance of Oracle VM Server that is earlier than Release 3.2.10 with Oracle VM Manager Release 3.4, an error message is returned for the job and conflicts occur between the databases that Oracle VM Manager requires for maintaining synchronization between internal components.

Click **OK**.

The Oracle VM Servers are discovered and added to the **Unassigned Servers** folder. The newly discovered Oracle VM Server contains some basic information about itself, and about any immediate

connectivity to a shared SAN, but it is considered to be in an unconfigured state. The Oracle VM Server cannot be used to perform any [virtual machine](#), or active cluster operations. Physical network and storage configuration can be performed, and any subsequent storage discovery operations may also be performed.

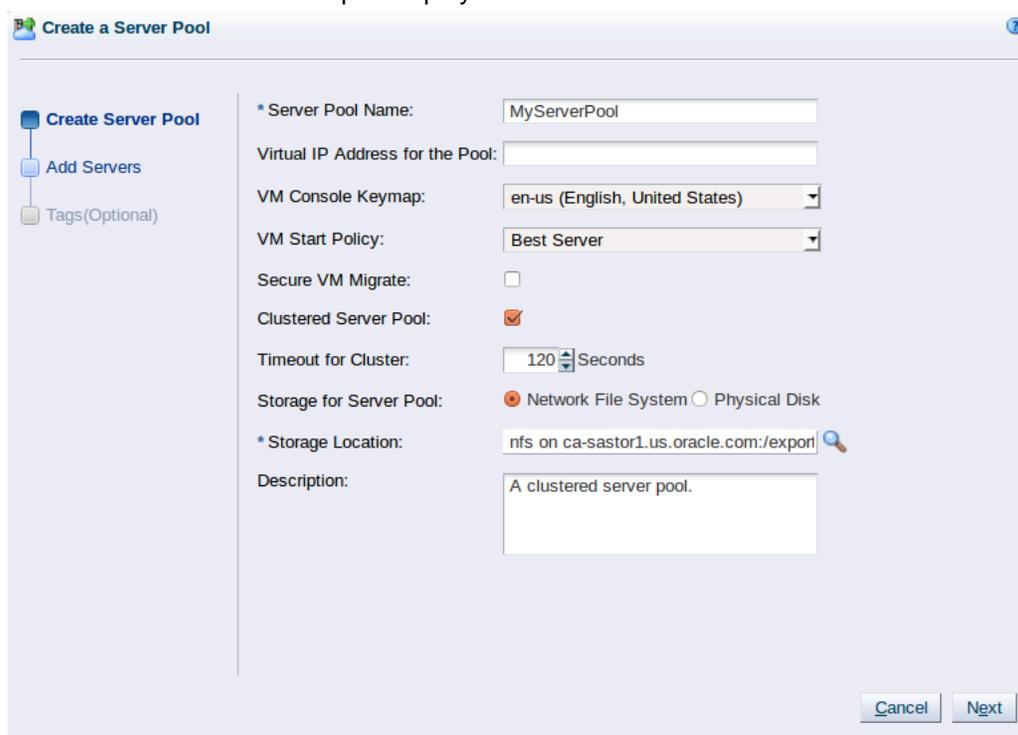
The **Utilization %** column in the **Servers** perspective in the management pane does not report the utilization statistics of an Oracle VM Server that is in the **Unassigned Servers** folder. This field does not report utilization statistics unless an Oracle VM Server is included in a server pool.

When an Oracle VM Server has been discovered, it can be added to a server pool.

3.1.2 Create Server Pool

To create a server pool:

1. Click **Create Server Pool**  in the toolbar to start the **Create Server Pool** wizard.
2. The **Create Server Pool** step is displayed in the wizard.



Enter the server pool information:

- **Server Pool Name:** The name of the server pool. The maximum length of a server pool name is 256 characters and may contain any character.
- **Virtual IP Address for the Pool:** This option is deprecated, but is available for backward compatibility purposes. See [What is a Master Server and a Virtual IP Address?](#) in the [Oracle VM Concepts Guide](#) for more information on this parameter.
- **VM Console Keymap:** The key mapping to be used when connecting to a virtual machine's console.
- **VM Start Policy:** For each server pool you can define the default start-up policy for all of your virtual machines. It is possible to override the default policy within the configuration of each virtual machine. See [Section 3.1.3, "Create Virtual Machine"](#) for information on setting the start policy for an individual

virtual machine. Note that as of Release 3.4, the VM Start Policy also applies to the VM Resume operation. Select one of:

- **Best Server:** This is the legacy algorithm that optimizes virtual machine placement on Oracle VM Servers that are in use before moving to unused servers in the pool.
- **Balance Server:** This algorithm distributes virtual machines across all the available Oracle VM Servers in the server pool, starting with the least utilized Oracle VM Server first. CPU and memory utilization statistics are used to balance the virtual machine distribution across the server pool, with CPU utilization taking precedence over memory utilization.
- **Current Server:** The virtual machine is started on the current Oracle VM Server to which it is assigned.



Note

If the VM start policy for a server pool is set to Current Server, and the server pool contains a VM that has not been assigned to a particular server yet, then that VM is started on one of the available servers according to the Best Server policy.

- **Secure VM Migrate:** Select whether to enable encrypted migration of virtual machines. When Secure VM Migrate is checked, virtual machines are migrated using SSL to protect the data during the migration process. Secure migration of a virtual machine may effect the time taken to perform the migration as the encryption and decryption of data requires more system resources and time.
- **Clustered Server Pool:** Select whether to enable clustering of the Oracle VM Servers in the server pool to enable HA. See [How do Server Pool Clusters Work?](#) and [How does High Availability \(HA\) Work?](#) in the *Oracle VM Concepts Guide* for more information on server pool clustering and on HA support and policies.



Important

If the Oracle VM Servers in your server pool are SPARC-based, you should be aware that clustering can only function if the distributed lock manager package is installed on all of the Oracle VM Servers that you intend to add to the server pool, as described in [Installing the Distributed Lock Manager \(DLM\) Package](#) in the *Oracle VM Installation and Upgrade Guide*. Furthermore, clustering is not supported for servers that have multiple control domains (shadow domains). Clustering for SPARC is only supported using NFS storage for the cluster file system. Failure to meet these requirements results in an error when attempting to create the clustered server pool, notifying you that the server lacks the ability to perform clustering.

- **Timeout for cluster:** If clustering is enabled for the server pool, this option allows you to set the timeout parameter. The maximum cluster timeout setting is 300 seconds. The minimum cluster timeout is 30 seconds. The default cluster timeout is 120 seconds. The Disk heartbeat and network heartbeat are automatically derived from the cluster timeout value. The cluster timeout determines how long a server should be unavailable within the cluster before failover occurs. Setting this value too low can cause false positives, where failover may occur due to a brief network outage or a

sudden load spike. Setting the cluster timeout to a higher value can mean that a server is unavailable for a lengthier period before failover occurs.

The cluster timeout can only be changed when there are no servers in the server pool, therefore it is usually good to set this during the creation of your server pool. See [Clustering for x86 Server Pools](#) in [Oracle VM Concepts Guide](#) for more information.

SPARC-based server pools do not recognize the cluster timeout parameter. Setting this value for a server pool consisting of SPARC servers has no effect and the parameter is ignored by the Oracle VM Agent for SPARC.



Note

This option is greyed out if the **Clustered Server Pool** check box is unchecked.

- **Storage for Server Pool:** Select the file system type to use for the server pool, either a **Network File System**, or a **Physical Disk**. The server pool file system is used to hold the server pool cluster data, and is also used for cluster heartbeating. Oracle recommends that you create this storage with a size of at least 12 GB, as a NAS export or LUN. Note that if you are creating a SPARC-based server pool, only NFS is supported for a server pool file system.

A server pool file system is exclusive, just like other storage. That is, in the same way that you cannot create two storage repositories on the same export path, the server pool file system cannot be shared with other server pools, or with storage repositories. Each fully qualified export path (for example, /export/myexport/one, /export/myexport/two) must be used for one, and only one, purpose, that is, for a storage repository, or a server pool file system.



Note

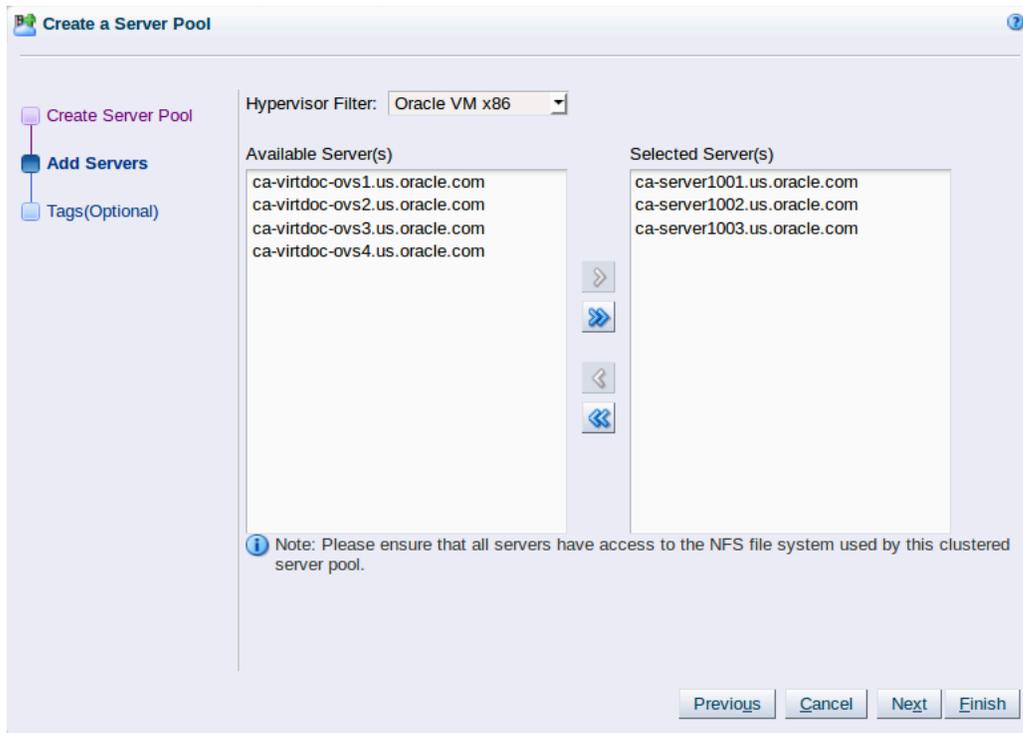
This option is greyed out if the **Clustered Server Pool** check box is unchecked.

For information on creating storage, see [Chapter 6, Storage Tab](#).

- **Network File System:** The file system to use as the pool file system. Click **Search**  in the **Storage Location** field to search for a network file system. This field is displayed if you select Network File System in the previous field.
- **Physical Disk:** The file system to use as the pool file system. Click **Search**  in the **Storage Location** field to search for a physical disk. This field is displayed if you select Physical Disk in the previous field.
- **Description:** A description of the server pool. This field is optional.

Click **Next**.

3. The **Add Servers** step is displayed in the wizard.

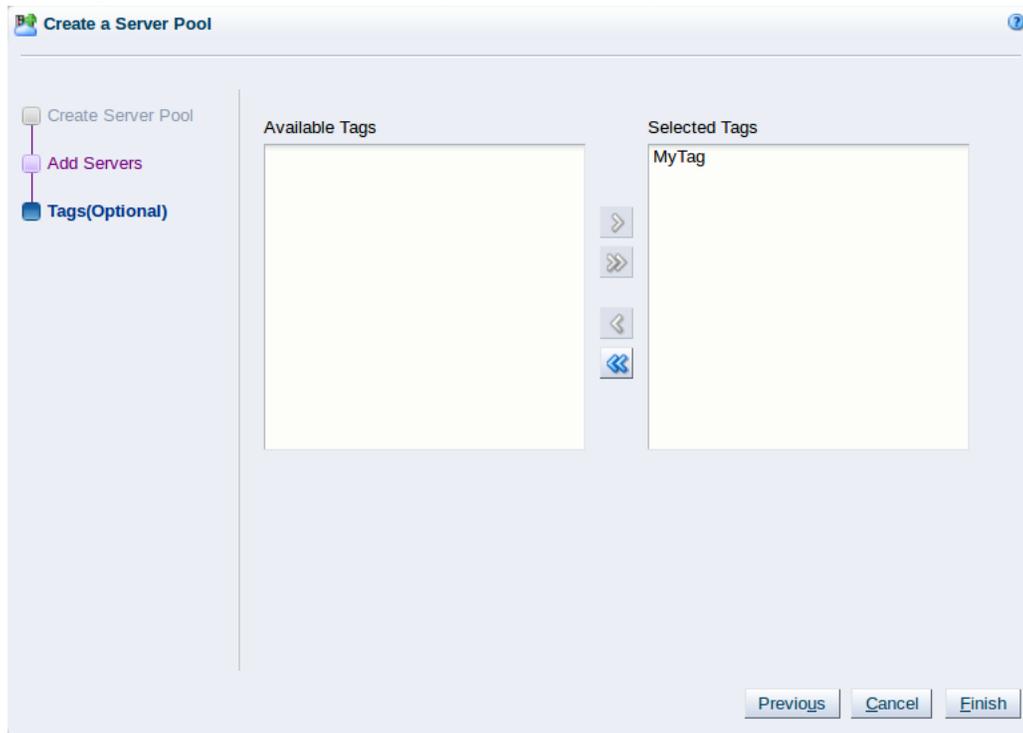


The **Hypervisor Filter** field allows you to specify the hypervisor type to use for the server pool. Selecting the **Oracle VM x86** hypervisor, limits the available servers to show only x86 systems; while selecting the **Oracle VM SPARC** hypervisor, limits the available servers to show only SPARC systems within your environment. If your environment does not contain systems of more than one hypervisor, the filter is greyed out and is automatically set to the hypervisor available within your environment. It is not possible to create a server pool consisting of servers that use different hypervisors.

Select the Oracle VM Servers to add to the server pool from the **Available Servers** column and move them to the **Selected Servers** column.

If you have defined tags and wish to add any to the server pool, click **Next**. Otherwise, click **Finish**.

- The **Tags** step is optional and displays in the wizard if you clicked **Next** in the previous step.



If you have defined tags previously, they appear in the **Available Tags** column. You can select the tags that you wish to apply to the server pool and move them to the **Selected Tags** column.

See [Section 1.17, "Tags and Tag Filters"](#) for more information on creating and managing tags.

Click **Finish**.

The server pool is created.

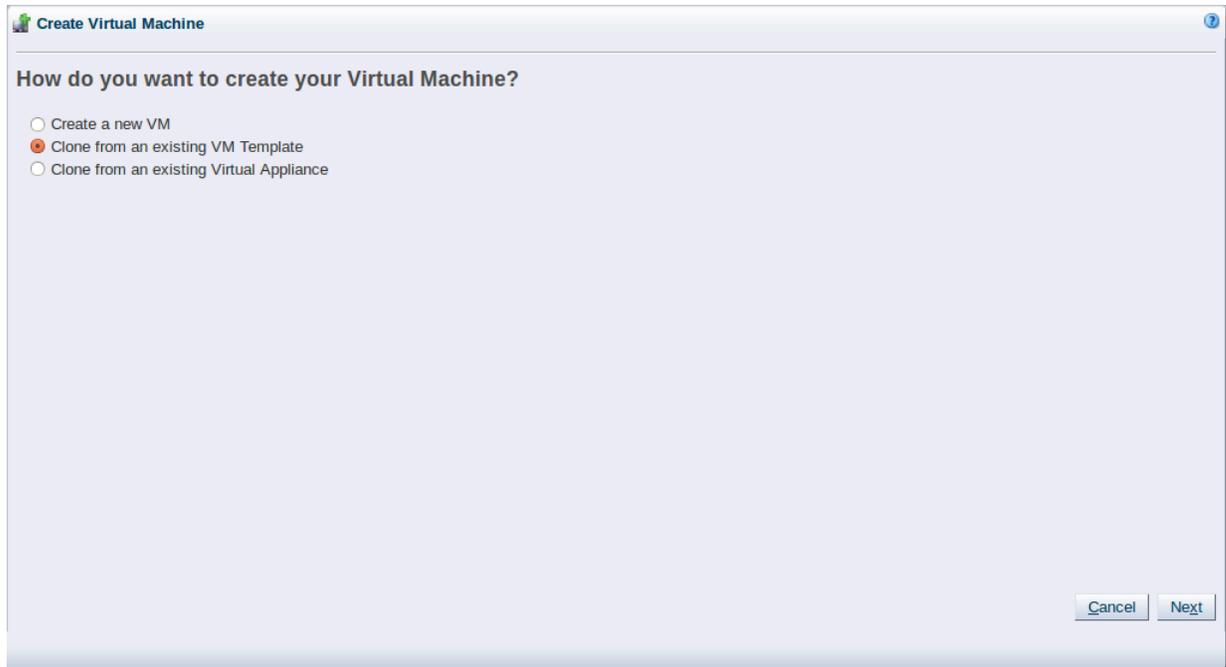
3.1.3 Create Virtual Machine

This section explains how to create a virtual machine using a template, and creating a virtual machine from an ISO file, or from physical or [virtual disks](#).

To create a virtual machine using a template:

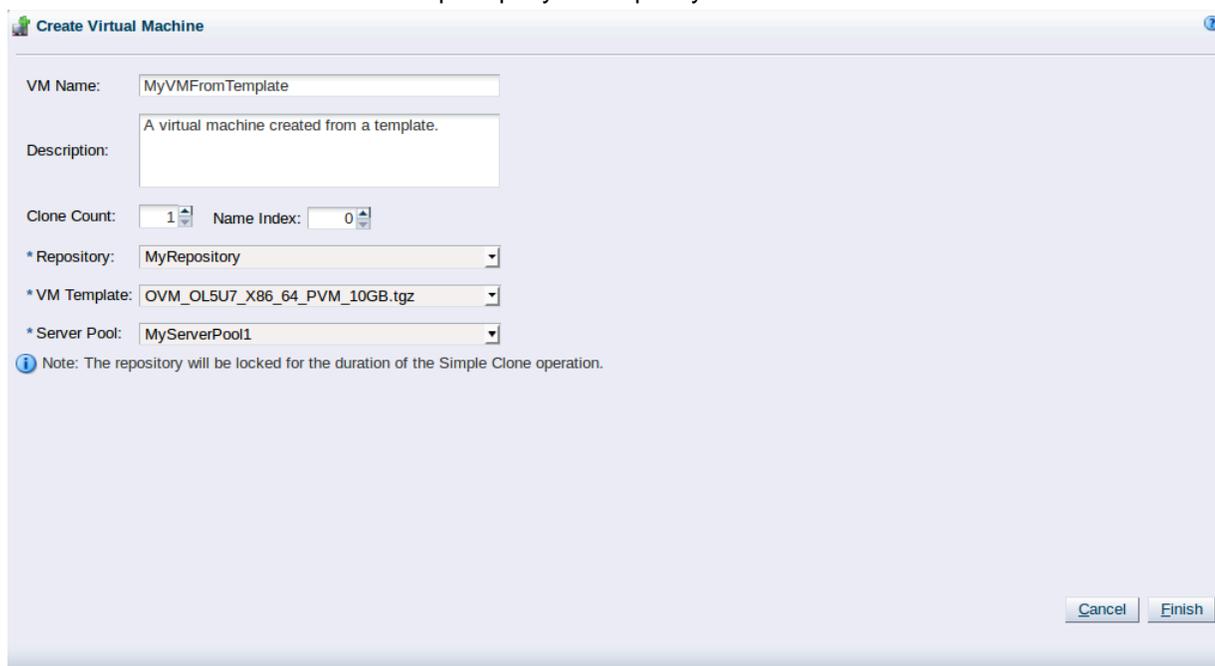
- Click the **Servers and VMs** tab.
- Click **Create Virtual Machine**  in the toolbar.
- The **Create Virtual Machine** wizard is displayed.

Create Virtual Machine



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 or select the following details:

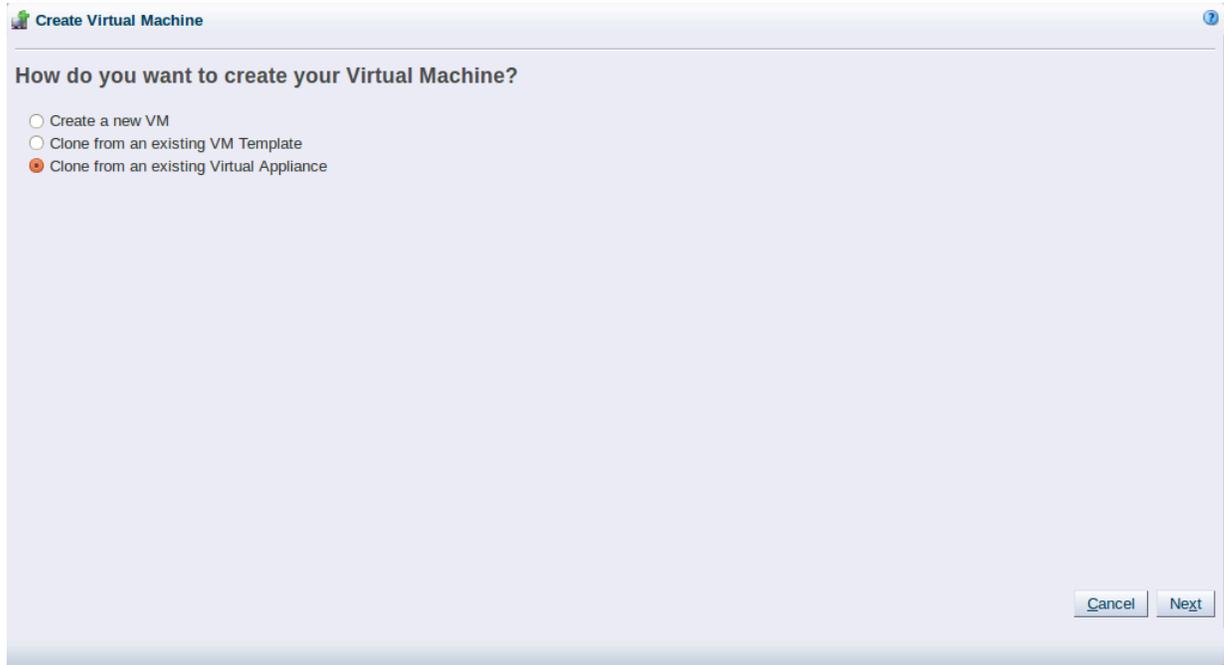
- **Clone Count:** The number of virtual machines to create from the template.
- **Name Index:** The start index number to use for the clone name suffix. The default is 0. This is used in conjunction with the **VM Name** field to create the name for each clone.
- **Repository:** The repository in which to create the virtual machine configuration files.
- **VM Template:** The template to use to create the virtual machines.
- **VM Name:** An optional name for the virtual machines. The maximum name length is 256 characters and may contain any character. The name need not be unique. If no value is given, the default is the name of the virtual machine template being cloned. Each clone is suffixed with a dot (.) and the clone index number, starting with the value for the **Name Index** field. For example, if the **VM Name** field is set to `MyVM`, and the **Name Index** field is set to `1`, the resulting clones would be named `MyVM.1`, `MyVM.2` and so on.
- **Server Pool:** The server pool in which to deploy the virtual machines.
- **Description:** An optional description of the virtual machines.

5. Click **Finish**. The virtual machines are created and deployed to the server pool.

To create a virtual machine using a virtual appliance:

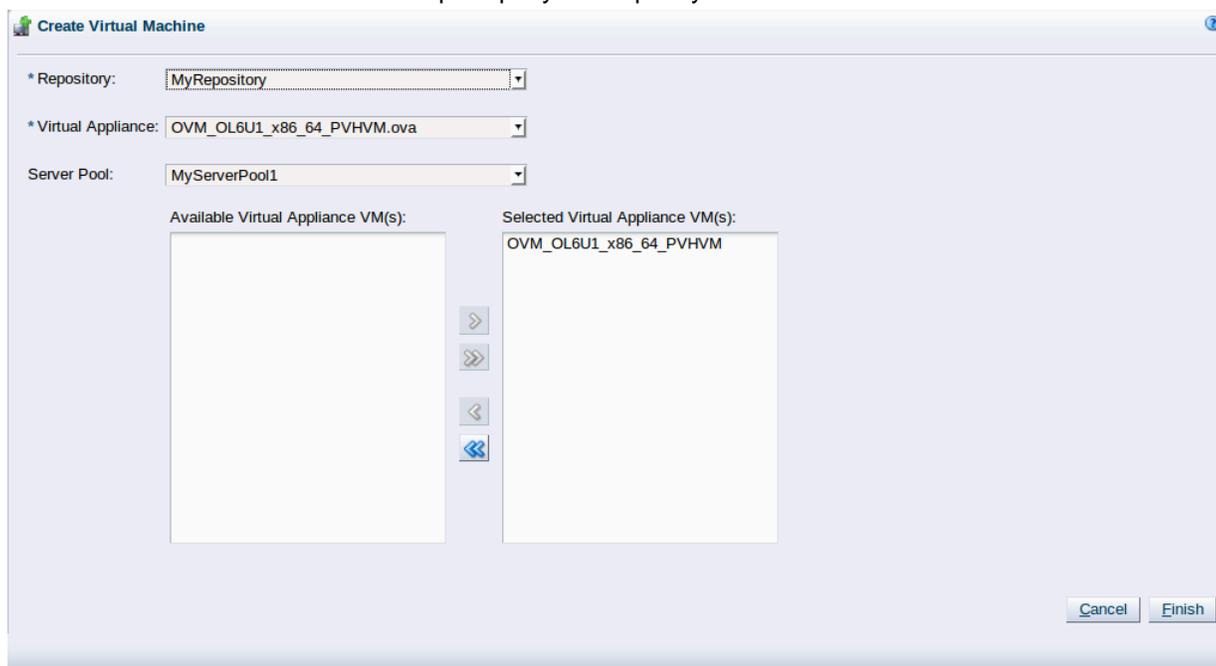
1. Click the **Servers and VMs** tab.
2. Click **Create Virtual Machine**  in the toolbar.
3. The **Create Virtual Machine** wizard is displayed.

Create Virtual Machine



Click 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.



Enter or select the following details:

- **Repository:** The repository in which to create the virtual machine configuration files.
- **Virtual Appliance:** The virtual appliance from which you want to create the virtual machines.
- **Server Pool:** The server pool in which to deploy the virtual machines.

If you select **None**, the virtual machines are deployed into the **Unassigned Virtual Machines** folder.

- **Available Virtual Appliance VM(s):** The virtual machines that are available to create from the virtual appliance.
- **Selected Virtual Appliance VM(s):** The virtual machines to create from the virtual appliance.

You can select multiple virtual machines if the virtual appliance contains more than one. Oracle VM Manager creates a separate virtual machine for each one that you select.

5. Click **Finish**.

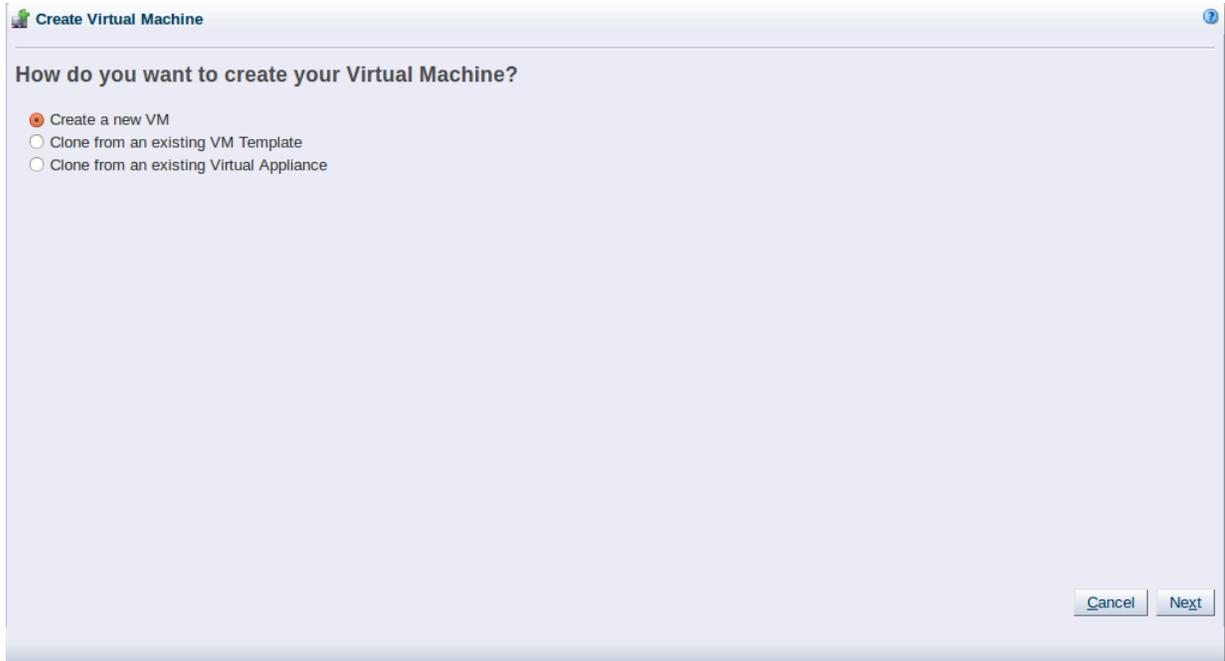
Oracle VM Manager creates the selected virtual machines from the virtual appliance and deploys them to the server pool you specified.

You can then migrate each virtual machine to a compatible server or server pool.

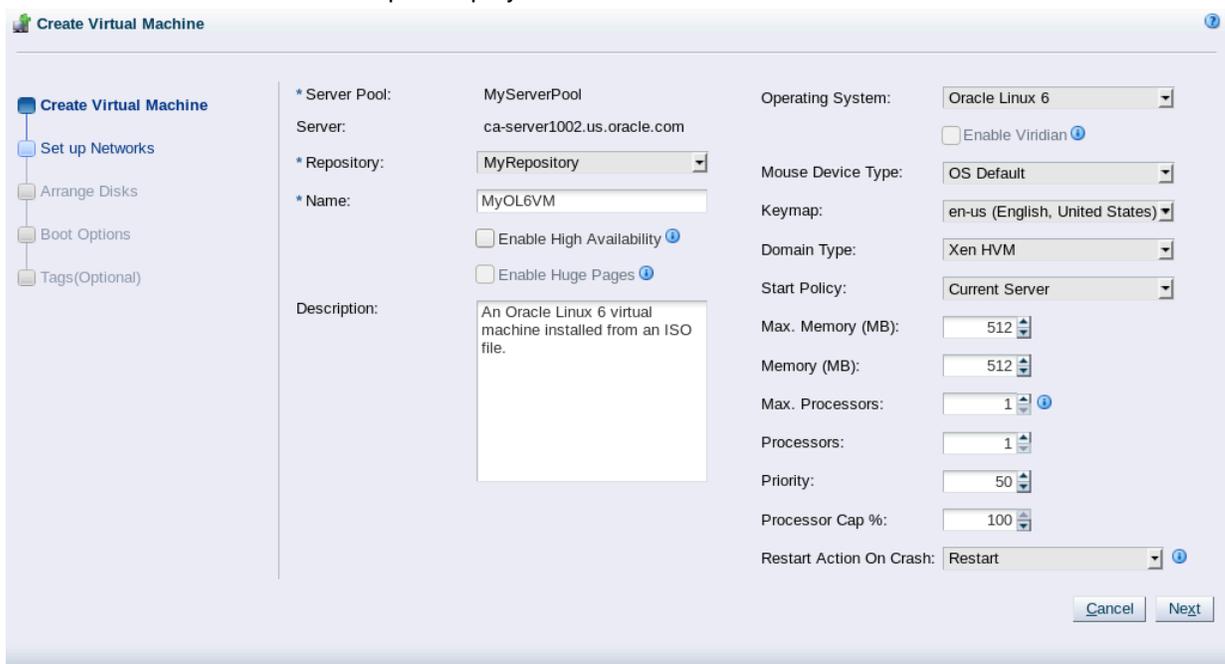
To create a virtual machine using all other media:

1. Click the **Servers and VMs** tab.
2. Click **Create Virtual Machine**  in the toolbar.
The **Create Virtual Machine** wizard is displayed.
3. Click the **Create a new VM** option and then click **Next**.

Create Virtual Machine



4. The **Create Virtual Machine** step is displayed in the wizard.



Enter or select the following details:

- **Server Pool:** The server pool on which to create the virtual machine.
- **Server:** The server that the virtual machine should be created on. The default option is [Any](#), but the drop-down selection lists the servers that exist in the server pool that you have selected. Selecting a

particular server forces the virtual machine to be created on that server. This has implications for the Start Policy discussed later.

- **Repository:** The repository in which to create the virtual machine configuration file.
- **Name:** A name for the virtual machine. The maximum name length is 256 characters and may contain any character. The name need not be unique.
- **Enable High Availability:** Whether to enable High Availability (HA). See [How does High Availability \(HA\) Work?](#) in the *Oracle VM Concepts Guide* for more information on HA.
- **Enable Huge Pages:** Whether to enable [HugePages](#).
 - The HugePages feature is deprecated for virtual machines with a domain type of PVM in Oracle VM Release 3.4.1. You should not enable HugePages when creating or editing virtual machines. This feature will be removed in a future release of Oracle VM.

If you have HugePages enabled for any PVM guests, Oracle recommends that you change the domain type for virtual machines from Paravirtualized (PVM) to Hardware virtualized, with paravirtualized drivers (PVHVM). If you cannot change the domain type for a virtual machine, you should disable the HugePages setting and then restart the virtual machine.

- Huge Page support is enabled by default for virtual machines with a domain type of HVM or PVHVM. You cannot set this parameter for those virtual machines.
- This option does not take effect on virtual machines deployed on SPARC-based server pools. Virtual machines running on SPARC-based servers can access the page sizes that the server platform supports, regardless of this setting.

See [How is the HugePages Feature Enabled for Virtual Machines?](#), in the *Oracle VM Concepts Guide*, for more information on Huge Page support.

- **Description:** An optional description of the virtual machine.
- **Operating System:** The operating system of the virtual machine. This setting enables or disables certain virtual machine settings that the guest operating system may require.
- **Enable Viridian:** Whether to enable Viridian.
 - Viridian support enables the exposure of Windows virtualization compatible entitlements to Microsoft Windows guest operating systems. Enabling viridian support is strongly recommended to ensure improved performance for Microsoft Windows guest operating systems.
 - Enabling viridian support is permitted for all Microsoft Windows guest operating system types. However, it is only effective from Microsoft Windows Vista and Microsoft Windows Server 2008 onwards.
 - Viridian support is enabled by default when creating virtual machines running Microsoft Windows guest operating systems.
- **Mouse Device Type:** The mouse type to use for the virtual machine. This option is not available for virtual machines in SPARC-based server pools.
- **Keymap:** The keyboard mapping to use for the virtual machine. This option is not available for virtual machines in SPARC-based server pools.
- **Domain Type:** The domain type of the virtual machine.

- **Xen HVM:** Hardware virtualization, or fully virtualized. When you select this option you can supply an ISO file in a repository (in the **Arrange Disks** step of the wizard) from which to install an operating system on the virtual machine. See [Section 4.5.1.1, “Import ISO”](#) for information on importing an ISO file into a repository. Alternatively, you may consider setting up an environment to perform a network installation for the virtual machine.
- **Xen HVM PV Drivers:** Identical to **Xen HVM**, but with additional paravirtualized drivers for improved performance of the virtual machine. See [What are Virtualization Modes or Domain Types?](#) in the [Oracle VM Concepts Guide](#) for more information about using paravirtualized drivers. This domain type is typically used to run Microsoft Windows guest operating systems with an acceptable performance level. Installation of the guest operating system is usually performed either using an ISO file in a repository or via a network installation.
- **Xen PVM:** Paravirtualized. Enables you to select a location for the mounted ISO file from which to create the virtual machine. Before you create the virtual machine using the paravirtualized method, mount the ISO file on an NFS share, or HTTP or FTP server. You supply the location of the mounted ISO file in the **Network Boot Path** field in the **Boot Options** step of the wizard. For information on creating a mounted ISO file, see [Provisioning ISO Files for PVM Guest Installations](#) in the [Oracle VM Administrator's Guide](#). Do not select this option if the virtual machine Operating System is set to either Oracle Linux 7 or RedHat Enterprise Linux 7. These operating systems do not support the Xen PVM domain type.



Important

As of Oracle VM Release 3.4.6, support for PVM guests is removed. For more information, see [Disabling Paravirtualized Guests on Oracle VM Server](#) in the [Oracle VM Administrator's Guide](#).

- **OVM/SPARC:** Specifies that the virtual machine is deployed on a server pool running on Oracle VM Server for SPARC.
- **Unknown:** This option is informational in the event that Oracle VM Manager is unable to determine the domain type for an existing virtual machine. It is not possible to actually set a virtual machine's domain type to this value. Attempting to do so generates a rule violation when you try to save the virtual machine settings and an error message is returned.
- **Start Policy:** The policy that should be used to start the virtual machine. Select one of:
 - **Best Server:** This is the legacy algorithm that optimizes virtual machine placement on Oracle VM Servers that are in use before moving to unused servers in the pool.
 - **Balance Server:** This algorithm distributes virtual machines across all the available Oracle VM Servers in the server pool, starting with the least utilized Oracle VM Server first. CPU and memory

utilization statistics are used to balance the virtual machine distribution across the server pool, with CPU utilization taking precedence over memory utilization.

- **Current Server:** The virtual machine is started on the Oracle VM Server to which it is assigned. If you selected a particular server to create the virtual machine on, then it is started on this server.
- **Use Pool Policy:** The virtual machine is started using the start policy defined for the entire server pool. See [Section 3.1.2, "Create Server Pool"](#) for more information on setting the start policy for a server pool.
- **Max. Memory (MB):** The maximum memory size the virtual machine can be allocated. This value must be between 32 and 512000. The default is 512.

For x86-based virtual machines, this value is incremented by 32 each time you click the up arrow, and, conversely, decreased by 32 if you click the down arrow. For SPARC-based virtual machines, the up arrow adds 512, and the down arrow subtracts 512. If you have enabled Huge Pages, the value must be a multiple of 2 MB.



Note

For HVM and PVHVM guests, the maximum memory size value must equal the memory size value. If these values are different, the following job failure message is generated for HVM/PVHVM guests: "The memory limit cannot be different than the current memory size on an HVM/PVHVM Virtual Machine."

- **Memory (MB):** The memory size the virtual machine is allocated. When creating a virtual machine, this is the memory allocation used when starting the virtual machine. This value must be between 32 and 512000. The default is 512.

For x86-based virtual machines, this value is incremented by 32 each time you click the up arrow, and, conversely, decreased by 32 if you click the down arrow. For SPARC-based virtual machines, the up arrow adds 512, and the down arrow subtracts 512. If you have enabled Huge Pages, the value must be a multiple of 2 MB.

You can change the memory allocated to a running virtual machine without the need to restart the virtual machine if the domain type is PVM or PVHVM and where the guest is running a Linux OS on an x86-based platform or an Oracle Solaris OS on a SPARC-based platform.



Note

For x86-based PVHVM guests running on Oracle Solaris OS, you cannot change the memory if the virtual machine is running.

See the *Oracle VM Paravirtual Drivers for Microsoft Windows* documentation for information about the availability of hot memory modification on PVHVM guests that are running a Microsoft Windows

OS. You must use a Windows PV Driver that supports hot memory modification or you must stop the guest before you modify the memory.

- **Max. Processors:** The maximum number of processors the virtual machine can be allocated. The number of processors is expressed in number of physical CPU cores. The maximum number of processors depends on the domain type, as follows:

- PVM: 256.



Important

As of Oracle VM Release 3.4.6, support for PVM guests is removed. For more information, see [Disabling Paravirtualized Guests on Oracle VM Server](#) in the *Oracle VM Administrator's Guide*.

- HVM: 128; or 32 for Microsoft Windows guests.



Note

As of Release 3.4.6, the HVM limit is 64 for Microsoft Windows guests.

- PVHVM: 128; or 32 if using Oracle VM Paravirtual Drivers for Microsoft Windows.



Note

As of Release 3.4.6, the PVHVM limit is 64 if using Oracle VM Paravirtual Drivers for Microsoft Windows.

- OVM/SPARC: Equivalent to the number of available CPUs on the server.
- **Processors:** The number of processors the virtual machine is allocated. The number of processors is expressed in number of physical CPU cores, up to the value of **Max. Processors**.
- **Priority:** The CPU priority of the virtual machine. The higher the priority value, the more physical CPU cycles are given to the virtual machine. This option is not available for virtual machines in SPARC-based server pools. This should be a number between 1 and 100. The default priority is set at 1.
- **Processor Cap %:** Increase or decrease the percentage to which the virtual CPUs can receive scheduled time. This parameter defines the maximum percentage to which the virtual CPUs can receive scheduled time. Use this parameter to keep low priority virtual machines from consuming too

many CPU cycles on a Virtual Machine Server. This option is not available for virtual machines in SPARC-based server pools.

- **Restart Action on Crash:** The action to perform if a virtual machine crashes. This option is only available for virtual machines that are running on the Xen hypervisor and that have been configured to run on a particular Oracle VM Server. Options include the following:
 - **Restart:** Restarts the virtual machine operating system.
 - **Stop:** Stops the virtual machine. If **Enable High Availability** is selected, this option is not available.
 - **Restart After Dump:** Restarts the virtual machine operating system after first creating a core dump file for the virtual machine.
 - **Stop After Dump:** Stops the virtual machine after first creating a core dump file for the virtual machine. If **Enable High Availability** is selected, this option is not available.

Core dump files are saved to `/var/xen/dump` on the Oracle VM Server where the virtual machine is hosted. Each core dump file is named uniquely so that files are not overwritten. This can use up disk space rapidly. You must make sure there is either enough disk space available at this path on the Oracle VM Server where the virtual machine will run; or you should mount additional storage at this path to avoid using up disk space required to host dom0.

This option cannot be modified for a running virtual machine. You must stop the virtual machine before you are able to change this option, if you select to edit the virtual machine later.

The **Priority** and **Processor Cap%** parameters are passed to the Xen hypervisor for use by the credit scheduler, which automatically load balances guest VCPUs across all available physical CPUs, using an algorithm that combines these two parameters. Therefore, these parameters are a key factor for the performance of the virtual machine on x86 hardware.



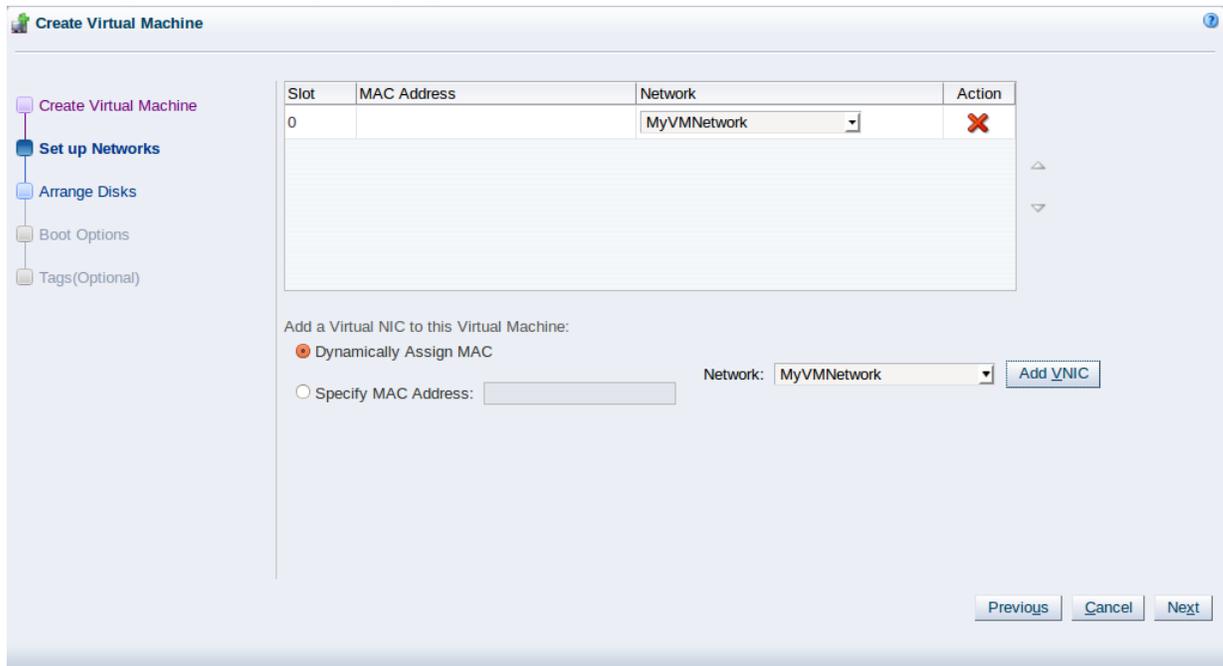
Note

For information on performance optimization goals and techniques for Oracle VM Server for x86, see *Optimizing Oracle VM Server for x86 Performance*, on Oracle Technology Network at: <http://www.oracle.com/technetwork/server-storage/vm/ovm-performance-2995164.pdf>.

On SPARC, each virtual machine uses dedicated physical CPU threads, and CPUs are not shared between virtual machines, being exclusively assigned to a single virtual machine.

Click **Next**.

5. The **Set up Networks** step is displayed in the wizard.



This step of the wizard allows you to add VNICs to the virtual machine.

- a. To specify the MAC address for a VNIC, select **Specify MAC Address** and enter the MAC address. Otherwise, leave the default **Dynamically Assign MAC**.
- b. Select a network with the virtual machine role from the **Network** drop-down list.

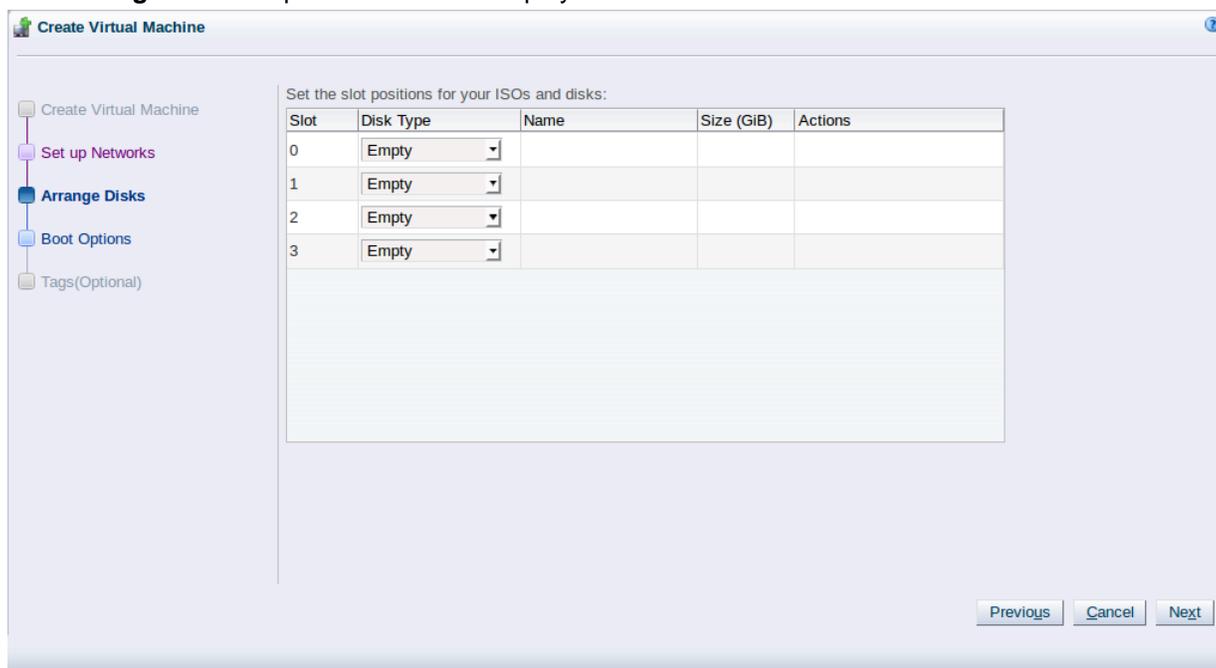
If no networks are available, you must first create a network with the virtual machine role as a dedicated network for virtual machine traffic. See [Section 5.1.1, "Create New Network"](#) for information on creating a network.

- c. Click **Add VNIC**.
 - The VNIC order specified determines the order in which the VNICs are presented to the virtual machine. You can control the ordering of the VNICs using the up and down arrows on the right of the table.
 - If you are editing the networking of an existing stopped virtual machine, you can change the network to which the VNIC belongs using the **Network** drop-down list in the table. It is important that the VNIC belongs to a network already associated with the Oracle VM Servers on which it can run, or you cannot start the virtual machine. See [Section 5.1.1, "Create New Network"](#) and [Section 5.1.2, "Edit Existing Network"](#) for more information on associating Oracle VM Servers with networks.
 - If you are editing an existing running virtual machine, you can add VNICs to the virtual machine, but you cannot remove VNICs that are already in use. You also cannot reorder VNICs on a running virtual machine. If you choose to add a VNIC to a running machine you must ensure that the VNIC belongs to a virtual machine network already associated with the Oracle VM Servers on which it can run, by selecting the appropriate network from the **Network** drop-down list.

- A virtual machine can have up to eight (8) VNICs for HVM guests and up to 31 for PVM guests. A PVM guest requires network connectivity to perform the operating system install and must have at least one VNIC.

d. Click **Next**.

6. The **Arrange Disks** step of the wizard is displayed.



Select the desired storage configuration of your virtual machine, such as virtual disks, physical disks, and ISO files. On a separate slot, add one or more of the following disk types:

- **Empty:** An empty slot.
- **Virtual Disk:** This allows you to add or create a virtual disk. Virtual disks may be shared by virtual machines, or only available to a single virtual machine.
- **Physical Disk:** The physical disks are the disks in a storage array. Physical disks may be shared by virtual machines.
- **CD/DVD:** This adds an ISO file in a storage repository and can be used to create HVM and PVHVM virtual machines. When creating a virtual machine from an ISO file, you must use a single file. Installations that span multiple ISO files are not supported. ISO files cannot be used to create PVM virtual machines. You cannot add an empty CDROM on a SPARC-based server.



Note

Adding or removing a CD/DVD device can only be done when a virtual machine is powered off. Once the VM is running again, the CD/DVD device is

always available for use as needed, much like a physical CD/DVD device on a physical server.

After the virtual machine is powered on, the only actions that are supported while the virtual machine is running are:

- Selecting an .iso for a CD/DVD slot in an "Empty" state.
- Hot-swapping the .iso currently in use.
- Ejecting the .iso from the CD/DVD slot, leaving the device in an "Empty" state.

Add or create any virtual disks to use as the virtual machine's hard disk, select any physical disks to add, and select any ISO files to use to create the virtual machine. Add the disks in the order they should appear in the virtual machine. The disk with the boot partition or installation media should be the first disk listed. An HVM guest can have up to four disks, including empty CD/DVD drives. A PVM guest can have up to 104 disks. A PVHVM guest can have up to 107 disks. An OVM/SPARC guest can have up to 1024 disks. Only one slot can contain an empty CD/DVD.



Tip

When editing a running virtual machine, you can change the CD/DVD using this dialog box and the CD/DVD is mounted in the operating system.

To create or add a virtual disk:

- a. To create a virtual disk, select **Virtual Disk** from the **Disk Type** drop-down list and click **Create a Virtual Disk +**.
- b. The **Create Virtual Disk** dialog box is displayed. Enter or select the following to create a virtual disk:
 - **Repository:** The repository in which the virtual disk is to be created.
 - **Virtual Disk Name:** The name of the virtual disk to be created and made available to the virtual machine. See [How are Virtual Disks Managed?](#) in the [Oracle VM Concepts Guide](#) for more information about using virtual disks.
 - **Size (GiB):** The disk size of the virtual disk, in [GiB](#).
 - **Description:** A description of the virtual disk.
 - **Shareable:** Whether the virtual disk should be shareable (read/write) with other virtual machines.
 - **Allocation Type:** Whether to use a **Sparse Allocation** or **Non-sparse Allocation**. Sparse Allocation creates a sparse disk, so the size of the disk is initially small and increases as it is used. Sparse allocation is faster than using Non-Sparse Allocation when creating a virtual

machine. Non-Sparse Allocation creates the entire disk when the virtual machine is created, and so is slower than creating a sparse disk.

Click **OK**.

- c. To search for an existing virtual disk to add to the virtual machine, click **Select a Virtual Machine Disk** . The **Select a Virtual Machine Disk** dialog box is displayed. The dialog box lists the available virtual disks in a table that indicates the following information:

- **Selected:** Whether or not the disk has been selected. This is indicated using radio button.
- **Name:** The name of the virtual disk as stored in Oracle VM Manager.
- **Size (GiB):** The disk size of the virtual disk, in [GiB](#).
- **Repository:** The repository in which the virtual disk is located.
- **Shareable:** Whether the virtual disk is configured to be shareable (read/write) with other virtual machines.
- **VM(s):** A comma separated list of the names of any virtual machines that may already be using this virtual disk.

Select the virtual disk to use and Click **OK**.



Note

If your virtual machine needs more than one disk, you can create the disk(s) afterwards in the repository, and add them to the virtual machine. See [Section 4.9.1.1, “Create Virtual Disk”](#) and [Section 3.5.2.1, “Edit Virtual Machine”](#) for more information on creating a virtual disk and editing a virtual machine. There are some limitations on mixing virtual disks of differing device types on a virtual machine. See [How are Virtual Disks Managed?](#) in the [Oracle VM Concepts Guide](#) for more information about how device

types are allocated to virtual disks and what you may need to do to solve any issues surrounding this problem.

To add a physical disk:

- a. To add a physical disk to the virtual machine, select **Physical Disk** from the **Disk Type** drop-down list. Click **Select a Virtual Machine Disk** . The **Select a Physical Disk** dialog box is displayed. The dialog box lists the available physical disks in a table that provides the following information:
 - **Selected:** Whether or not the disk has been selected. This is indicated using radio button.
 - **Name:** The name of the physical disk as stored in Oracle VM Manager.
 - **Size (GiB):** The disk size of the physical disk, in [GiB](#).
 - **SAN Server:** The SAN Server where the physical disk is located.
 - **Volume Group:** The volume group that the physical disk belongs to.
 - **Shareable:** Whether the physical disk is configured to be shareable (read/write) with other virtual machines.
 - **VM(s):** A comma separated list of the names of any virtual machines that may already be using this physical disk.

Select a physical disk from the list of available disks. If you want to leave the slot empty, select **Leave Slot Empty**. Click **OK**.

To add an ISO file:

- a. To add an ISO file to the virtual machine, 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 a Iso file from the list of available files. If you want to leave the slot empty, select **Leave Slot Empty**. Click **OK**.

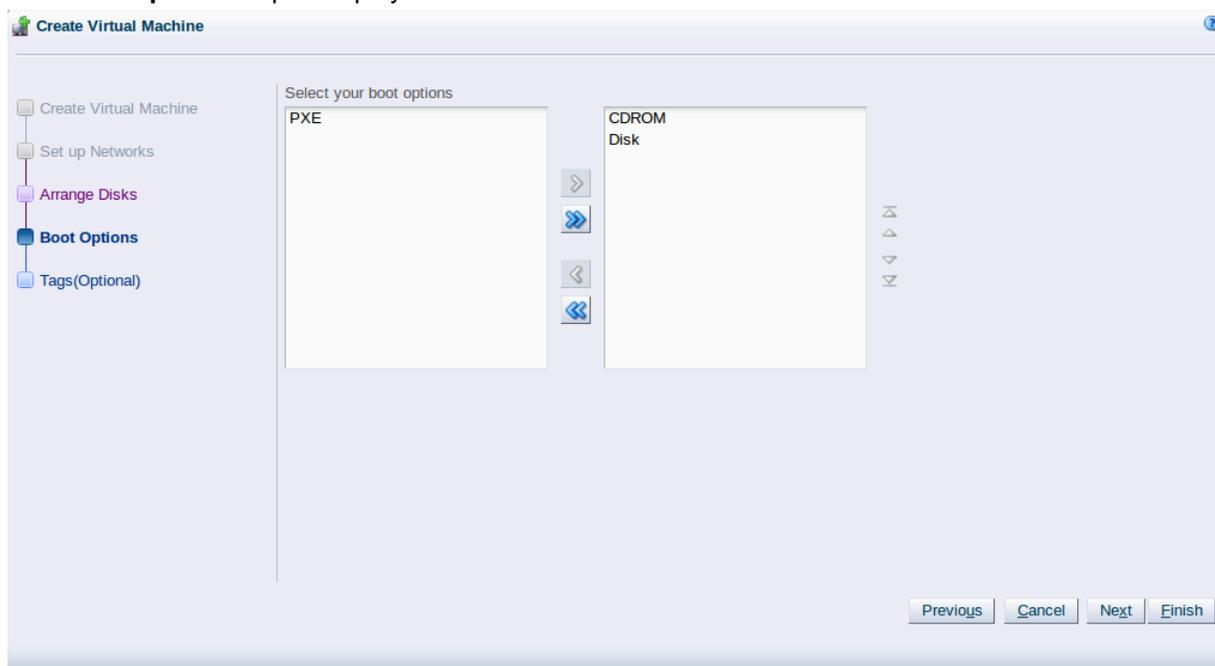


Note

When adding an ISO file to an existing virtual machine, the ISO file is available to the operating system, but may not be mounted. To access the ISO file, you may need to mount it, for example:

```
# mkdir /cdrom
# mount -o loop /dev/xvdb /cdrom
```

When you have set up the virtual machine's disks, click **Next**.

7. The **Boot Options** step is displayed in the wizard.

Select the boot media order for your virtual machine.

If you are creating a hardware virtualized machine virtual machine (HVM), you can choose the **PXE** boot option. If so, remember to put PXE first in the **Select your boot options** field, and change the boot order again after installation and before rebooting the virtual machine. To use PXE, you must configure a PXE/ftp environment to offer the necessary boot media and instructions to the virtual machine.

If you are creating a paravirtualized virtual machine (PVM), you also have the **PXE** option available. In this case, the **PXE** option refers to a network style boot. If the **PXE** option appears in the right-hand-side column, you must enter the location of the mounted ISO file from which to perform the operating system installation in the **Network Boot Path** field that is shown when editing or creating a PVM, for example

```
http://example.com/EL6-x86
```

For information on creating a mounted ISO file, see [Provisioning ISO Files for PVM Guest Installations](#) in the *Oracle VM Administrator's Guide*.

You cannot use the **Network Boot Path** field to boot a virtual machine using PXE. This field can only be used to specify the path to a mounted ISO file to use when installing a PVM guest.

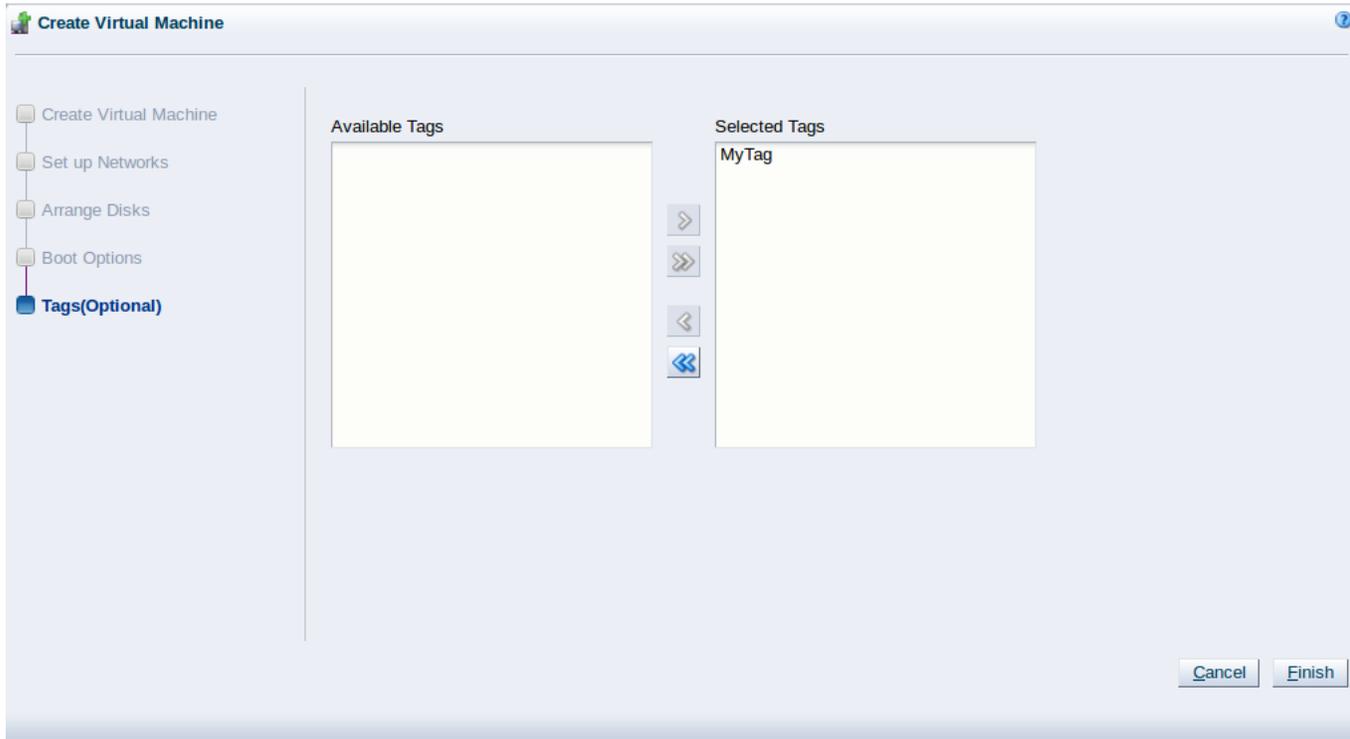
If you have defined tags and want to add any to this virtual machine, click **Next**. Otherwise, click **Finish** to create and deploy the virtual machine to the server pool.

- The **Tags** step is optional and displays in the wizard if you clicked **Next** in the previous step.



Note

The virtual machine has already been created and deployed to the server pool at this point. This step is entirely optional. Cancelling the operation within this dialog does not prevent the virtual machine from being created.



If you have previously created tags, they appear in the **Available Tags** column. Select the tags you want to apply to the virtual machine and move them to the **Selected Tags** column. See [Section 1.17, “Tags and Tag Filters”](#) for more information on creating and managing tags. Click **Finish**.

If you created a PVM, there are some steps you should take after the operating system installation is completed:

- Stop the virtual machine. See [Section 3.5.2.4, “Stop Virtual Machines”](#) for information on stopping a virtual machine.
- Edit the virtual machine and remove **PXE** from the **Boot Order** column in the **Boot Options** step of the **Edit Virtual Machine** wizard. See [Section 3.5.2.1, “Edit Virtual Machine”](#) for information on editing a virtual machine.
- Start the virtual machine and complete the installation if necessary. See [Section 3.5.2.3, “Start Virtual Machines”](#) for information on starting a virtual machine.

To edit the virtual machine configuration information, see [Section 3.5.2.1, “Edit Virtual Machine”](#).

3.2 Summary

On the **Servers and VMs** tab there is a navigation pane. At the top of the navigation pane is the navigation toolbar discussed in [Section 3.1, “Toolbar”](#). Within the navigation pane is a navigation tree that allows you to navigate through the different object types that comprise your environment.

Different objects may be nested at different levels within the navigation tree depending on their relationships to each other. Clicking on different objects or folders within the navigation tree enables access to the different perspectives available for that object in the management pane.

The navigation tree that is available within the **Servers and VMs** tab conforms to the following structure:

- [Server Pools Folder](#)
 - [Server Pool Item](#)
 - [Server Item](#)
- [Unassigned Servers Folder](#)
 - [Server Item](#)
- [Unassigned Virtual Machines Folder](#)

Each navigation element has a number of associated perspectives offering different views of the objects contained by the selected navigation element, or the configuration information specific to it. For many of these perspectives, an associated toolbar is provided so that it is possible to perform different configuration or management tasks on elements selected in the management pane.

3.3 Server Pools Folder

The **Server Pools** navigation folder contains each server pool that has been configured within the environment. The structure of the navigation provided in the navigation tree is discussed in more detail in [Section 3.2, “Summary”](#).

Clicking on the **Server Pools** navigation folder in the navigation tree allows you to access different perspectives in the management pane. Each perspective provides its own view of all of the server pools within Oracle VM Manager. Most of the perspectives also include separate perspective toolbars that enable you to perform various configuration or management tasks specific to the view currently displayed within the management pane. The **Server Pools** navigation folder offers the following perspectives within the management pane:

- [Server Pools Perspective](#)
- [Server Processor Compatibility Perspective](#)

3.3.1 Server Pools Perspective

The Server Pools perspective lists the different server pools configured in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the server pool.
- **Tag(s):** Any tags that have been applied to the server pool.
- **Keymap:** The configured keymap for the server pool.

- **Pool File System:** The path location to the server pool file system.
- **Secure VM Migrate:** Whether or not the server pool is configured to support secure virtual machine migration.
- **Description:** A description entered for the server pool when it was created or edited.

This perspective includes a toolbar that consists of the following options:

Table 3.2 Server Pools Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Refresh All		Rediscovered all Oracle VM Server instances, file servers, and SAN servers. Use this to refresh information about all Oracle VM Server instances Use this option after rebuilding your database, to ensure that all information stored within the database is up to date.
Create Server Pool...		Displays the Create a Server Pool wizard. Use this option to create a server pool for Oracle VM Servers.
Create Virtual Machine...		Displays the Create Virtual Machine wizard. Use this option to create a virtual machine in the selected server pool.
Import Virtual Machine...		Displays the Import Virtual Machine dialog box. Use this option to import a virtual machine into Oracle VM Manager and optionally deploy it to an Oracle VM Server or server pools.
Edit Selected Server Pool...		Displays the Edit Server Pool wizard. Use this option to edit a server pool.
Delete Server Pool		Displays the Delete Confirmation dialog box. Use this option to delete the selected server pool.
Change Servers Agent Password		Displays the Change Servers Agent Password dialog box. Use this option to change the Oracle VM Agent password used by all of the Oracle VM Servers in the selected server pool. Note that the Oracle VM Agent password is only used during the process of taking ownership of an Oracle VM Server, thereafter certificate based authentication is used.
Define Policy for Server Pool...		Displays the Configure DRS/DPM wizard. Use this option to set or edit resource policies for the server pool.
Send VM Messages...		Send one or more virtual machines a message. Use this option to send messages to virtual machines that have the Oracle VM Guest Additions installed.
Generate Report		Generate an XML report on one or more server pools.
Help		Displays context sensitive help.

3.3.1.1 Refresh All

If there are either changes to the physical state of an Oracle VM Server or its attached storage, you should discover it again to update the configuration information in Oracle VM Manager. In order to cut load time within Oracle VM Manager, Oracle VM Server rediscovery is not performed at start-up, therefore there may be cases where you want to update the configuration information for *all* Oracle VM Server instances within the Oracle VM Manager. Note that in larger deployments this may be a resource consuming action.



Important

The **Refresh All** function does not pick up the contents of file systems that have never been refreshed before. Furthermore, it does not refresh repositories that are not already presented on at least one server. It is important to keep this in mind if you have restored a configuration from a backup, since some items may not have been refreshed before at the time that the backup was created.

To rediscover all Oracle VM Servers, file servers and SAN servers:

1. On the **Servers and VMs** tab click on the **Server Pools** folder in the navigation pane.
2. Select the **Server Pools** perspective from the drop-down selector.
3. Click **Refresh All**  in the perspective toolbar.

The configuration information about all Oracle VM Server instances is updated in Oracle VM Manager.

3.3.1.2 Create Server Pool

To create a server pool:

1. Click **Create Server Pool**  in the toolbar to start the **Create Server Pool** wizard.
2. The **Create Server Pool** step is displayed in the wizard.

Enter the server pool information:

- **Server Pool Name:** The name of the server pool. The maximum length of a server pool name is 256 characters and may contain any character.
- **Virtual IP Address for the Pool:** This option is deprecated, but is available for backward compatibility purposes. See [What is a Master Server and a Virtual IP Address?](#) in the *Oracle VM Concepts Guide* for more information on this parameter.

- **VM Console Keymap:** The key mapping to be used when connecting to a virtual machine's console.
- **VM Start Policy:** For each server pool you can define the default start-up policy for all of your virtual machines. It is possible to override the default policy within the configuration of each virtual machine. See [Section 3.1.3, “Create Virtual Machine”](#) for information on setting the start policy for an individual virtual machine. Note that as of Release 3.4, the VM Start Policy also applies to the VM Resume operation. Select one of:
 - **Best Server:** This is the legacy algorithm that optimizes virtual machine placement on Oracle VM Servers that are in use before moving to unused servers in the pool.
 - **Balance Server:** This algorithm distributes virtual machines across all the available Oracle VM Servers in the server pool, starting with the least utilized Oracle VM Server first. CPU and memory utilization statistics are used to balance the virtual machine distribution across the server pool, with CPU utilization taking precedence over memory utilization.
 - **Current Server:** The virtual machine is started on the current Oracle VM Server to which it is assigned.



Note

If the VM start policy for a server pool is set to Current Server, and the server pool contains a VM that has not been assigned to a particular server yet, then that VM is started on one of the available servers according to the Best Server policy.

- **Secure VM Migrate:** Select whether to enable encrypted migration of virtual machines. When Secure VM Migrate is checked, virtual machines are migrated using SSL to protect the data during the migration process. Secure migration of a virtual machine may effect the time taken to perform the migration as the encryption and decryption of data requires more system resources and time.
- **Clustered Server Pool:** Select whether to enable clustering of the Oracle VM Servers in the server pool to enable HA. See [How do Server Pool Clusters Work?](#) and [How does High Availability \(HA\) Work?](#) in the [Oracle VM Concepts Guide](#) for more information on server pool clustering and on HA support and policies.



Important

If the Oracle VM Servers in your server pool are SPARC-based, you should be aware that clustering can only function if the distributed lock manager package is installed on all of the Oracle VM Servers that you intend to add to the server pool, as described in [Installing the Distributed Lock Manager \(DLM\) Package](#) in the [Oracle VM Installation and Upgrade Guide](#). Furthermore, clustering is not supported for servers that have multiple control domains (shadow domains). Clustering for SPARC is only supported using NFS storage for the cluster file system. Failure to meet these requirements results in an error when attempting to create the clustered server pool, notifying you that the server lacks the ability to perform clustering.

- **Timeout for cluster:** If clustering is enabled for the server pool, this option allows you to set the timeout parameter. The maximum cluster timeout setting is 300 seconds. The minimum cluster timeout is 30 seconds. The default cluster timeout is 120 seconds. The Disk heartbeat and network heartbeat are automatically derived from the cluster timeout value. The cluster timeout determines how long a server should be unavailable within the cluster before failover occurs. Setting this value too low can cause false positives, where failover may occur due to a brief network outage or a

sudden load spike. Setting the cluster timeout to a higher value can mean that a server is unavailable for a lengthier period before failover occurs.

The cluster timeout can only be changed when there are no servers in the server pool, therefore it is usually good to set this during the creation of your server pool. See [Clustering for x86 Server Pools](#) in [Oracle VM Concepts Guide](#) for more information.

SPARC-based server pools do not recognize the cluster timeout parameter. Setting this value for a server pool consisting of SPARC servers has no effect and the parameter is ignored by the Oracle VM Agent for SPARC.



Note

This option is greyed out if the **Clustered Server Pool** check box is unchecked.

- **Storage for Server Pool:** Select the file system type to use for the server pool, either a **Network File System**, or a **Physical Disk**. The server pool file system is used to hold the server pool cluster data, and is also used for cluster heartbeating. Oracle recommends that you create this storage with a size of at least 12 GB, as a NAS export or LUN. Note that if you are creating a SPARC-based server pool, only NFS is supported for a server pool file system.

A server pool file system is exclusive, just like other storage. That is, in the same way that you cannot create two storage repositories on the same export path, the server pool file system cannot be shared with other server pools, or with storage repositories. Each fully qualified export path (for example, /export/myexport/one, /export/myexport/two) must be used for one, and only one, purpose, that is, for a storage repository, or a server pool file system.



Note

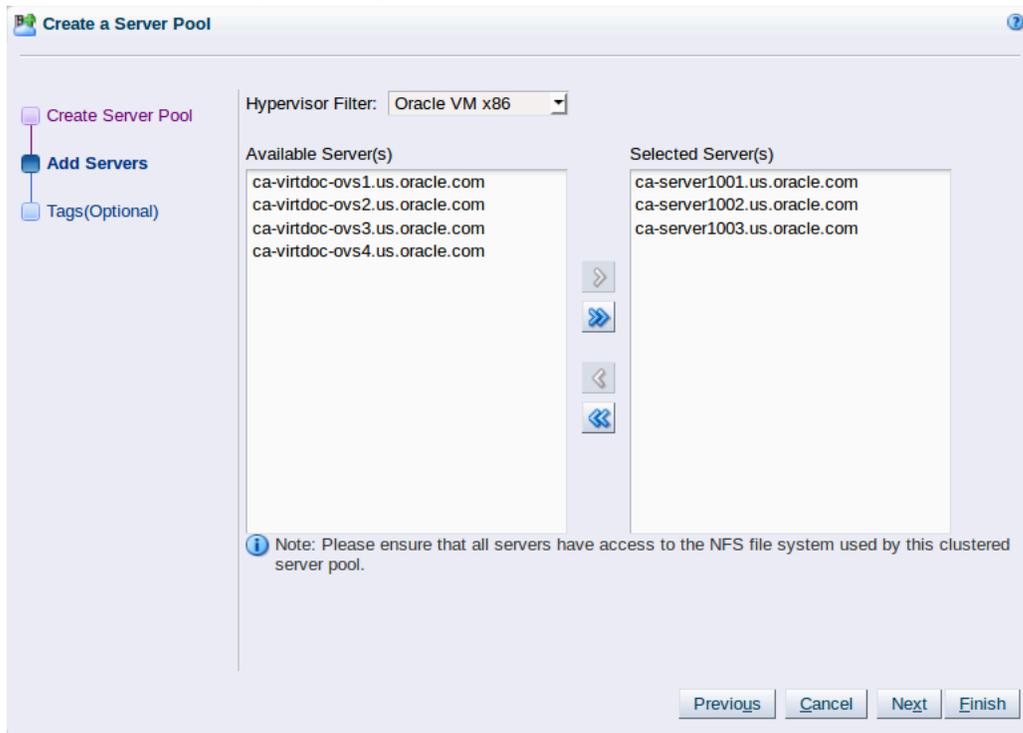
This option is greyed out if the **Clustered Server Pool** check box is unchecked.

For information on creating storage, see [Chapter 6, Storage Tab](#).

- **Network File System:** The file system to use as the pool file system. Click **Search**  in the **Storage Location** field to search for a network file system. This field is displayed if you select Network File System in the previous field.
- **Physical Disk:** The file system to use as the pool file system. Click **Search**  in the **Storage Location** field to search for a physical disk. This field is displayed if you select Physical Disk in the previous field.
- **Description:** A description of the server pool. This field is optional.

Click **Next**.

3. The **Add Servers** step is displayed in the wizard.

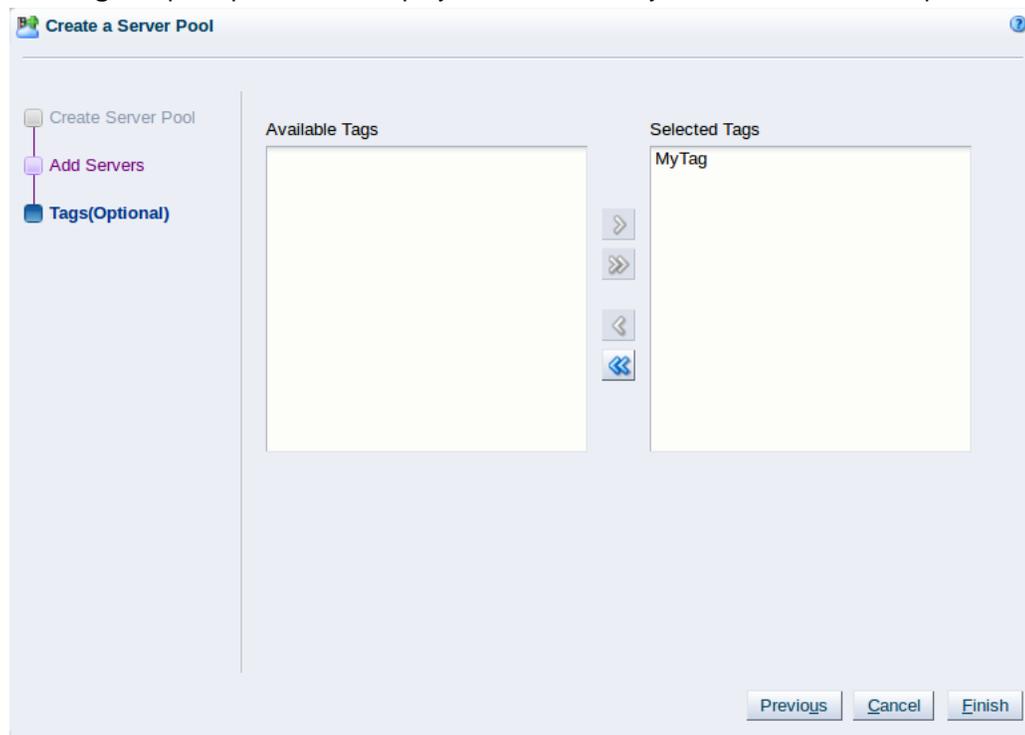


The **Hypervisor Filter** field allows you to specify the hypervisor type to use for the server pool. Selecting the **Oracle VM x86** hypervisor, limits the available servers to show only x86 systems; while selecting the **Oracle VM SPARC** hypervisor, limits the available servers to show only SPARC systems within your environment. If your environment does not contain systems of more than one hypervisor, the filter is greyed out and is automatically set to the hypervisor available within your environment. It is not possible to create a server pool consisting of servers that use different hypervisors.

Select the Oracle VM Servers to add to the server pool from the **Available Servers** column and move them to the **Selected Servers** column.

If you have defined tags and wish to add any to the server pool, click **Next**. Otherwise, click **Finish**.

4. The **Tags** step is optional and displays in the wizard if you clicked **Next** in the previous step.



If you have defined tags previously, they appear in the **Available Tags** column. You can select the tags that you wish to apply to the server pool and move them to the **Selected Tags** column.

See [Section 1.17, "Tags and Tag Filters"](#) for more information on creating and managing tags.

Click **Finish**.

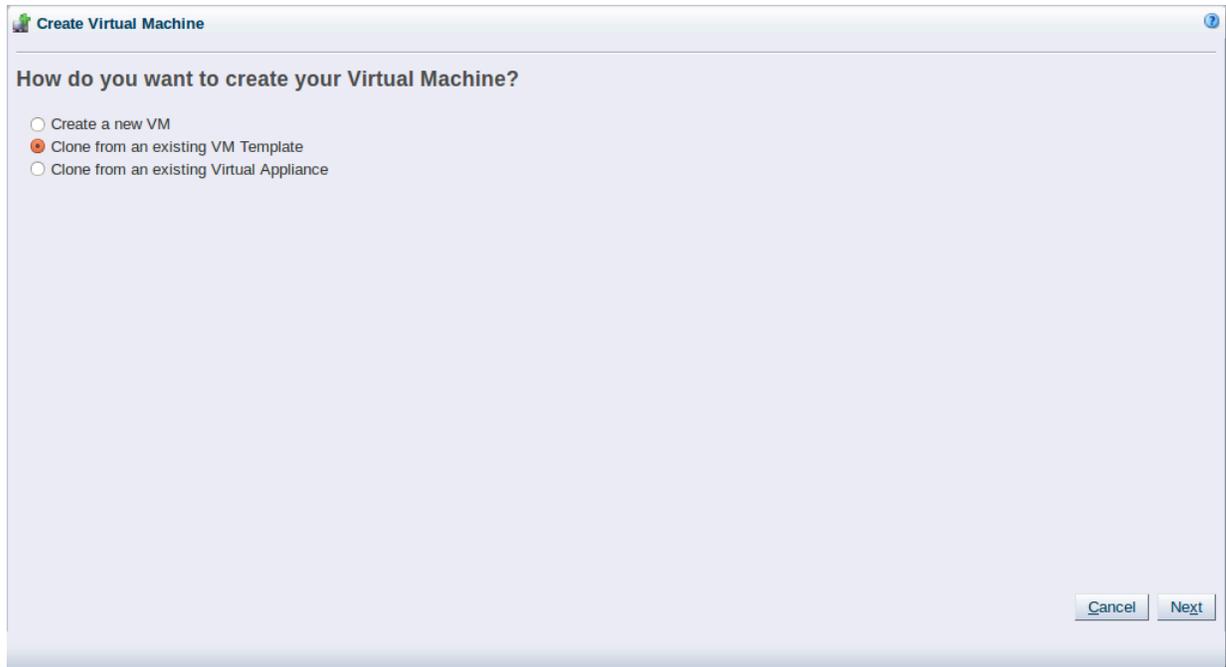
The server pool is created.

3.3.1.3 Create Virtual Machine

This section explains how to create a virtual machine using a template, and creating a virtual machine from an ISO file, or from physical or [virtual disks](#).

To create a virtual machine using 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**.

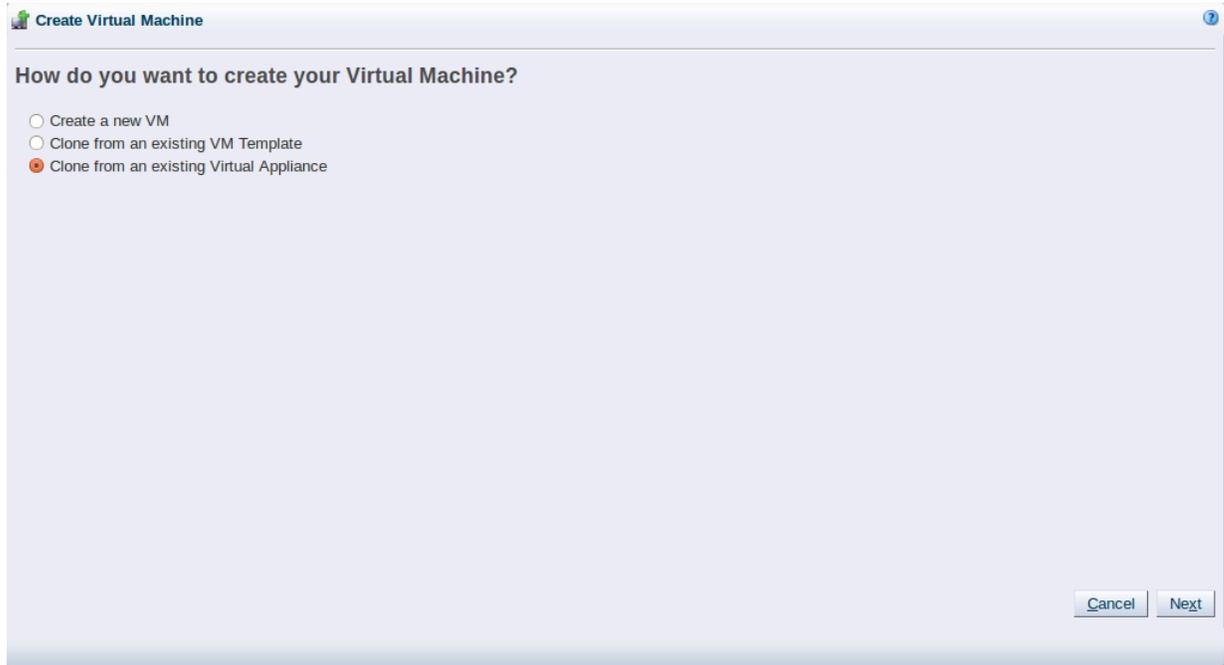
4. The **Create Virtual Machine** wizard prompts you to specify details for the virtual machine.

Enter or select the following details:

- **Clone Count:** The number of virtual machines to create from the template.
 - **Name Index:** The start index number to use for the clone name suffix. The default is 0. This is used in conjunction with the **VM Name** field to create the name for each clone.
 - **Repository:** The repository in which to create the virtual machine configuration files.
 - **VM Template:** The template to use to create the virtual machines.
 - **VM Name:** An optional name for the virtual machines. The maximum name length is 256 characters and may contain any character. The name need not be unique. If no value is given, the default is the name of the virtual machine template being cloned. Each clone is suffixed with a dot (.) and the clone index number, starting with the value for the **Name Index** field. For example, if the **VM Name** field is set to `MyVM`, and the **Name Index** field is set to `1`, the resulting clones would be named `MyVM.1`, `MyVM.2` and so on.
 - **Server Pool:** The server pool in which to deploy the virtual machines.
 - **Description:** An optional description of the virtual machines.
5. Click **Finish**. The virtual machines are created and deployed to the server pool.

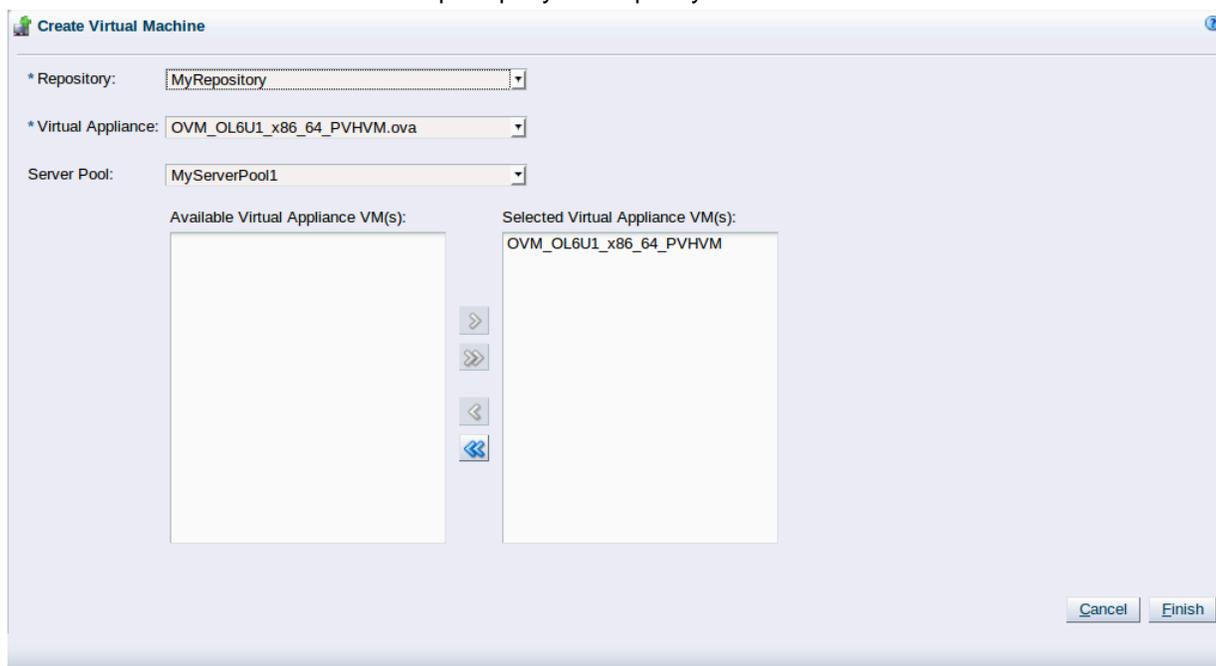
To create a virtual machine using a virtual appliance:

1. Click the **Servers and VMs** tab.
2. Click **Create Virtual Machine**  in the toolbar.
3. The **Create Virtual Machine** wizard is displayed.



Click 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.



Enter or select the following details:

- **Repository:** The repository in which to create the virtual machine configuration files.
- **Virtual Appliance:** The virtual appliance from which you want to create the virtual machines.
- **Server Pool:** The server pool in which to deploy the virtual machines.

If you select **None**, the virtual machines are deployed into the **Unassigned Virtual Machines** folder.

- **Available Virtual Appliance VM(s):** The virtual machines that are available to create from the virtual appliance.
- **Selected Virtual Appliance VM(s):** The virtual machines to create from the virtual appliance.

You can select multiple virtual machines if the virtual appliance contains more than one. Oracle VM Manager creates a separate virtual machine for each one that you select.

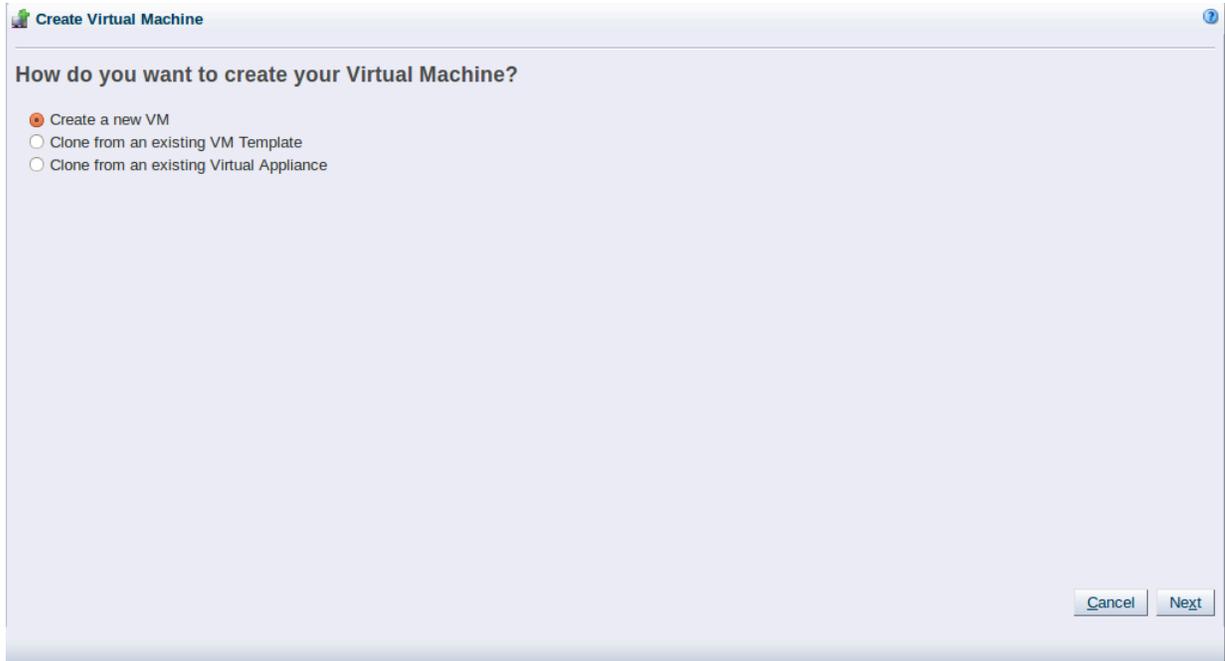
5. Click **Finish**.

Oracle VM Manager creates the selected virtual machines from the virtual appliance and deploys them to the server pool you specified.

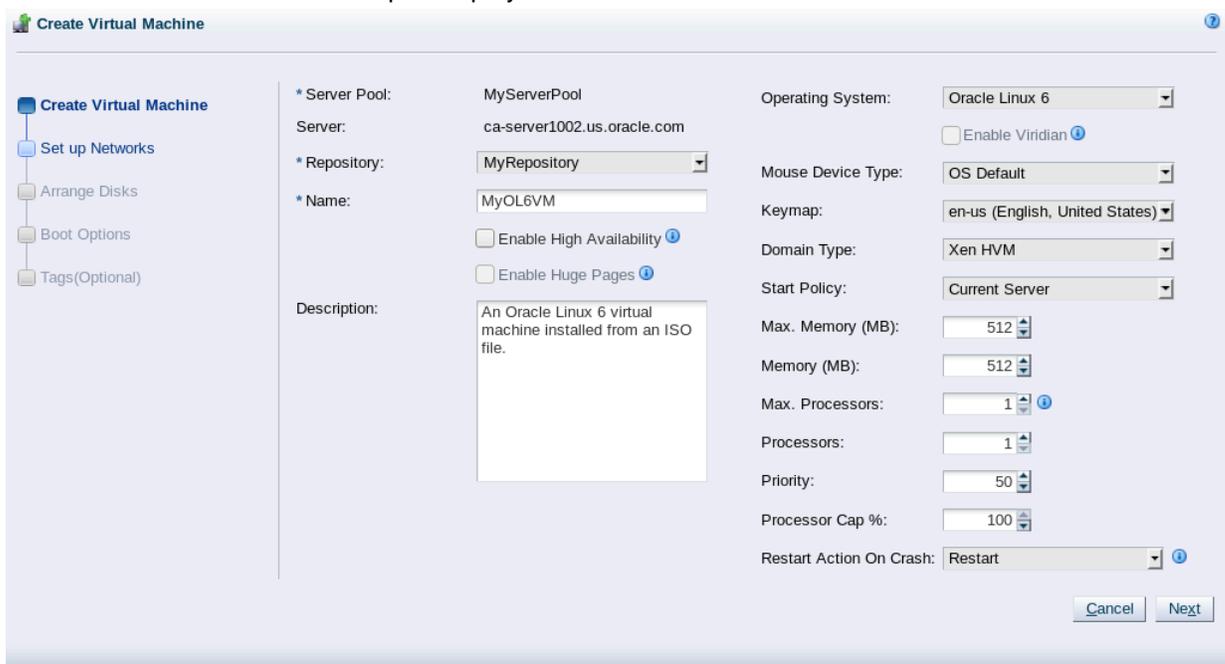
You can then migrate each virtual machine to a compatible server or server pool.

To create a virtual machine using all other media:

1. Click the **Servers and VMs** tab.
2. Click **Create Virtual Machine**  in the toolbar.
The **Create Virtual Machine** wizard is displayed.
3. Click the **Create a new VM** option and then click **Next**.



4. The **Create Virtual Machine** step is displayed in the wizard.



Enter or select the following details:

- **Server Pool:** The server pool on which to create the virtual machine.
- **Server:** The server that the virtual machine should be created on. The default option is [Any](#), but the drop-down selection lists the servers that exist in the server pool that you have selected. Selecting a

particular server forces the virtual machine to be created on that server. This has implications for the Start Policy discussed later.

- **Repository:** The repository in which to create the virtual machine configuration file.
- **Name:** A name for the virtual machine. The maximum name length is 256 characters and may contain any character. The name need not be unique.
- **Enable High Availability:** Whether to enable High Availability (HA). See [How does High Availability \(HA\) Work?](#) in the *Oracle VM Concepts Guide* for more information on HA.
- **Enable Huge Pages:** Whether to enable [HugePages](#).
 - The HugePages feature is deprecated for virtual machines with a domain type of PVM in Oracle VM Release 3.4.1. You should not enable HugePages when creating or editing virtual machines. This feature will be removed in a future release of Oracle VM.

If you have HugePages enabled for any PVM guests, Oracle recommends that you change the domain type for virtual machines from Paravirtualized (PVM) to Hardware virtualized, with paravirtualized drivers (PVHVM). If you cannot change the domain type for a virtual machine, you should disable the HugePages setting and then restart the virtual machine.

- Huge Page support is enabled by default for virtual machines with a domain type of HVM or PVHVM. You cannot set this parameter for those virtual machines.
- This option does not take effect on virtual machines deployed on SPARC-based server pools. Virtual machines running on SPARC-based servers can access the page sizes that the server platform supports, regardless of this setting.

See [How is the HugePages Feature Enabled for Virtual Machines?](#), in the *Oracle VM Concepts Guide*, for more information on Huge Page support.

- **Description:** An optional description of the virtual machine.
- **Operating System:** The operating system of the virtual machine. This setting enables or disables certain virtual machine settings that the guest operating system may require.
- **Enable Viridian:** Whether to enable Viridian.
 - Viridian support enables the exposure of Windows virtualization compatible entitlements to Microsoft Windows guest operating systems. Enabling viridian support is strongly recommended to ensure improved performance for Microsoft Windows guest operating systems.
 - Enabling viridian support is permitted for all Microsoft Windows guest operating system types. However, it is only effective from Microsoft Windows Vista and Microsoft Windows Server 2008 onwards.
 - Viridian support is enabled by default when creating virtual machines running Microsoft Windows guest operating systems.
- **Mouse Device Type:** The mouse type to use for the virtual machine. This option is not available for virtual machines in SPARC-based server pools.
- **Keymap:** The keyboard mapping to use for the virtual machine. This option is not available for virtual machines in SPARC-based server pools.
- **Domain Type:** The domain type of the virtual machine.

- **Xen HVM:** Hardware virtualization, or fully virtualized. When you select this option you can supply an ISO file in a repository (in the **Arrange Disks** step of the wizard) from which to install an operating system on the virtual machine. See [Section 4.5.1.1, “Import ISO”](#) for information on importing an ISO file into a repository. Alternatively, you may consider setting up an environment to perform a network installation for the virtual machine.
- **Xen HVM PV Drivers:** Identical to **Xen HVM**, but with additional paravirtualized drivers for improved performance of the virtual machine. See [What are Virtualization Modes or Domain Types?](#) in the [Oracle VM Concepts Guide](#) for more information about using paravirtualized drivers. This domain type is typically used to run Microsoft Windows guest operating systems with an acceptable performance level. Installation of the guest operating system is usually performed either using an ISO file in a repository or via a network installation.
- **Xen PVM:** Paravirtualized. Enables you to select a location for the mounted ISO file from which to create the virtual machine. Before you create the virtual machine using the paravirtualized method, mount the ISO file on an NFS share, or HTTP or FTP server. You supply the location of the mounted ISO file in the **Network Boot Path** field in the **Boot Options** step of the wizard. For information on creating a mounted ISO file, see [Provisioning ISO Files for PVM Guest Installations](#) in the [Oracle VM Administrator's Guide](#). Do not select this option if the virtual machine Operating System is set to either Oracle Linux 7 or RedHat Enterprise Linux 7. These operating systems do not support the Xen PVM domain type.

**Important**

As of Oracle VM Release 3.4.6, support for PVM guests is removed. For more information, see [Disabling Paravirtualized Guests on Oracle VM Server](#) in the [Oracle VM Administrator's Guide](#).

- **OVM/SPARC:** Specifies that the virtual machine is deployed on a server pool running on Oracle VM Server for SPARC.
- **Unknown:** This option is informational in the event that Oracle VM Manager is unable to determine the domain type for an existing virtual machine. It is not possible to actually set a virtual machine's domain type to this value. Attempting to do so generates a rule violation when you try to save the virtual machine settings and an error message is returned.
- **Start Policy:** The policy that should be used to start the virtual machine. Select one of:
 - **Best Server:** This is the legacy algorithm that optimizes virtual machine placement on Oracle VM Servers that are in use before moving to unused servers in the pool.
 - **Balance Server:** This algorithm distributes virtual machines across all the available Oracle VM Servers in the server pool, starting with the least utilized Oracle VM Server first. CPU and memory

utilization statistics are used to balance the virtual machine distribution across the server pool, with CPU utilization taking precedence over memory utilization.

- **Current Server:** The virtual machine is started on the Oracle VM Server to which it is assigned. If you selected a particular server to create the virtual machine on, then it is started on this server.
- **Use Pool Policy:** The virtual machine is started using the start policy defined for the entire server pool. See [Section 3.1.2, "Create Server Pool"](#) for more information on setting the start policy for a server pool.
- **Max. Memory (MB):** The maximum memory size the virtual machine can be allocated. This value must be between 32 and 512000. The default is 512.

For x86-based virtual machines, this value is incremented by 32 each time you click the up arrow, and, conversely, decreased by 32 if you click the down arrow. For SPARC-based virtual machines, the up arrow adds 512, and the down arrow subtracts 512. If you have enabled Huge Pages, the value must be a multiple of 2 MB.



Note

For HVM and PVHVM guests, the maximum memory size value must equal the memory size value. If these values are different, the following job failure message is generated for HVM/PVHVM guests: "The memory limit cannot be different than the current memory size on an HVM/PVHVM Virtual Machine."

- **Memory (MB):** The memory size the virtual machine is allocated. When creating a virtual machine, this is the memory allocation used when starting the virtual machine. This value must be between 32 and 512000. The default is 512.

For x86-based virtual machines, this value is incremented by 32 each time you click the up arrow, and, conversely, decreased by 32 if you click the down arrow. For SPARC-based virtual machines, the up arrow adds 512, and the down arrow subtracts 512. If you have enabled Huge Pages, the value must be a multiple of 2 MB.

You can change the memory allocated to a running virtual machine without the need to restart the virtual machine if the domain type is PVM or PVHVM and where the guest is running a Linux OS on an x86-based platform or an Oracle Solaris OS on a SPARC-based platform.



Note

For x86-based PVHVM guests running on Oracle Solaris OS, you cannot change the memory if the virtual machine is running.

See the *Oracle VM Paravirtual Drivers for Microsoft Windows* documentation for information about the availability of hot memory modification on PVHVM guests that are running a Microsoft Windows

OS. You must use a Windows PV Driver that supports hot memory modification or you must stop the guest before you modify the memory.

- **Max. Processors:** The maximum number of processors the virtual machine can be allocated. The number of processors is expressed in number of physical CPU cores. The maximum number of processors depends on the domain type, as follows:

- PVM: 256.



Important

As of Oracle VM Release 3.4.6, support for PVM guests is removed. For more information, see [Disabling Paravirtualized Guests on Oracle VM Server](#) in the *Oracle VM Administrator's Guide*.

- HVM: 128; or 32 for Microsoft Windows guests.



Note

As of Release 3.4.6, the HVM limit is 64 for Microsoft Windows guests.

- PVHVM: 128; or 32 if using Oracle VM Paravirtual Drivers for Microsoft Windows.



Note

As of Release 3.4.6, the PVHVM limit is 64 if using Oracle VM Paravirtual Drivers for Microsoft Windows.

- OVM/SPARC: Equivalent to the number of available CPUs on the server.
- **Processors:** The number of processors the virtual machine is allocated. The number of processors is expressed in number of physical CPU cores, up to the value of **Max. Processors**.
- **Priority:** The CPU priority of the virtual machine. The higher the priority value, the more physical CPU cycles are given to the virtual machine. This option is not available for virtual machines in SPARC-based server pools. This should be a number between 1 and 100. The default priority is set at 1.
- **Processor Cap %:** Increase or decrease the percentage to which the virtual CPUs can receive scheduled time. This parameter defines the maximum percentage to which the virtual CPUs can receive scheduled time. Use this parameter to keep low priority virtual machines from consuming too

many CPU cycles on a Virtual Machine Server. This option is not available for virtual machines in SPARC-based server pools.

- **Restart Action on Crash:** The action to perform if a virtual machine crashes. This option is only available for virtual machines that are running on the Xen hypervisor and that have been configured to run on a particular Oracle VM Server. Options include the following:
 - **Restart:** Restarts the virtual machine operating system.
 - **Stop:** Stops the virtual machine. If **Enable High Availability** is selected, this option is not available.
 - **Restart After Dump:** Restarts the virtual machine operating system after first creating a core dump file for the virtual machine.
 - **Stop After Dump:** Stops the virtual machine after first creating a core dump file for the virtual machine. If **Enable High Availability** is selected, this option is not available.

Core dump files are saved to `/var/xen/dump` on the Oracle VM Server where the virtual machine is hosted. Each core dump file is named uniquely so that files are not overwritten. This can use up disk space rapidly. You must make sure there is either enough disk space available at this path on the Oracle VM Server where the virtual machine will run; or you should mount additional storage at this path to avoid using up disk space required to host dom0.

This option cannot be modified for a running virtual machine. You must stop the virtual machine before you are able to change this option, if you select to edit the virtual machine later.

The **Priority** and **Processor Cap%** parameters are passed to the Xen hypervisor for use by the credit scheduler, which automatically load balances guest VCPUs across all available physical CPUs, using an algorithm that combines these two parameters. Therefore, these parameters are a key factor for the performance of the virtual machine on x86 hardware.

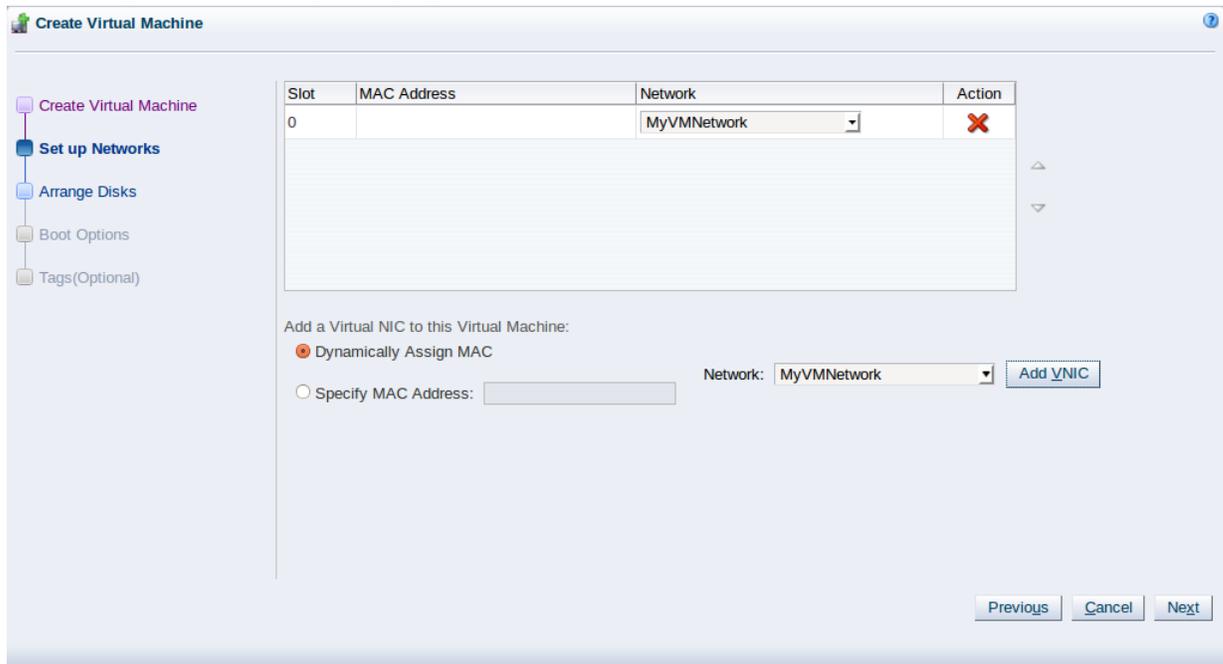


Note

For information on performance optimization goals and techniques for Oracle VM Server for x86, see *Optimizing Oracle VM Server for x86 Performance*, on Oracle Technology Network at: <http://www.oracle.com/technetwork/server-storage/vm/ovm-performance-2995164.pdf>.

On SPARC, each virtual machine uses dedicated physical CPU threads, and CPUs are not shared between virtual machines, being exclusively assigned to a single virtual machine.

Click **Next**.

5. The **Set up Networks** step is displayed in the wizard.

This step of the wizard allows you to add VNICs to the virtual machine.

- a. To specify the MAC address for a VNIC, select **Specify MAC Address** and enter the MAC address. Otherwise, leave the default **Dynamically Assign MAC**.
- b. Select a network with the virtual machine role from the **Network** drop-down list.

If no networks are available, you must first create a network with the virtual machine role as a dedicated network for virtual machine traffic. See [Section 5.1.1, "Create New Network"](#) for information on creating a network.

- c. Click **Add VNIC**.
 - The VNIC order specified determines the order in which the VNICs are presented to the virtual machine. You can control the ordering of the VNICs using the up and down arrows on the right of the table.
 - If you are editing the networking of an existing stopped virtual machine, you can change the network to which the VNIC belongs using the **Network** drop-down list in the table. It is important that the VNIC belongs to a network already associated with the Oracle VM Servers on which it can run, or you cannot start the virtual machine. See [Section 5.1.1, "Create New Network"](#) and [Section 5.1.2, "Edit Existing Network"](#) for more information on associating Oracle VM Servers with networks.
 - If you are editing an existing running virtual machine, you can add VNICs to the virtual machine, but you cannot remove VNICs that are already in use. You also cannot reorder VNICs on a running virtual machine. If you choose to add a VNIC to a running machine you must ensure that the VNIC belongs to a virtual machine network already associated with the Oracle VM Servers on which it can run, by selecting the appropriate network from the **Network** drop-down list.

- A virtual machine can have up to eight (8) VNICs for HVM guests and up to 31 for PVM guests. A PVM guest requires network connectivity to perform the operating system install and must have at least one VNIC.

d. Click **Next**.

6. The **Arrange Disks** step of the wizard is displayed.

Set the slot positions for your ISOs and disks:

Slot	Disk Type	Name	Size (GiB)	Actions
0	Empty			
1	Empty			
2	Empty			
3	Empty			

Previous Cancel Next

Select the desired storage configuration of your virtual machine, such as virtual disks, physical disks, and ISO files. On a separate slot, add one or more of the following disk types:

- **Empty:** An empty slot.
- **Virtual Disk:** This allows you to add or create a virtual disk. Virtual disks may be shared by virtual machines, or only available to a single virtual machine.
- **Physical Disk:** The physical disks are the disks in a storage array. Physical disks may be shared by virtual machines.
- **CD/DVD:** This adds an ISO file in a storage repository and can be used to create HVM and PVHVM virtual machines. When creating a virtual machine from an ISO file, you must use a single file. Installations that span multiple ISO files are not supported. ISO files cannot be used to create PVM virtual machines. You cannot add an empty CDROM on a SPARC-based server.



Note

Adding or removing a CD/DVD device can only be done when a virtual machine is powered off. Once the VM is running again, the CD/DVD device is

always available for use as needed, much like a physical CD/DVD device on a physical server.

After the virtual machine is powered on, the only actions that are supported while the virtual machine is running are:

- Selecting an .iso for a CD/DVD slot in an "Empty" state.
- Hot-swapping the .iso currently in use.
- Ejecting the .iso from the CD/DVD slot, leaving the device in an "Empty" state.

Add or create any virtual disks to use as the virtual machine's hard disk, select any physical disks to add, and select any ISO files to use to create the virtual machine. Add the disks in the order they should appear in the virtual machine. The disk with the boot partition or installation media should be the first disk listed. An HVM guest can have up to four disks, including empty CD/DVD drives. A PVM guest can have up to 104 disks. A PVHVM guest can have up to 107 disks. An OVM/SPARC guest can have up to 1024 disks. Only one slot can contain an empty CD/DVD.



Tip

When editing a running virtual machine, you can change the CD/DVD using this dialog box and the CD/DVD is mounted in the operating system.

To create or add a virtual disk:

- a. To create a virtual disk, select **Virtual Disk** from the **Disk Type** drop-down list and click **Create a Virtual Disk +**.
- b. The **Create Virtual Disk** dialog box is displayed. Enter or select the following to create a virtual disk:
 - **Repository:** The repository in which the virtual disk is to be created.
 - **Virtual Disk Name:** The name of the virtual disk to be created and made available to the virtual machine. See [How are Virtual Disks Managed?](#) in the *Oracle VM Concepts Guide* for more information about using virtual disks.
 - **Size (GiB):** The disk size of the virtual disk, in [GiB](#).
 - **Description:** A description of the virtual disk.
 - **Shareable:** Whether the virtual disk should be shareable (read/write) with other virtual machines.
 - **Allocation Type:** Whether to use a **Sparse Allocation** or **Non-sparse Allocation**. Sparse Allocation creates a sparse disk, so the size of the disk is initially small and increases as it is used. Sparse allocation is faster than using Non-Sparse Allocation when creating a virtual

machine. Non-Sparse Allocation creates the entire disk when the virtual machine is created, and so is slower than creating a sparse disk.

Click **OK**.

- c. To search for an existing virtual disk to add to the virtual machine, click **Select a Virtual Machine Disk** . The **Select a Virtual Machine Disk** dialog box is displayed. The dialog box lists the available virtual disks in a table that indicates the following information:

- **Selected:** Whether or not the disk has been selected. This is indicated using radio button.
- **Name:** The name of the virtual disk as stored in Oracle VM Manager.
- **Size (GiB):** The disk size of the virtual disk, in [GiB](#).
- **Repository:** The repository in which the virtual disk is located.
- **Shareable:** Whether the virtual disk is configured to be shareable (read/write) with other virtual machines.
- **VM(s):** A comma separated list of the names of any virtual machines that may already be using this virtual disk.

Select the virtual disk to use and Click **OK**.



Note

If your virtual machine needs more than one disk, you can create the disk(s) afterwards in the repository, and add them to the virtual machine. See [Section 4.9.1.1, “Create Virtual Disk”](#) and [Section 3.5.2.1, “Edit Virtual Machine”](#) for more information on creating a virtual disk and editing a virtual machine. There are some limitations on mixing virtual disks of differing device types on a virtual machine. See [How are Virtual Disks Managed?](#) in the [Oracle VM Concepts Guide](#) for more information about how device

types are allocated to virtual disks and what you may need to do to solve any issues surrounding this problem.

To add a physical disk:

- a. To add a physical disk to the virtual machine, select **Physical Disk** from the **Disk Type** drop-down list. Click **Select a Virtual Machine Disk** . The **Select a Physical Disk** dialog box is displayed. The dialog box lists the available physical disks in a table that provides the following information:
 - **Selected:** Whether or not the disk has been selected. This is indicated using radio button.
 - **Name:** The name of the physical disk as stored in Oracle VM Manager.
 - **Size (GiB):** The disk size of the physical disk, in [GiB](#).
 - **SAN Server:** The SAN Server where the physical disk is located.
 - **Volume Group:** The volume group that the physical disk belongs to.
 - **Shareable:** Whether the physical disk is configured to be shareable (read/write) with other virtual machines.
 - **VM(s):** A comma separated list of the names of any virtual machines that may already be using this physical disk.

Select a physical disk from the list of available disks. If you want to leave the slot empty, select **Leave Slot Empty**. Click **OK**.

To add an ISO file:

- a. To add an ISO file to the virtual machine, 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 a Iso file from the list of available files. If you want to leave the slot empty, select **Leave Slot Empty**. Click **OK**.

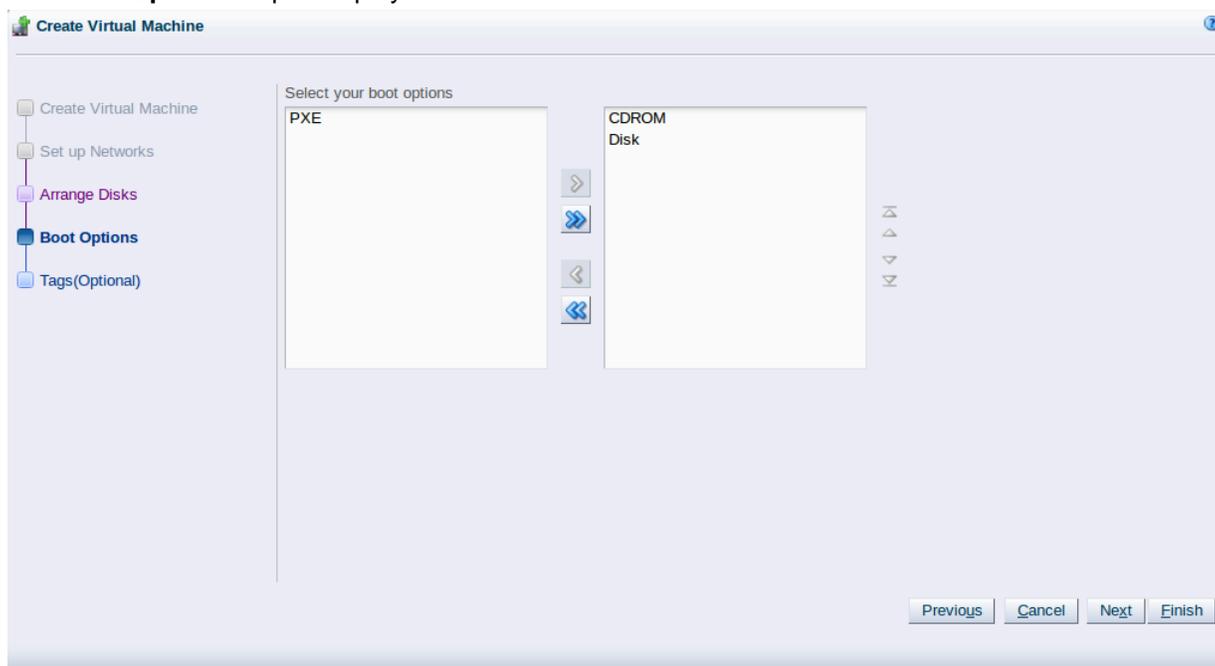


Note

When adding an ISO file to an existing virtual machine, the ISO file is available to the operating system, but may not be mounted. To access the ISO file, you may need to mount it, for example:

```
# mkdir /cdrom
# mount -o loop /dev/xvdb /cdrom
```

When you have set up the virtual machine's disks, click **Next**.

7. The **Boot Options** step is displayed in the wizard.

Select the boot media order for your virtual machine.

If you are creating a hardware virtualized machine virtual machine (HVM), you can choose the **PXE** boot option. If so, remember to put PXE first in the **Select your boot options** field, and change the boot order again after installation and before rebooting the virtual machine. To use PXE, you must configure a PXE/ftp environment to offer the necessary boot media and instructions to the virtual machine.

If you are creating a paravirtualized virtual machine (PVM), you also have the **PXE** option available. In this case, the **PXE** option refers to a network style boot. If the **PXE** option appears in the right-hand-side column, you must enter the location of the mounted ISO file from which to perform the operating system installation in the **Network Boot Path** field that is shown when editing or creating a PVM, for example

```
http://example.com/EL6-x86
```

For information on creating a mounted ISO file, see [Provisioning ISO Files for PVM Guest Installations](#) in the *Oracle VM Administrator's Guide*.

You cannot use the **Network Boot Path** field to boot a virtual machine using PXE. This field can only be used to specify the path to a mounted ISO file to use when installing a PVM guest.

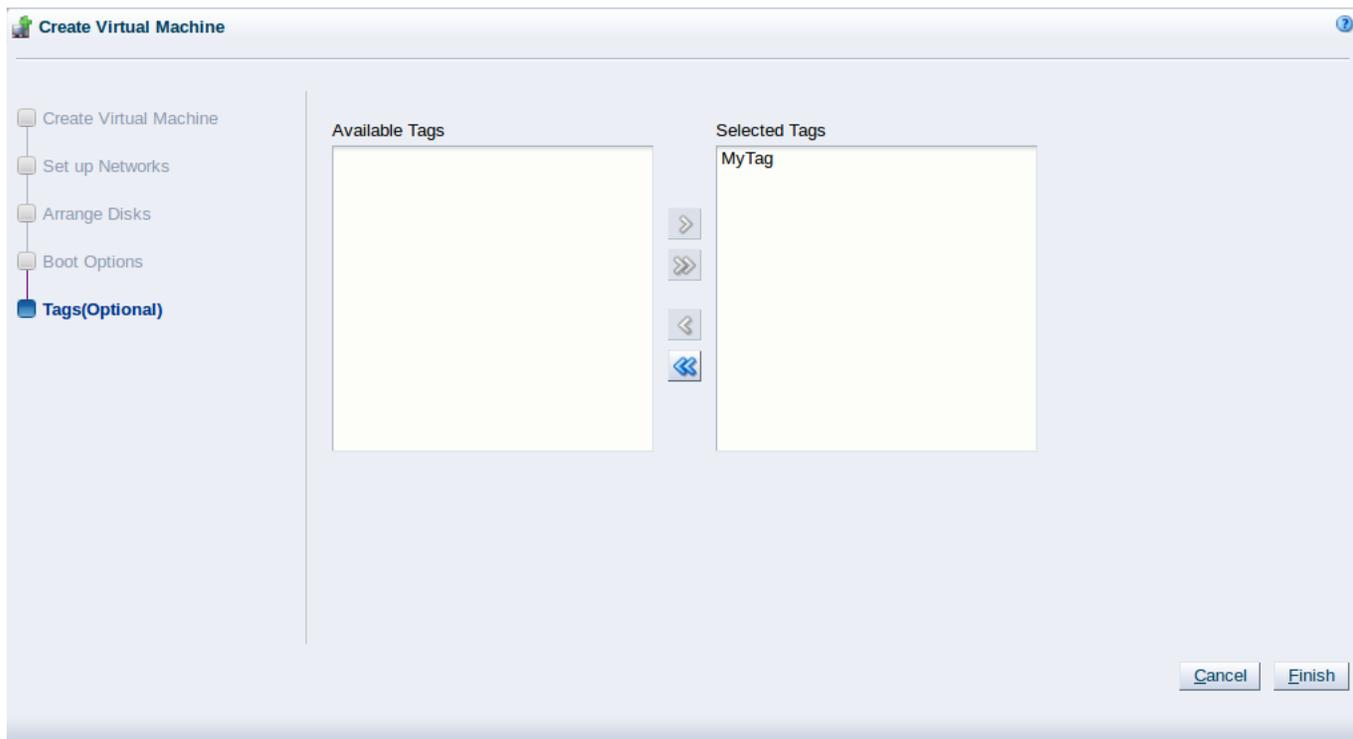
If you have defined tags and want to add any to this virtual machine, click **Next**. Otherwise, click **Finish** to create and deploy the virtual machine to the server pool.

8. The **Tags** step is optional and displays in the wizard if you clicked **Next** in the previous step.



Note

The virtual machine has already been created and deployed to the server pool at this point. This step is entirely optional. Cancelling the operation within this dialog does not prevent the virtual machine from being created.



If you have previously created tags, they appear in the **Available Tags** column. Select the tags you want to apply to the virtual machine and move them to the **Selected Tags** column. See [Section 1.17, “Tags and Tag Filters”](#) for more information on creating and managing tags. Click **Finish**.

If you created a PVM, there are some steps you should take after the operating system installation is completed:

1. Stop the virtual machine. See [Section 3.5.2.4, “Stop Virtual Machines”](#) for information on stopping a virtual machine.
2. Edit the virtual machine and remove **PXE** from the **Boot Order** column in the **Boot Options** step of the **Edit Virtual Machine** wizard. See [Section 3.5.2.1, “Edit Virtual Machine”](#) for information on editing a virtual machine.
3. Start the virtual machine and complete the installation if necessary. See [Section 3.5.2.3, “Start Virtual Machines”](#) for information on starting a virtual machine.

To edit the virtual machine configuration information, see [Section 3.5.2.1, “Edit Virtual Machine”](#).

3.3.1.4 Import Virtual Machine

You can import a [virtual machine](#) into [Oracle VM Manager](#) and have it deployed to a [server pool](#), or placed in the **Unassigned Virtual Machines** folder if you do not want to deploy it. The virtual machine must be

located on an FTP or web server, either as separate files, or compressed into a single archive file (for example, a .tgz or .zip file). As an archive of a virtual machine is also known as a [virtual machine template](#), you can also use this process to import older style Oracle VM virtual machine templates. This process does not work for the newer OVF/OVA style templates.

When you import a virtual machine into a server pool, you have the option of saving it to any storage repository that is presented to at least one [Oracle VM Server](#) in the server pool. When you import a virtual machine to the **Unassigned Virtual Machines** folder, you can save it into any storage repository.

To import a virtual machine:

1. Place the files that make up a virtual machine, or an archive of those files, in a location accessible by Oracle VM Manager using any of these protocols: HTTP, HTTPS or FTP.
2. Click the **Servers and VMs** tab.
3. If you want to import and deploy the virtual machine to a server pool, select **Server Pools** in the navigation tree, then select the server pool in the management pane table.

If you do not want to deploy the virtual machine, select the **Unassigned Virtual Machines** folder.

4. Select **Import Virtual Machine...**  in the toolbar in the management pane.
5. The **Import Virtual Machine** dialog box is displayed. Select or edit the following:
 - **Destination Repository:** The storage repository in which to save the virtual machine.
 - **VM URLs:** The URLs for the virtual machine. The URL schemes supported are HTTP, HTTPS, and FTP. For example:

```
http://example.com/mytemplate.tgz
```

To import a virtual machine using FTP, use the standard FTP syntax, for example:

```
ftp://user:password@server/path/filename.tgz
```

Each virtual machine component should be listed on a new line. Each URL must be a reference to a complete file. If your virtual machine files are split into multiple compressed files, concatenate those files and enter the URL for the concatenated file, for example to concatenate a number of compressed files to one compressed file, enter:

```
$ cat vm.tgz.1of3 vm.tgz.2of3 vm.tgz.3of3 > vm.tgz
```

Then enter the URL to the single compressed virtual machine file, in this case, vm.tgz.

To import a virtual machine that is not compressed as a single file, each component must be a complete file (if not, concatenate them to one file), for example to enter a [virtual disk](#) image and a virtual machine configuration file that together make up a complete virtual machine, you could enter:

```
http://myexample.com/System-sda.img
http://myexample.com/vm.cfg
```

- **Proxy:** The IP address or hostname of an optional proxy server to use when importing the virtual machine.

Click **OK** to import the virtual machine. The virtual machine is deployed to the server pool in the stopped state. Alternatively, the virtual machine is imported to the **Unassigned Virtual Machines** folder.

See [Section 3.5.2.3, “Start Virtual Machines”](#) for information on starting a virtual machine, and [Section 3.5.2.1, “Edit Virtual Machine”](#) for information on editing a virtual machine.

3.3.1.5 Edit Server Pool

You can edit the configuration information of a server pool, including the server pool name, description, key mapping and secure migration of virtual machines.

To edit a server pool:

1. Click the **Servers and VMs** tab.
2. Select the **Server Pools** folder in the navigation pane. Ensure that you are in the **Server Pools** perspective. Click **Edit Selected Server Pool...**  in the toolbar.
3. The **Edit Server Pool** dialog box is displayed. Edit the server pool information:
 - **Server Pool Name:** The name of the server pool. The maximum length of a server pool name is 256 characters and may contain any character.
 - **Description:** A description of the server pool.
 - **Virtual IP Address for the Pool:** This deprecated field is not displayed if a virtual IP address was not configured when the server pool was created. The field is greyed out, as it is not possible to edit the virtual IP address for a server pool after it has been created.
 - **Master Server:** This deprecated option is not displayed if a virtual IP address was not configured when the server pool was created. In the case where a virtual IP address exists for a server pool, the option to select an Oracle VM Server within the server pool to take the role of the master server is available. This option is only significant if configuring a server pool that consists of Oracle VM Servers running software prior to the 3.4 release. Please see [What is a Master Server and a Virtual IP Address?](#) in the [Oracle VM Concepts Guide](#) for more information.
 - **Pool File System:** This field cannot be modified.
 - **VM Console Keymap:** The key mapping to use in the consoles for all virtual machines in the server pool.
 - **VM Start Policy:** Define the default start-up policy for all of your virtual machines handled by this server pool. It is possible to override the default policy within the configuration of each virtual machine. See [Section 3.1.3, “Create Virtual Machine”](#) for information on setting the start policy for an individual virtual machine.
 - **Secure VM Migrate:** Select whether to enable encrypted migration of virtual machines.
 - **Override Global Server Update Group:** Select whether to enable overriding of the global update repository. See [Section 7.3, “Server Update Groups”](#) and [Section 3.4.6, “Server Update Repositories Perspective”](#) for more information on update repositories.
 - **Timeout for cluster:** If clustering is enabled for the server pool, this option allows you to set the timeout parameter. The maximum cluster timeout setting is 300 seconds. The minimum cluster timeout is 12 seconds. The default cluster timeout is 120 seconds. The disk heartbeat and network heartbeat are automatically derived from the cluster timeout value.

The cluster timeout can only be changed when there are no servers in the server pool, therefore it is usually good to set this during the creation of your server pool.

4. To edit the Oracle VM Servers in the server pool, click the **Servers** tab. Using the controls provided, you can add or remove Oracle VM Servers that comprise the server pool.
5. To edit the tags associated with the server pool, click the **Tags** tab. Using the controls provided, you can add or remove tags that can be used to identify the server pool and to group it with other objects within Oracle VM Manager. See [Section 1.17, “Tags and Tag Filters”](#) for more information on creating and managing tags.
6. Click **OK** to apply your changes.

3.3.1.6 Delete Server Pool

Before you can delete a server pool, you must delete or remove all virtual machines and remove all Oracle VM Servers from the server pool.

To delete server pools:

1. Click the **Servers and VMs** tab.
2. Select the **Server Pools** folder in the navigation tree.
3. Select **Server Pools** from the **Perspective** drop-down list.
4. Select one or more server pools in the table in the management pane. Click **Delete**  in the toolbar.
5. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the server pools.

The server pools are deleted.



Tip

To delete a server pool which is HA-enabled, you must have an [admin server](#) assigned to any NFS file server-based storage.

3.3.1.7 Change Oracle VM Agent Passwords on Oracle VM Servers

Oracle VM Manager allows you to change the password for the [Oracle VM Agent](#) running on each Oracle VM Server. However, you must change the Oracle VM Agent password for all Oracle VM Servers in a server pool. This is why the password change can only be executed at the server pool level and is applied to all Oracle VM Servers in the server pool at the same time.

To change the Oracle VM Agent password for all Oracle VM Servers in a server pool:

1. Select the **Server Pools** folder in the navigation tree.
2. Select **Server Pools** from the **Perspective** drop-down list.
3. Select one or more server pools in the table in the management pane. Click **Change Servers Agent Password**  in the toolbar.
4. The **Change Agent Password for All Servers within the Server Pool** dialog box is displayed. Enter the current password first. Then enter a new password and confirm it in the respective fields.
5. Click **OK** to complete the operation. Oracle VM Manager logs into each Oracle VM Server in the server pool and changes the Oracle VM Agent password.

3.3.1.8 Define or Edit Server Pool Policies

It is possible to define server pool policies to improve power and resource usage across the servers within your server pool. The two policies you can set are for:

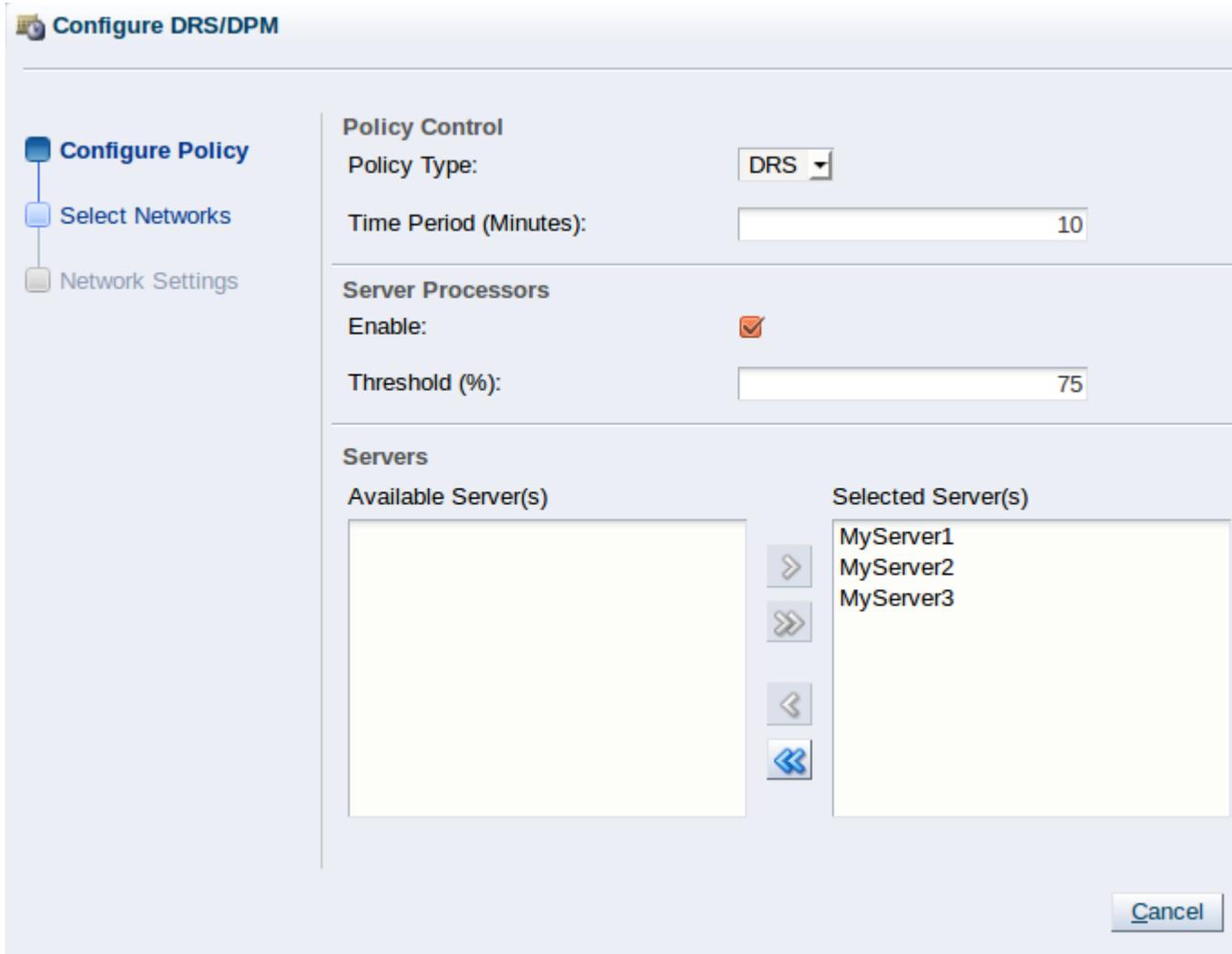
- [Distributed Resource Scheduling \(DRS\)](#): Optimizes virtual machine resource utilization in a server pool.
- [Distributed Power Management \(DPM\)](#): Increases the consolidation ratio to use fewer Oracle VM Servers during periods of relative low resource utilization.

The policy is also able to be set for networks used in a server pool. You can set the server pool to use either [DRS](#), or [DPM](#), but not both at the same time.

See [What are Server Pool Policies?](#) in the [Oracle VM Concepts Guide](#) for more information on these server pool policies.

To set a server pool policy:

1. Click the **Servers and VMs** tab.
2. Select the server pool in the **Server Pools** folder in the navigation pane.
3. From the **Perspective** field in the management pane, select **Policies** from the drop-down list. Click **Edit**  in the toolbar. The **Configure Policy** step of the **Configure DRS/DPM** wizard is displayed.



Configure DRS/DPM

Configure Policy

Policy Control

Policy Type:

Time Period (Minutes):

Server Processors

Enable:

Threshold (%):

Servers

Available Server(s)

Selected Server(s)

MyServer1
MyServer2
MyServer3

Enter the server pool policy information:

- **Policy Control:**

- **Policy Type:** You can choose from either DRS, DPM, or none. You cannot set both DRS and DPM to be active at the same time.
- **Time Period (Minutes):** The time period for the policy job to run. This sets the policy job to run every n minutes, for example, 10 sets the policy job to run every 10 minutes. You can enter a number between 2 and 60.
- **Server CPU:**
 - **Enable:** Set whether to enable or disable logging of CPU performance and utilization.
 - **Threshold (%):** The maximum amount of CPU percentage usage allowed before the policy must be enacted. You can enter a number between 25 and 99.



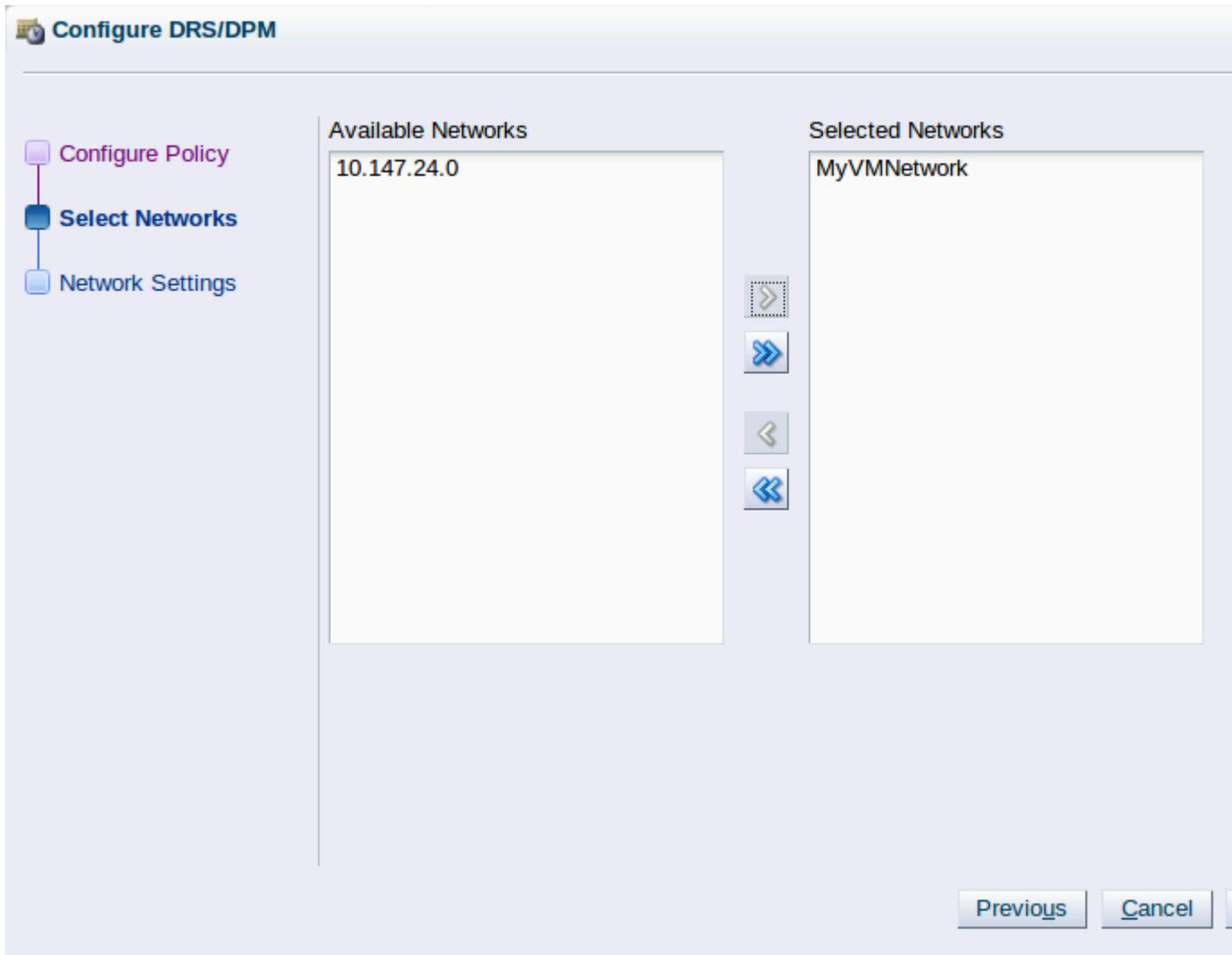
Note

The **Enable** check box must be selected before a value can be specified for the **Threshold (%)** field.

- **Servers:** Select the Oracle VM Servers for which the policy is to be enabled by moving the selected Oracle VM Servers from the **Available Servers** to the **Selected Servers** shuttle box.

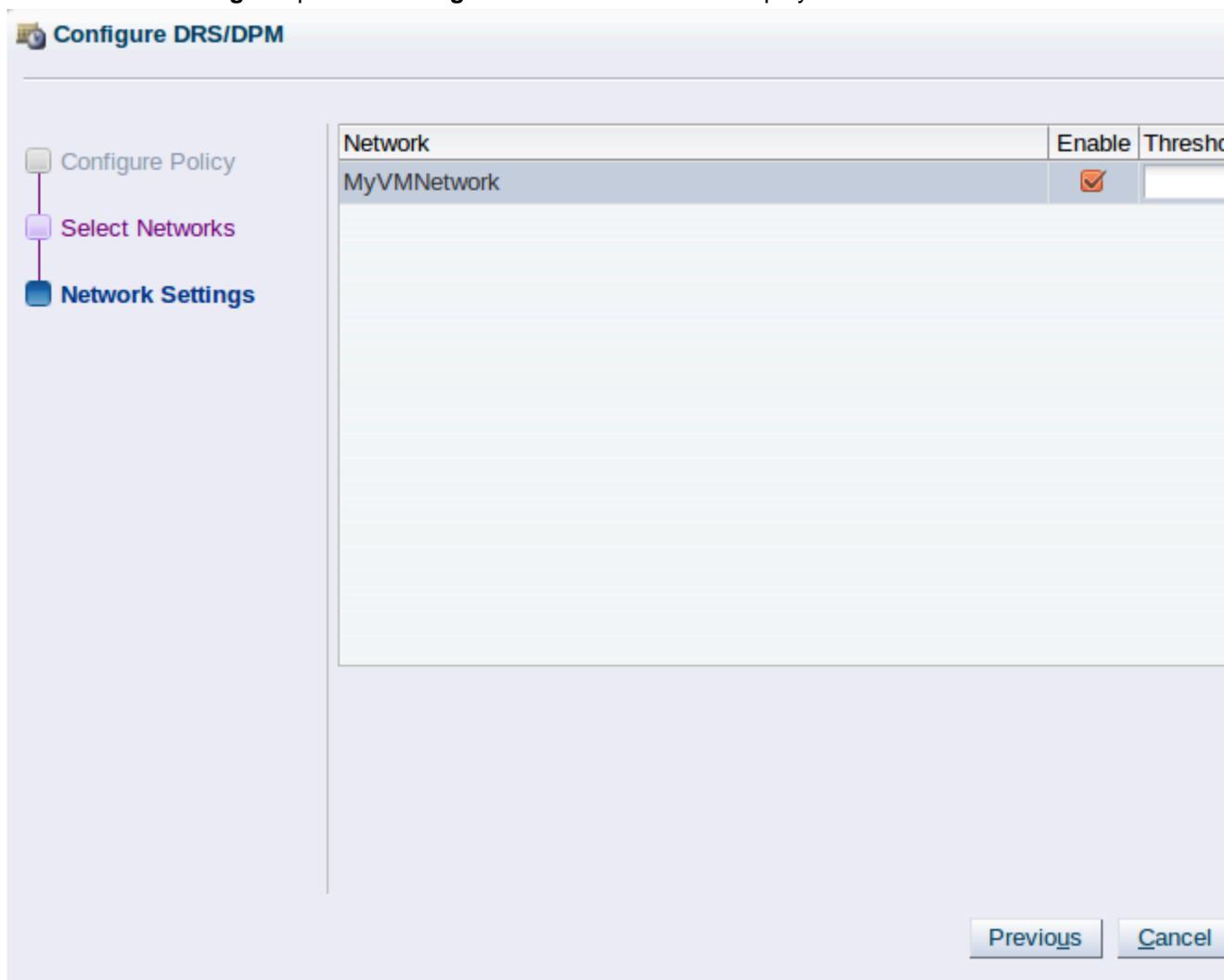
Click **Next**.

- The **Select Networks** step of the **Configure DRS/DPM** wizard is displayed.



Select the networks to be included in the policy. Click **Next**.

5. The **Network Settings** step of the **Configure DRS/DPM** wizard is displayed.



Select whether to enable the policy on the network, and select the threshold at which the policy is to be enacted for the network. Click **Finish**.

The policy is set for the server pool.

3.3.1.9 Send VM Messages

You can select one or more virtual machines, Oracle VM Servers or server pools, to select which running virtual machines are populated in the dialog box used to send messages to virtual machines.

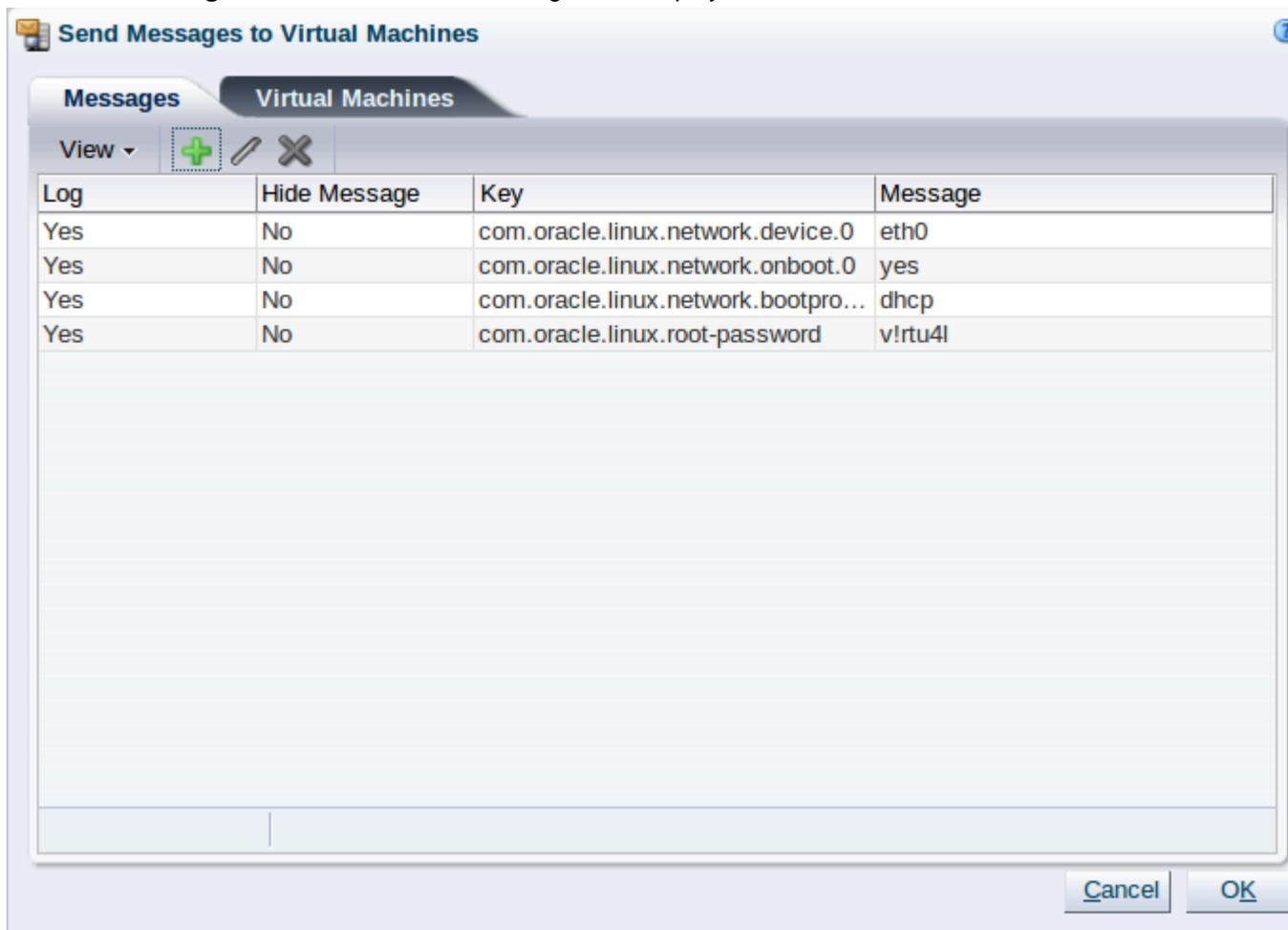
To send a virtual machine a message you must have first installed the Oracle VM Guest Additions in the virtual machine. For information on installing the Oracle VM Guest Additions, and a more detailed description of the virtual machine messaging mechanism and its uses, see the [Oracle VM Administrator's Guide](#).

To send messages to virtual machines:

1. Click the **Servers and VMs** tab.
2. Determine the grouping of virtual machines that you wish to send a message to:

- i. If you wish to send a message to virtual machines distributed across one or more server pools, click on the **Server Pools** folder in the navigation pane. Select **Server Pools** from the **Perspective** drop-down list. Select one or more server pools in the management pane.
 - ii. If you wish to send a message to virtual machines distributed across one or more servers in a particular server pool, expand the **Server Pools** folder in the navigation pane and select the server pool where the servers reside. Select **Servers** from the **Perspective** drop-down list. Select one or more servers in the management pane.
 - iii. If you wish to send a message to one or more virtual machines on a particular server, expand the **Server Pools** folder in the navigation pane and select the server pool where the servers reside. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane.
3. Click **Send VM Messages...**  in the perspective toolbar.

The **Send Messages to Virtual Machines** dialog box is displayed.



4. To create a message, click **Create Message...**  in the perspective toolbar to display the **Create VM Message** dialog box.



+ Create VM Message

* Key:

Log Message

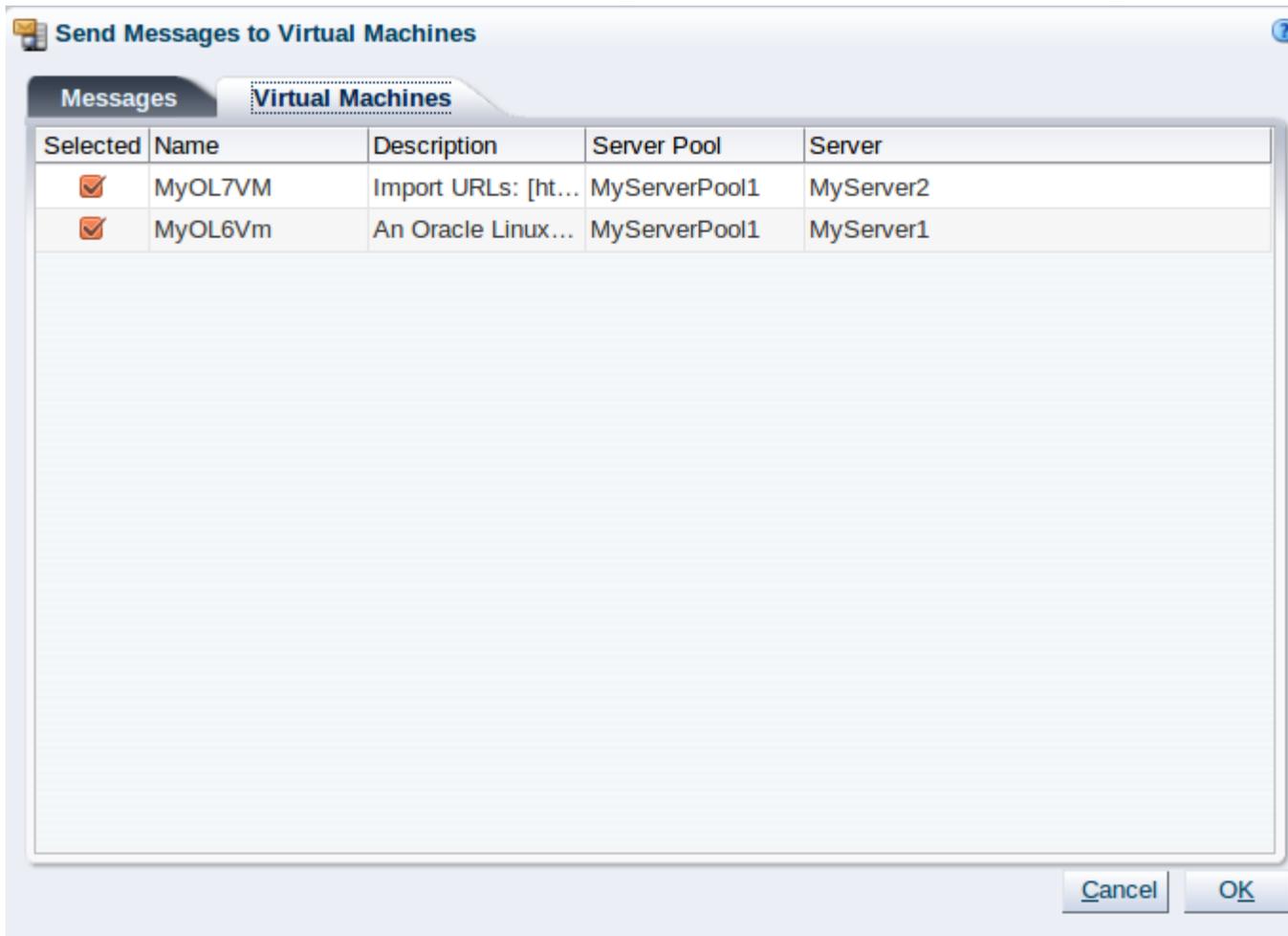
Hide Message

* Message:

Enter the message key value pair in the **Key** and **Message** fields. Check the **Log Message** field to retain a log of the message. Check the **Hide Message** field to hide the message of the key/value pair in the user interface. Click **OK** to save the message and return to the **Send Messages to Virtual Machines** dialog box.

5. To edit a message, select the message and click **Edit...**  in the dialog box toolbar. To delete a message, select it and click **Delete**  in the dialog box toolbar.

6. Select the **Virtual Machines** tab to select which running virtual machines are to receive the messages.



Click **OK** to send the messages to the virtual machines.

3.3.1.10 Generate Report

You can generate an XML report on one or more server pools. For more information about object reporting, see [Section 7.1, "Reports"](#).

To generate a report on server pools:

1. Select the **Server Pools** folder in the navigation pane.
2. Select one or more server pools in the management pane table.
3. Click  **Generate Report** in the management pane toolbar.
4. The report is generated and sent to the browser.

3.3.2 Server Processor Compatibility Perspective

The Server Processor Compatibility perspective lists the different server processor compatibility groups configured in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the server processor compatibility group.

- **Description:** A description entered for the server processor compatibility group when it was created or edited.
- **Servers:** A comma-separated list of servers that belong to the server processor compatibility group.

This perspective includes a toolbar that consists of the following options:

Table 3.3 Server Processor Compatibility Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create New Server Processor Compatibility Group...		Displays the Create a Server Processor Compatibility Group wizard. Use this option, after adding servers to a server pool, to define which servers have processors belonging to the same family. This helps to improve the success of live virtual machine migration.
Edit Server Processor Compatibility Group...		Displays the Edit Server Processor Compatibility Group wizard. Use this option to edit a server processor compatibility group.
Delete Server Processor Compatibility Group		Displays the Delete Confirmation dialog box. Use this option to delete the selected server processor compatibility group.
Help		Displays context sensitive help.

3.3.2.1 Create Server Processor Compatibility Group



Warning

It is critical that all of the members of a server processor compatibility group have compatible processors. If you create a group that contains members with incompatible processor families or models, live migration and other migration related functions may fail.

To create a server processor compatibility group:

1. Click the **Servers and VMs** tab. Select **Server Pools** in the navigation pane.
2. From the **Perspective** field in the management pane, select **Server Processor Compatibility** from the drop-down list. Click **Create New Server Processor Compatibility...**  in the perspective toolbar.
3. The **Create a Server Processor Compatibility Group** wizard is displayed.

+ Create a Server Processor Compatibility Group

Create Compatibility Group

Select Servers

* Group Name: MyServerCompatibilityGroup

Description: A group of servers with compatible processors for virtual machine migration.

Creating a Server Processor Compatibility Group with incompatible processors may cause migration failure.

Cancel

Enter the server processor compatibility group information:

- **Group Name:** Enter the name of the server processor compatibility group.
- **Description:** A description of the server processor compatibility group.

Click **Next**.

4. The **Select Servers** step of the **Create a Server Processor Compatibility Group** wizard is displayed.



Select the servers to include in the server processor compatibility group and move them from the **Available Servers** column to the **Selected Servers** column.

Click **Finish**.

The server processor compatibility group is created and listed in the **Server Processor Compatibility Group** table in the management pane.

3.3.2.2 Edit Server Processor Compatibility Group



Warning

You should not edit the default server processor compatibility groups created during Oracle VM Server discovery. You should also be aware that if you add members to a processor compatibility group, the server processor family and model must match the other members of the group or live migration and other migration related functions may fail.

To edit a server processor compatibility group:

1. In the **Servers and VMs** tab, select **Server Pools** in the navigation pane.
2. From the **Perspective** field in the management pane, select **Server Processor Compatibility** from the drop-down list. Select the server processor compatibility group in the **Server Processor Compatibility** table and click **Edit Server Processor Compatibility...** in the perspective toolbar.
3. The **Edit Server Processor Compatibility Group** dialog box is displayed. Edit the server processor compatibility group as required. To edit the Oracle VM Servers in the server processor compatibility group, click the **Servers** tab.

Click **OK**.

The server processor compatibility group is edited and displayed in the **Server Processor Compatibility Group** table in the management pane.

3.3.2.3 Delete Server Processor Compatibility Group

To delete a server processor compatibility group:

1. In the **Servers and VMs** tab, select **Server Pools** in the navigation pane.
2. From the **Perspective** field in the management pane, select **Server Processor Compatibility** from the drop-down list. Select the server processor compatibility group in the **Server Processor Compatibility** table and click **Delete Server Processor Compatibility**  in the perspective toolbar.
3. A confirmation dialog box is displayed. Click **OK** to delete the server processor compatibility group.

The server processor compatibility group is deleted.

3.4 Server Pool Item

Each server pool configured within the environment is displayed as a server pool navigation item within the Server Pools navigation folder. These server pool navigation items are labelled according to the server pool name that is configured within Oracle VM Manager. If a name is not available or not configured properly within Oracle VM Manager, the server pool UUID is allocated as the server pool name. The structure of the navigation provided in the navigation tree is discussed in more detail in [Section 3.2, "Summary"](#).

Clicking on a server pool navigation item in the navigation tree allows you to access different perspectives in the management pane. Each perspective provides its own view of the server pool within Oracle VM Manager. Most of the perspectives also include separate perspective toolbars that enable you to perform various configuration or management tasks specific to the view currently displayed within the management pane. A server pool navigation item offers the following perspectives within the management pane:

- [Info Perspective](#)
- [Servers Perspective](#)
- [Virtual Machines Perspective](#)
- [Anti-Affinity Groups Perspective](#)
- [Policies Perspective](#)
- [Server Update Repositories Perspective](#)
- [Events Perspective](#)

3.4.1 Info Perspective

The Info perspective is common to many elements within the Oracle VM Manager Web Interface. This perspective always shows the individually configured parameters for an item that is currently selected in the navigation tree. Some of these configured parameters may be automatically populated through a discovery process, while others may have been configured manually during the creation of the object that is selected.

The Info perspective or dialog contains a perspective toolbar with the following options:

Table 3.4 Info Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Help		Displays context sensitive help.

This perspective includes the following information:

- **Server Pool Name:** The configured name for the server pool.
- **Server Count:** The number of Oracle VM Servers that belong to the server pool.
- **Clustered:** Whether or not the server pool is configured as a cluster.
- **Timeout for Cluster:** The number of seconds before a server in the cluster times out.
- **ID:** The UUID for this server pool.
- **Description:** The description provided for the server pool when it was created or edited.
- **Pool File System:** The path to the file system that is used for the server pool file system.
- **Pool File System Type:** The type of file system where the server pool file system is stored.
- **Pool File System Storage Device:** The device used for the pool file system.
- **NFS/NAS File System:** The NFS mount path for the pool file system if NFS is used.
- **VM Console Keymap:** The configured keymap for the virtual machine console.
- **VM Start Policy:** The virtual machine start-up policy selected for the server pool.
- **File Servers:** A list of file servers that are currently presented to the server pool.
- **Secure VM Migrate:** Whether or not the server pool is configured to support secure migrations of virtual machines.
- **Override Global Server Update Group:** Whether or not the server pool is configured to override any global server update group.

This perspective includes a toolbar that consists of the following options:

Table 3.5 Info Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Help		Displays context sensitive help.

3.4.2 Servers Perspective

The Servers perspective lists the different servers that belong to either a server pool or the Unassigned Servers folder, depending on the item selected in the navigation pane. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the server.

- **Status:** The running status of the server.
- **Tag(s):** Any tags that have been applied to the server.
- **Maintenance Mode:** Whether or not the server is configured to be in maintenance mode.
- **IP Address:** The IP address that is used by Oracle VM Manager to access the server on the management network channel.
- **Memory (GiB):** The available memory, in [GiB](#), on the server.
- **Processors:** The number of processors that the server contains.
- **Speed (GHz):** The speed that the processors for the server are configured to run at.
- **Product:** The physical host brand and type reported by the server bios.
- **Owned:** Whether or not the server is owned by the current Oracle VM Manager instance.
- **Update Required:** Whether or not a server update is available for the server from its server update repository.

This perspective includes a toolbar that consists of the following options:

Table 3.6 Servers Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create Virtual Machine...		Displays the Create Virtual Machine wizard. Use this option to create a virtual machine in the selected server pool.
Edit...		Displays the Edit Server dialog box. Use this option to edit the name and description for an Oracle VM Server. This is also used to put the Oracle VM Server into maintenance mode, take ownership of it, and to configure remote management of the Oracle VM Server using IPMI (Intelligent Platform Management Interface). Note that placing an Oracle VM Server in maintenance mode is indicated in the navigation pane with this icon: 
Delete		Displays the Delete Confirmation dialog box. Use this option to delete the selected Oracle VM Server.
Start		Starts a stopped Oracle VM Server.
Stop		Stops a running Oracle VM Server.
Restart		Restarts a running Oracle VM Server.
Kill		Powers off an Oracle VM Server. This is the equivalent of physically pushing the Off button on the hardware.
Rediscover Server		Rediscover the Oracle VM Server. Use this to refresh information about the Oracle VM Server.
Rescan Physical Disks		Rescans the local storage on an Oracle VM Server. Use this option to rescan the storage presented to an Oracle VM Server when the storage configuration is changed, for example, a new storage array is added.

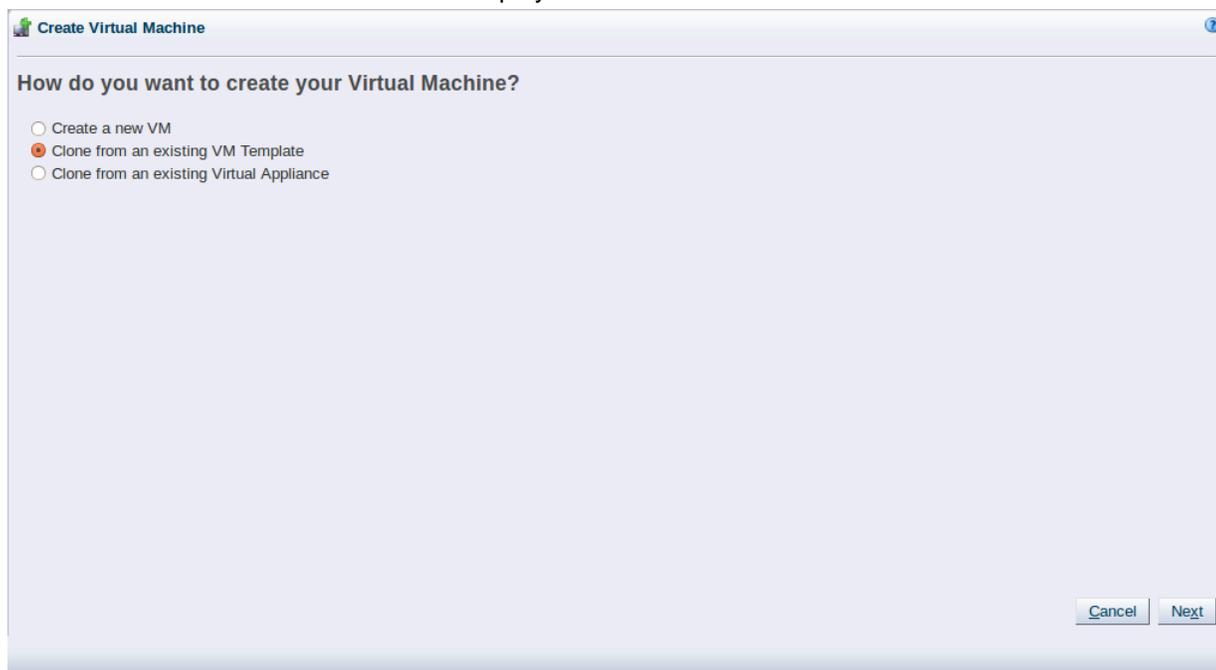
Toolbar Icon Option	Icon	Description
Update Server		Updates or upgrades the Oracle VM Server if an update is available in the server update repository.
Send VM Messages...		Send one or more virtual machines a message. Use this option to send messages to virtual machines that have the Oracle VM Guest Additions installed. This option is not available in the Unassigned Servers folder. Virtual machines must be running on a server to receive messages.
Generate Report		Generate an XML report on one or more Oracle VM Servers.
Help		Displays context sensitive help.

3.4.2.1 Create Virtual Machine

This section explains how to create a virtual machine using a template, and creating a virtual machine from an ISO file, or from physical or [virtual disks](#).

To create a virtual machine using 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.

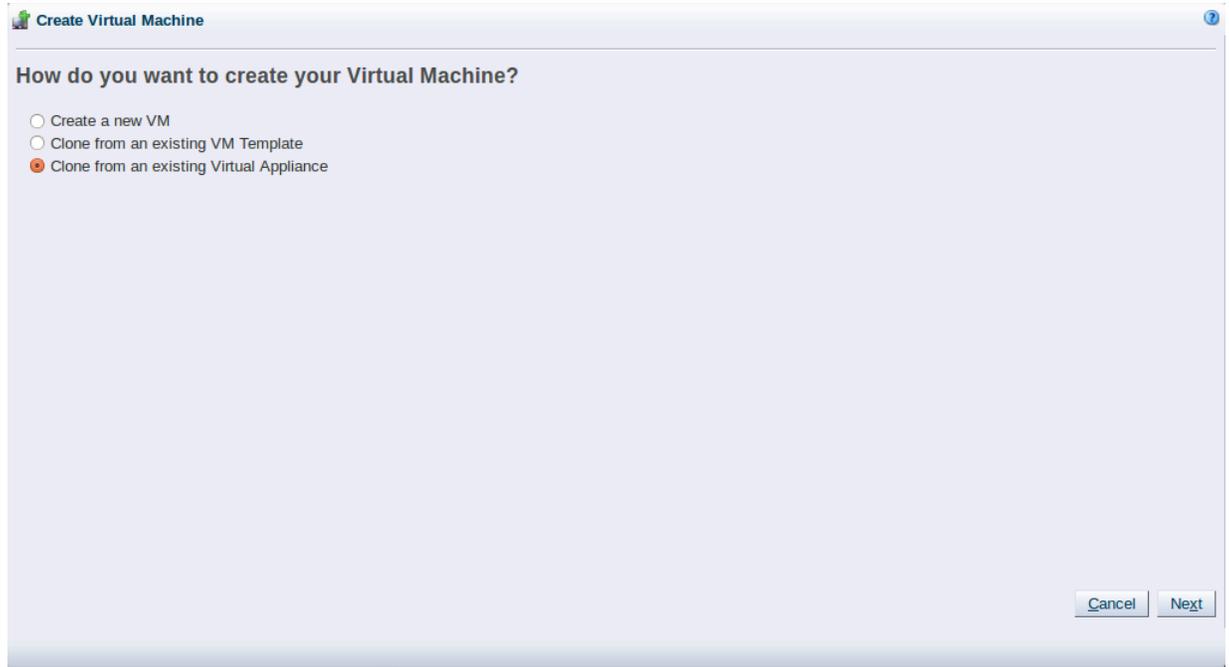
Enter or select the following details:

- **Clone Count:** The number of virtual machines to create from the template.
- **Name Index:** The start index number to use for the clone name suffix. The default is 0. This is used in conjunction with the **VM Name** field to create the name for each clone.
- **Repository:** The repository in which to create the virtual machine configuration files.
- **VM Template:** The template to use to create the virtual machines.
- **VM Name:** An optional name for the virtual machines. The maximum name length is 256 characters and may contain any character. The name need not be unique. If no value is given, the default is the name of the virtual machine template being cloned. Each clone is suffixed with a dot (.) and the clone index number, starting with the value for the **Name Index** field. For example, if the **VM Name** field is set to `MyVM`, and the **Name Index** field is set to `1`, the resulting clones would be named `MyVM.1`, `MyVM.2` and so on.
- **Server Pool:** The server pool in which to deploy the virtual machines.
- **Description:** An optional description of the virtual machines.

5. Click **Finish**. The virtual machines are created and deployed to the server pool.

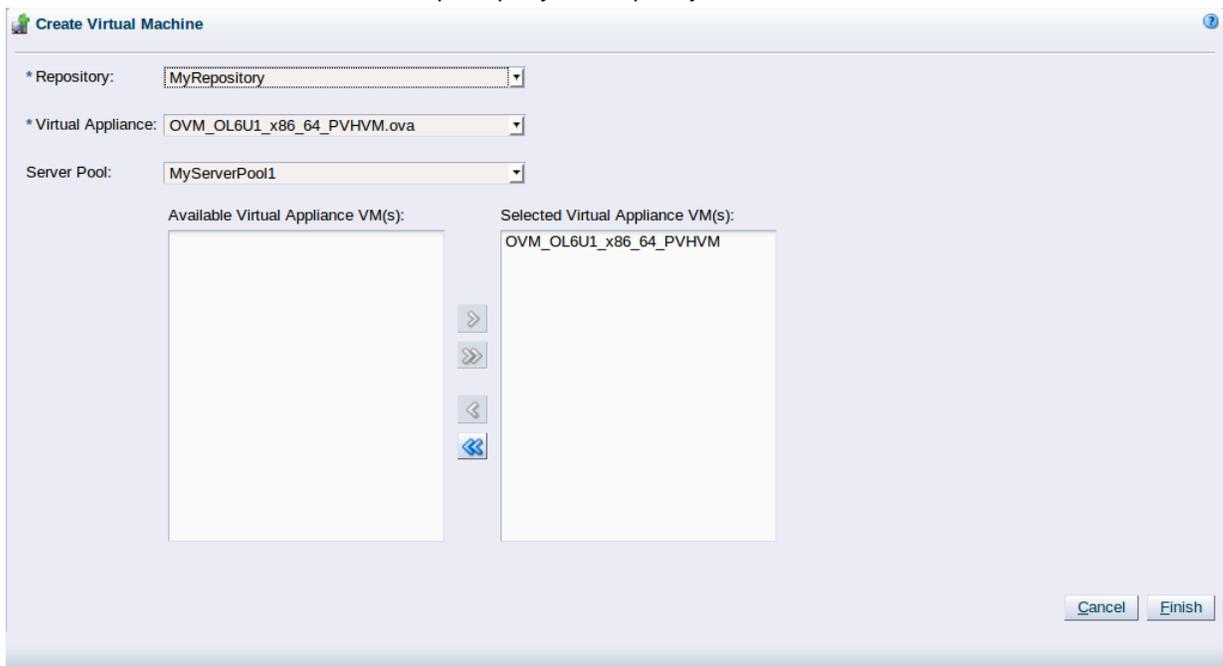
To create a virtual machine using a virtual appliance:

1. Click the **Servers and VMs** tab.
2. Click **Create Virtual Machine**  in the toolbar.
3. The **Create Virtual Machine** wizard is displayed.



Click 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.



Enter or select the following details:

- **Repository:** The repository in which to create the virtual machine configuration files.
- **Virtual Appliance:** The virtual appliance from which you want to create the virtual machines.
- **Server Pool:** The server pool in which to deploy the virtual machines.

If you select **None**, the virtual machines are deployed into the **Unassigned Virtual Machines** folder.

- **Available Virtual Appliance VM(s):** The virtual machines that are available to create from the virtual appliance.
- **Selected Virtual Appliance VM(s):** The virtual machines to create from the virtual appliance.

You can select multiple virtual machines if the virtual appliance contains more than one. Oracle VM Manager creates a separate virtual machine for each one that you select.

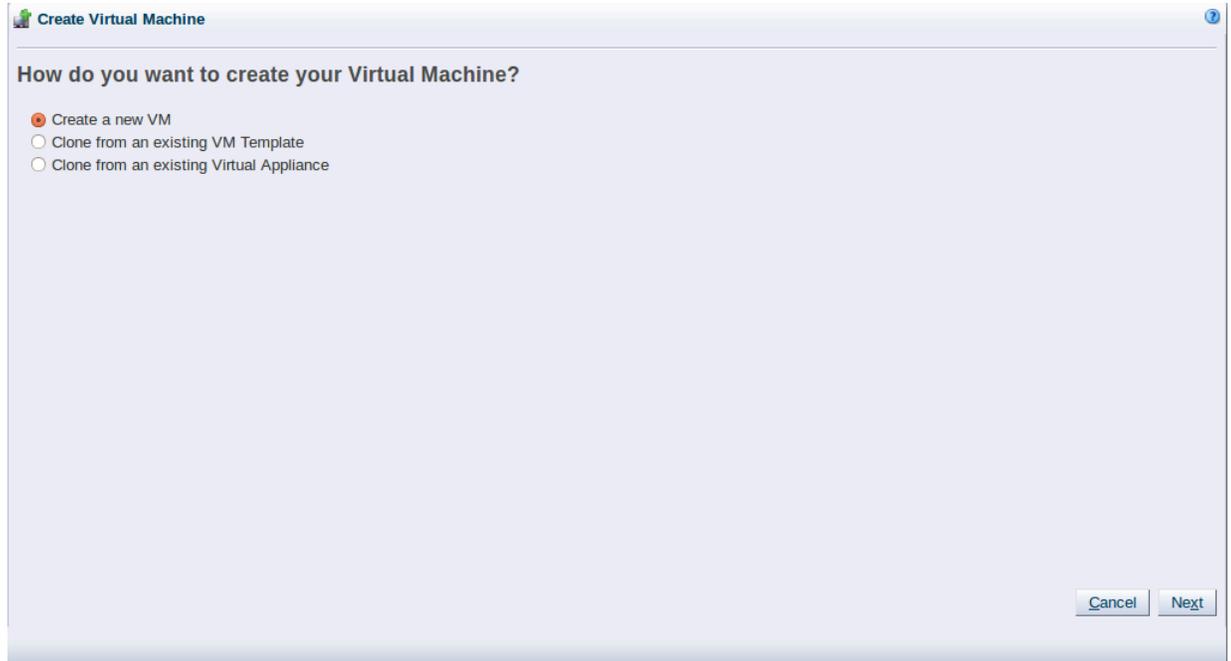
5. Click **Finish**.

Oracle VM Manager creates the selected virtual machines from the virtual appliance and deploys them to the server pool you specified.

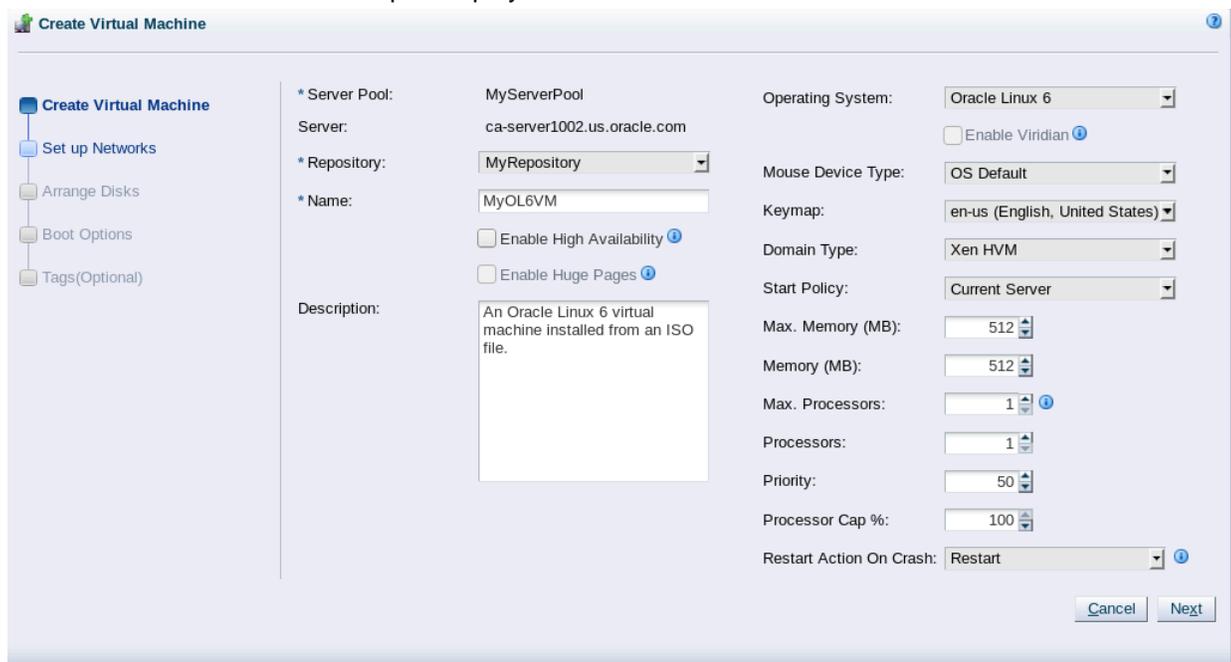
You can then migrate each virtual machine to a compatible server or server pool.

To create a virtual machine using all other media:

1. Click the **Servers and VMs** tab.
2. Click **Create Virtual Machine**  in the toolbar.
The **Create Virtual Machine** wizard is displayed.
3. Click the **Create a new VM** option and then click **Next**.



4. The **Create Virtual Machine** step is displayed in the wizard.



Enter or select the following details:

- **Server Pool:** The server pool on which to create the virtual machine.
- **Server:** The server that the virtual machine should be created on. The default option is [Any](#), but the drop-down selection lists the servers that exist in the server pool that you have selected. Selecting a

particular server forces the virtual machine to be created on that server. This has implications for the Start Policy discussed later.

- **Repository:** The repository in which to create the virtual machine configuration file.
- **Name:** A name for the virtual machine. The maximum name length is 256 characters and may contain any character. The name need not be unique.
- **Enable High Availability:** Whether to enable High Availability (HA). See [How does High Availability \(HA\) Work?](#) in the [Oracle VM Concepts Guide](#) for more information on HA.
- **Enable Huge Pages:** Whether to enable [HugePages](#).
 - The HugePages feature is deprecated for virtual machines with a domain type of PVM in Oracle VM Release 3.4.1. You should not enable HugePages when creating or editing virtual machines. This feature will be removed in a future release of Oracle VM.

If you have HugePages enabled for any PVM guests, Oracle recommends that you change the domain type for virtual machines from Paravirtualized (PVM) to Hardware virtualized, with paravirtualized drivers (PVHVM). If you cannot change the domain type for a virtual machine, you should disable the HugePages setting and then restart the virtual machine.

- Huge Page support is enabled by default for virtual machines with a domain type of HVM or PVHVM. You cannot set this parameter for those virtual machines.
- This option does not take effect on virtual machines deployed on SPARC-based server pools. Virtual machines running on SPARC-based servers can access the page sizes that the server platform supports, regardless of this setting.

See [How is the HugePages Feature Enabled for Virtual Machines?](#), in the [Oracle VM Concepts Guide](#), for more information on Huge Page support.

- **Description:** An optional description of the virtual machine.
- **Operating System:** The operating system of the virtual machine. This setting enables or disables certain virtual machine settings that the guest operating system may require.
- **Enable Viridian:** Whether to enable Viridian.
 - Viridian support enables the exposure of Windows virtualization compatible entitlements to Microsoft Windows guest operating systems. Enabling viridian support is strongly recommended to ensure improved performance for Microsoft Windows guest operating systems.
 - Enabling viridian support is permitted for all Microsoft Windows guest operating system types. However, it is only effective from Microsoft Windows Vista and Microsoft Windows Server 2008 onwards.
 - Viridian support is enabled by default when creating virtual machines running Microsoft Windows guest operating systems.
- **Mouse Device Type:** The mouse type to use for the virtual machine. This option is not available for virtual machines in SPARC-based server pools.
- **Keymap:** The keyboard mapping to use for the virtual machine. This option is not available for virtual machines in SPARC-based server pools.
- **Domain Type:** The domain type of the virtual machine.

- **Xen HVM:** Hardware virtualization, or fully virtualized. When you select this option you can supply an ISO file in a repository (in the **Arrange Disks** step of the wizard) from which to install an operating system on the virtual machine. See [Section 4.5.1.1, “Import ISO”](#) for information on importing an ISO file into a repository. Alternatively, you may consider setting up an environment to perform a network installation for the virtual machine.
- **Xen HVM PV Drivers:** Identical to **Xen HVM**, but with additional paravirtualized drivers for improved performance of the virtual machine. See [What are Virtualization Modes or Domain Types?](#) in the [Oracle VM Concepts Guide](#) for more information about using paravirtualized drivers. This domain type is typically used to run Microsoft Windows guest operating systems with an acceptable performance level. Installation of the guest operating system is usually performed either using an ISO file in a repository or via a network installation.
- **Xen PVM:** Paravirtualized. Enables you to select a location for the mounted ISO file from which to create the virtual machine. Before you create the virtual machine using the paravirtualized method, mount the ISO file on an NFS share, or HTTP or FTP server. You supply the location of the mounted ISO file in the **Network Boot Path** field in the **Boot Options** step of the wizard. For information on creating a mounted ISO file, see [Provisioning ISO Files for PVM Guest Installations](#) in the [Oracle VM Administrator's Guide](#). Do not select this option if the virtual machine Operating System is set to either Oracle Linux 7 or RedHat Enterprise Linux 7. These operating systems do not support the Xen PVM domain type.

**Important**

As of Oracle VM Release 3.4.6, support for PVM guests is removed. For more information, see [Disabling Paravirtualized Guests on Oracle VM Server](#) in the [Oracle VM Administrator's Guide](#).

- **OVM/SPARC:** Specifies that the virtual machine is deployed on a server pool running on Oracle VM Server for SPARC.
- **Unknown:** This option is informational in the event that Oracle VM Manager is unable to determine the domain type for an existing virtual machine. It is not possible to actually set a virtual machine's domain type to this value. Attempting to do so generates a rule violation when you try to save the virtual machine settings and an error message is returned.
- **Start Policy:** The policy that should be used to start the virtual machine. Select one of:
 - **Best Server:** This is the legacy algorithm that optimizes virtual machine placement on Oracle VM Servers that are in use before moving to unused servers in the pool.
 - **Balance Server:** This algorithm distributes virtual machines across all the available Oracle VM Servers in the server pool, starting with the least utilized Oracle VM Server first. CPU and memory

utilization statistics are used to balance the virtual machine distribution across the server pool, with CPU utilization taking precedence over memory utilization.

- **Current Server:** The virtual machine is started on the Oracle VM Server to which it is assigned. If you selected a particular server to create the virtual machine on, then it is started on this server.
- **Use Pool Policy:** The virtual machine is started using the start policy defined for the entire server pool. See [Section 3.1.2, “Create Server Pool”](#) for more information on setting the start policy for a server pool.
- **Max. Memory (MB):** The maximum memory size the virtual machine can be allocated. This value must be between 32 and 512000. The default is 512.

For x86-based virtual machines, this value is incremented by 32 each time you click the up arrow, and, conversely, decreased by 32 if you click the down arrow. For SPARC-based virtual machines, the up arrow adds 512, and the down arrow subtracts 512. If you have enabled Huge Pages, the value must be a multiple of 2 MB.

**Note**

For HVM and PVHVM guests, the maximum memory size value must equal the memory size value. If these values are different, the following job failure message is generated for HVM/PVHVM guests: "The memory limit cannot be different than the current memory size on an HVM/PVHVM Virtual Machine."

- **Memory (MB):** The memory size the virtual machine is allocated. When creating a virtual machine, this is the memory allocation used when starting the virtual machine. This value must be between 32 and 512000. The default is 512.

For x86-based virtual machines, this value is incremented by 32 each time you click the up arrow, and, conversely, decreased by 32 if you click the down arrow. For SPARC-based virtual machines, the up arrow adds 512, and the down arrow subtracts 512. If you have enabled Huge Pages, the value must be a multiple of 2 MB.

You can change the memory allocated to a running virtual machine without the need to restart the virtual machine if the domain type is PVM or PVHVM and where the guest is running a Linux OS on an x86-based platform or an Oracle Solaris OS on a SPARC-based platform.

**Note**

For x86-based PVHVM guests running on Oracle Solaris OS, you cannot change the memory if the virtual machine is running.

See the *Oracle VM Paravirtual Drivers for Microsoft Windows* documentation for information about the availability of hot memory modification on PVHVM guests that are running a Microsoft Windows

OS. You must use a Windows PV Driver that supports hot memory modification or you must stop the guest before you modify the memory.

- **Max. Processors:** The maximum number of processors the virtual machine can be allocated. The number of processors is expressed in number of physical CPU cores. The maximum number of processors depends on the domain type, as follows:

- PVM: 256.

**Important**

As of Oracle VM Release 3.4.6, support for PVM guests is removed. For more information, see [Disabling Paravirtualized Guests on Oracle VM Server](#) in the *Oracle VM Administrator's Guide*.

- HVM: 128; or 32 for Microsoft Windows guests.

**Note**

As of Release 3.4.6, the HVM limit is 64 for Microsoft Windows guests.

- PVHVM: 128; or 32 if using Oracle VM Paravirtual Drivers for Microsoft Windows.

**Note**

As of Release 3.4.6, the PVHVM limit is 64 if using Oracle VM Paravirtual Drivers for Microsoft Windows.

- OVM/SPARC: Equivalent to the number of available CPUs on the server.
- **Processors:** The number of processors the virtual machine is allocated. The number of processors is expressed in number of physical CPU cores, up to the value of **Max. Processors**.
- **Priority:** The CPU priority of the virtual machine. The higher the priority value, the more physical CPU cycles are given to the virtual machine. This option is not available for virtual machines in SPARC-based server pools. This should be a number between 1 and 100. The default priority is set at 1.
- **Processor Cap %:** Increase or decrease the percentage to which the virtual CPUs can receive scheduled time. This parameter defines the maximum percentage to which the virtual CPUs can receive scheduled time. Use this parameter to keep low priority virtual machines from consuming too

many CPU cycles on a Virtual Machine Server. This option is not available for virtual machines in SPARC-based server pools.

- **Restart Action on Crash:** The action to perform if a virtual machine crashes. This option is only available for virtual machines that are running on the Xen hypervisor and that have been configured to run on a particular Oracle VM Server. Options include the following:
 - **Restart:** Restarts the virtual machine operating system.
 - **Stop:** Stops the virtual machine. If **Enable High Availability** is selected, this option is not available.
 - **Restart After Dump:** Restarts the virtual machine operating system after first creating a core dump file for the virtual machine.
 - **Stop After Dump:** Stops the virtual machine after first creating a core dump file for the virtual machine. If **Enable High Availability** is selected, this option is not available.

Core dump files are saved to `/var/xen/dump` on the Oracle VM Server where the virtual machine is hosted. Each core dump file is named uniquely so that files are not overwritten. This can use up disk space rapidly. You must make sure there is either enough disk space available at this path on the Oracle VM Server where the virtual machine will run; or you should mount additional storage at this path to avoid using up disk space required to host dom0.

This option cannot be modified for a running virtual machine. You must stop the virtual machine before you are able to change this option, if you select to edit the virtual machine later.

The **Priority** and **Processor Cap%** parameters are passed to the Xen hypervisor for use by the credit scheduler, which automatically load balances guest VCPUs across all available physical CPUs, using an algorithm that combines these two parameters. Therefore, these parameters are a key factor for the performance of the virtual machine on x86 hardware.



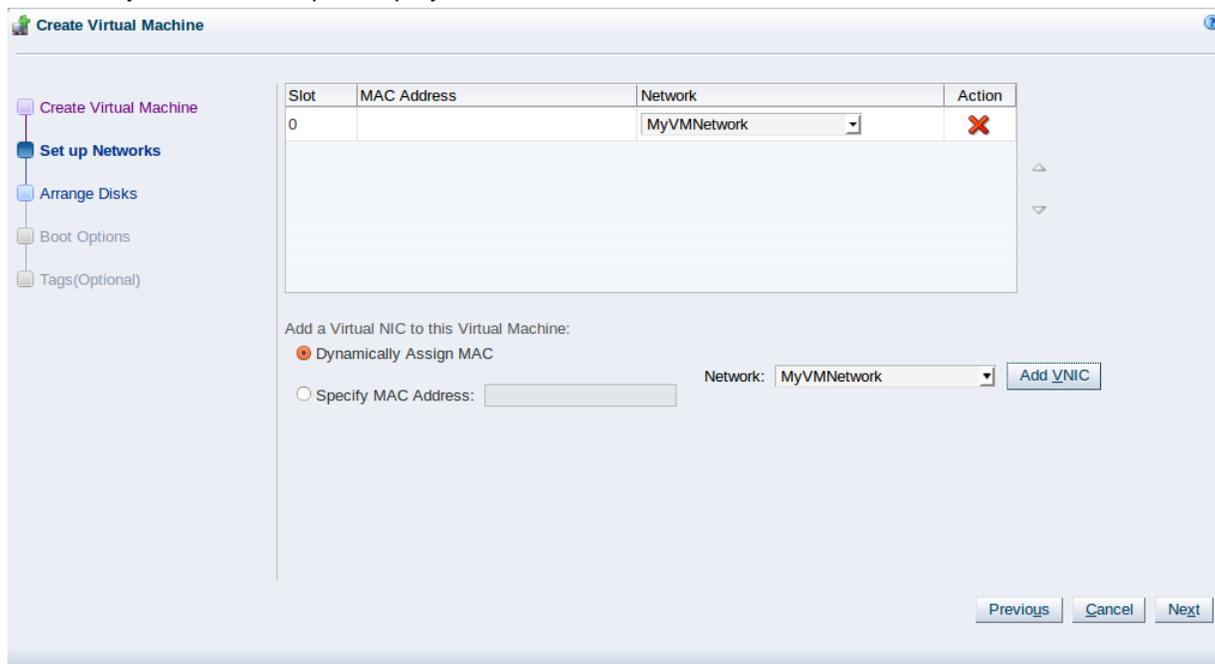
Note

For information on performance optimization goals and techniques for Oracle VM Server for x86, see *Optimizing Oracle VM Server for x86 Performance*, on Oracle Technology Network at: <http://www.oracle.com/technetwork/server-storage/vm/ovm-performance-2995164.pdf>.

On SPARC, each virtual machine uses dedicated physical CPU threads, and CPUs are not shared between virtual machines, being exclusively assigned to a single virtual machine.

Click **Next**.

5. The **Set up Networks** step is displayed in the wizard.



This step of the wizard allows you to add VNICs to the virtual machine.

- To specify the MAC address for a VNIC, select **Specify MAC Address** and enter the MAC address. Otherwise, leave the default **Dynamically Assign MAC**.
- Select a network with the virtual machine role from the **Network** drop-down list.

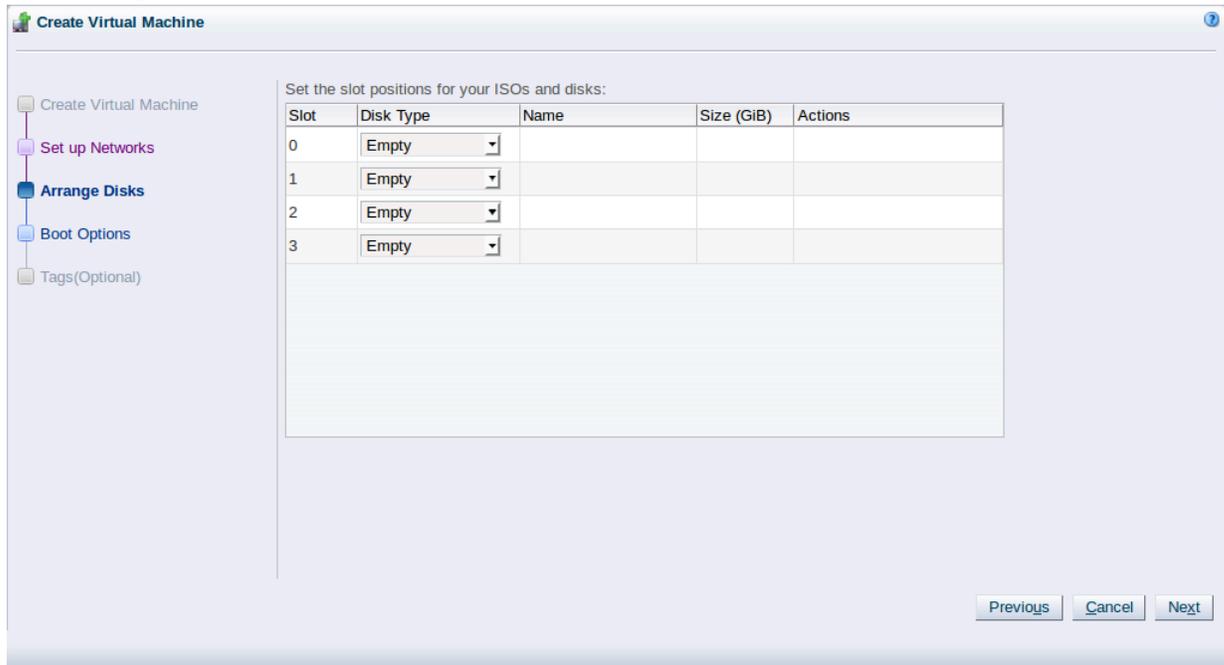
If no networks are available, you must first create a network with the virtual machine role as a dedicated network for virtual machine traffic. See [Section 5.1.1, "Create New Network"](#) for information on creating a network.

- Click **Add VNIC**.
 - The VNIC order specified determines the order in which the VNICs are presented to the virtual machine. You can control the ordering of the VNICs using the up and down arrows on the right of the table.
 - If you are editing the networking of an existing stopped virtual machine, you can change the network to which the VNIC belongs using the **Network** drop-down list in the table. It is important that the VNIC belongs to a network already associated with the Oracle VM Servers on which it can run, or you cannot start the virtual machine. See [Section 5.1.1, "Create New Network"](#) and [Section 5.1.2, "Edit Existing Network"](#) for more information on associating Oracle VM Servers with networks.
 - If you are editing an existing running virtual machine, you can add VNICs to the virtual machine, but you cannot remove VNICs that are already in use. You also cannot reorder VNICs on a running virtual machine. If you choose to add a VNIC to a running machine you must ensure that the VNIC belongs to a virtual machine network already associated with the Oracle VM Servers on which it can run, by selecting the appropriate network from the **Network** drop-down list.

- A virtual machine can have up to eight (8) VNICs for HVM guests and up to 31 for PVM guests. A PVM guest requires network connectivity to perform the operating system install and must have at least one VNIC.

d. Click **Next**.

6. The **Arrange Disks** step of the wizard is displayed.



Select the desired storage configuration of your virtual machine, such as virtual disks, physical disks, and ISO files. On a separate slot, add one or more of the following disk types:

- **Empty:** An empty slot.
- **Virtual Disk:** This allows you to add or create a virtual disk. Virtual disks may be shared by virtual machines, or only available to a single virtual machine.
- **Physical Disk:** The physical disks are the disks in a storage array. Physical disks may be shared by virtual machines.
- **CD/DVD:** This adds an ISO file in a storage repository and can be used to create HVM and PVHVM virtual machines. When creating a virtual machine from an ISO file, you must use a single file. Installations that span multiple ISO files are not supported. ISO files cannot be used to create PVM virtual machines. You cannot add an empty CDROM on a SPARC-based server.



Note

Adding or removing a CD/DVD device can only be done when a virtual machine is powered off. Once the VM is running again, the CD/DVD device is

always available for use as needed, much like a physical CD/DVD device on a physical server.

After the virtual machine is powered on, the only actions that are supported while the virtual machine is running are:

- Selecting an .iso for a CD/DVD slot in an "Empty" state.
- Hot-swapping the .iso currently in use.
- Ejecting the .iso from the CD/DVD slot, leaving the device in an "Empty" state.

Add or create any virtual disks to use as the virtual machine's hard disk, select any physical disks to add, and select any ISO files to use to create the virtual machine. Add the disks in the order they should appear in the virtual machine. The disk with the boot partition or installation media should be the first disk listed. An HVM guest can have up to four disks, including empty CD/DVD drives. A PVM guest can have up to 104 disks. A PVHVM guest can have up to 107 disks. An OVM/SPARC guest can have up to 1024 disks. Only one slot can contain an empty CD/DVD.



Tip

When editing a running virtual machine, you can change the CD/DVD using this dialog box and the CD/DVD is mounted in the operating system.

To create or add a virtual disk:

- To create a virtual disk, select **Virtual Disk** from the **Disk Type** drop-down list and click **Create a Virtual Disk +**.
- The **Create Virtual Disk** dialog box is displayed. Enter or select the following to create a virtual disk:
 - **Repository:** The repository in which the virtual disk is to be created.
 - **Virtual Disk Name:** The name of the virtual disk to be created and made available to the virtual machine. See [How are Virtual Disks Managed?](#) in the *Oracle VM Concepts Guide* for more information about using virtual disks.
 - **Size (GiB):** The disk size of the virtual disk, in [GiB](#).
 - **Description:** A description of the virtual disk.
 - **Shareable:** Whether the virtual disk should be shareable (read/write) with other virtual machines.
 - **Allocation Type:** Whether to use a **Sparse Allocation** or **Non-sparse Allocation**. Sparse Allocation creates a sparse disk, so the size of the disk is initially small and increases as it is used. Sparse allocation is faster than using Non-Sparse Allocation when creating a virtual

machine. Non-Sparse Allocation creates the entire disk when the virtual machine is created, and so is slower than creating a sparse disk.

Click **OK**.

- c. To search for an existing virtual disk to add to the virtual machine, click **Select a Virtual Machine Disk** . The **Select a Virtual Machine Disk** dialog box is displayed. The dialog box lists the available virtual disks in a table that indicates the following information:
- **Selected:** Whether or not the disk has been selected. This is indicated using radio button.
 - **Name:** The name of the virtual disk as stored in Oracle VM Manager.
 - **Size (GiB):** The disk size of the virtual disk, in [GiB](#).
 - **Repository:** The repository in which the virtual disk is located.
 - **Shareable:** Whether the virtual disk is configured to be shareable (read/write) with other virtual machines.
 - **VM(s):** A comma separated list of the names of any virtual machines that may already be using this virtual disk.

Select the virtual disk to use and Click **OK**.



Note

If your virtual machine needs more than one disk, you can create the disk(s) afterwards in the repository, and add them to the virtual machine. See [Section 4.9.1.1, “Create Virtual Disk”](#) and [Section 3.5.2.1, “Edit Virtual Machine”](#) for more information on creating a virtual disk and editing a virtual machine. There are some limitations on mixing virtual disks of differing device types on a virtual machine. See [How are Virtual Disks Managed?](#) in the [Oracle VM Concepts Guide](#) for more information about how device

types are allocated to virtual disks and what you may need to do to solve any issues surrounding this problem.

To add a physical disk:

- a. To add a physical disk to the virtual machine, select **Physical Disk** from the **Disk Type** drop-down list. Click **Select a Virtual Machine Disk** . The **Select a Physical Disk** dialog box is displayed. The dialog box lists the available physical disks in a table that provides the following information:
 - **Selected:** Whether or not the disk has been selected. This is indicated using radio button.
 - **Name:** The name of the physical disk as stored in Oracle VM Manager.
 - **Size (GiB):** The disk size of the physical disk, in [GiB](#).
 - **SAN Server:** The SAN Server where the physical disk is located.
 - **Volume Group:** The volume group that the physical disk belongs to.
 - **Shareable:** Whether the physical disk is configured to be shareable (read/write) with other virtual machines.
 - **VM(s):** A comma separated list of the names of any virtual machines that may already be using this physical disk.

Select a physical disk from the list of available disks. If you want to leave the slot empty, select **Leave Slot Empty**. Click **OK**.

To add an ISO file:

- a. To add an ISO file to the virtual machine, 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 a Iso file from the list of available files. If you want to leave the slot empty, select **Leave Slot Empty**. Click **OK**.

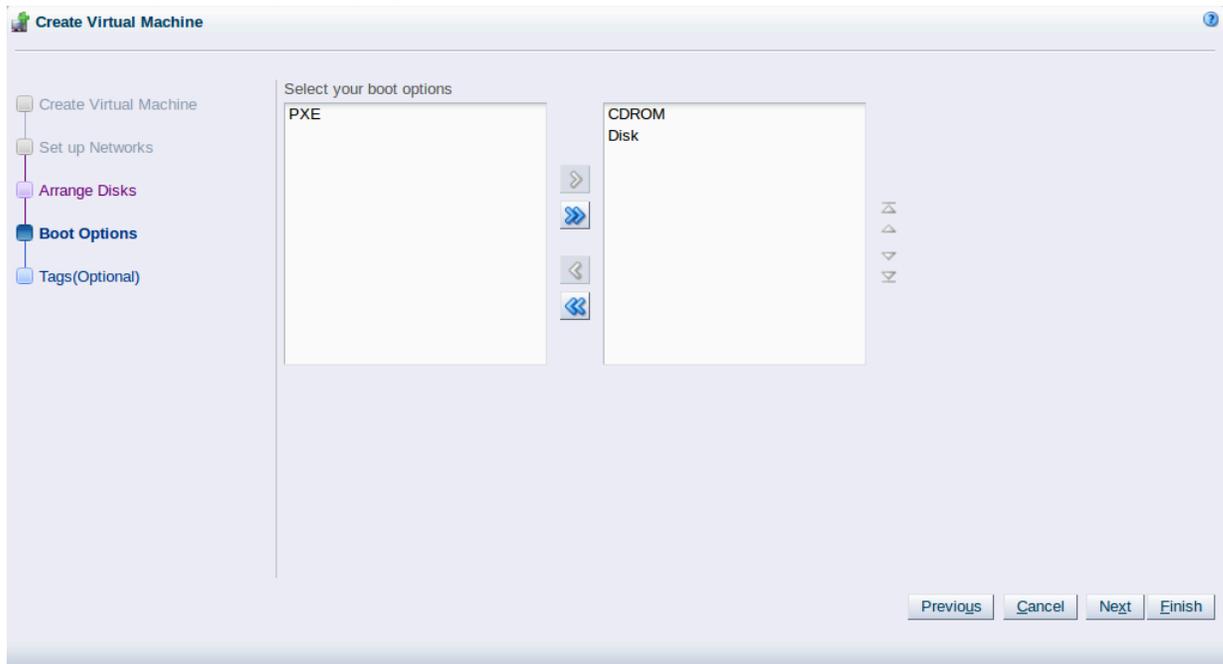


Note

When adding an ISO file to an existing virtual machine, the ISO file is available to the operating system, but may not be mounted. To access the ISO file, you may need to mount it, for example:

```
# mkdir /cdrom
# mount -o loop /dev/xvdb /cdrom
```

When you have set up the virtual machine's disks, click **Next**.

7. The **Boot Options** step is displayed in the wizard.

Select the boot media order for your virtual machine.

If you are creating a hardware virtualized machine virtual machine (HVM), you can choose the **PXE** boot option. If so, remember to put PXE first in the **Select your boot options** field, and change the boot order again after installation and before rebooting the virtual machine. To use PXE, you must configure a PXE/tftp environment to offer the necessary boot media and instructions to the virtual machine.

If you are creating a paravirtualized virtual machine (PVM), you also have the **PXE** option available. In this case, the **PXE** option refers to a network style boot. If the **PXE** option appears in the right-hand-side column, you must enter the location of the mounted ISO file from which to perform the operating system installation in the **Network Boot Path** field that is shown when editing or creating a PVM, for example

```
http://example.com/EL6-x86
```

For information on creating a mounted ISO file, see [Provisioning ISO Files for PVM Guest Installations](#) in the *Oracle VM Administrator's Guide*.

You cannot use the **Network Boot Path** field to boot a virtual machine using PXE. This field can only be used to specify the path to a mounted ISO file to use when installing a PVM guest.

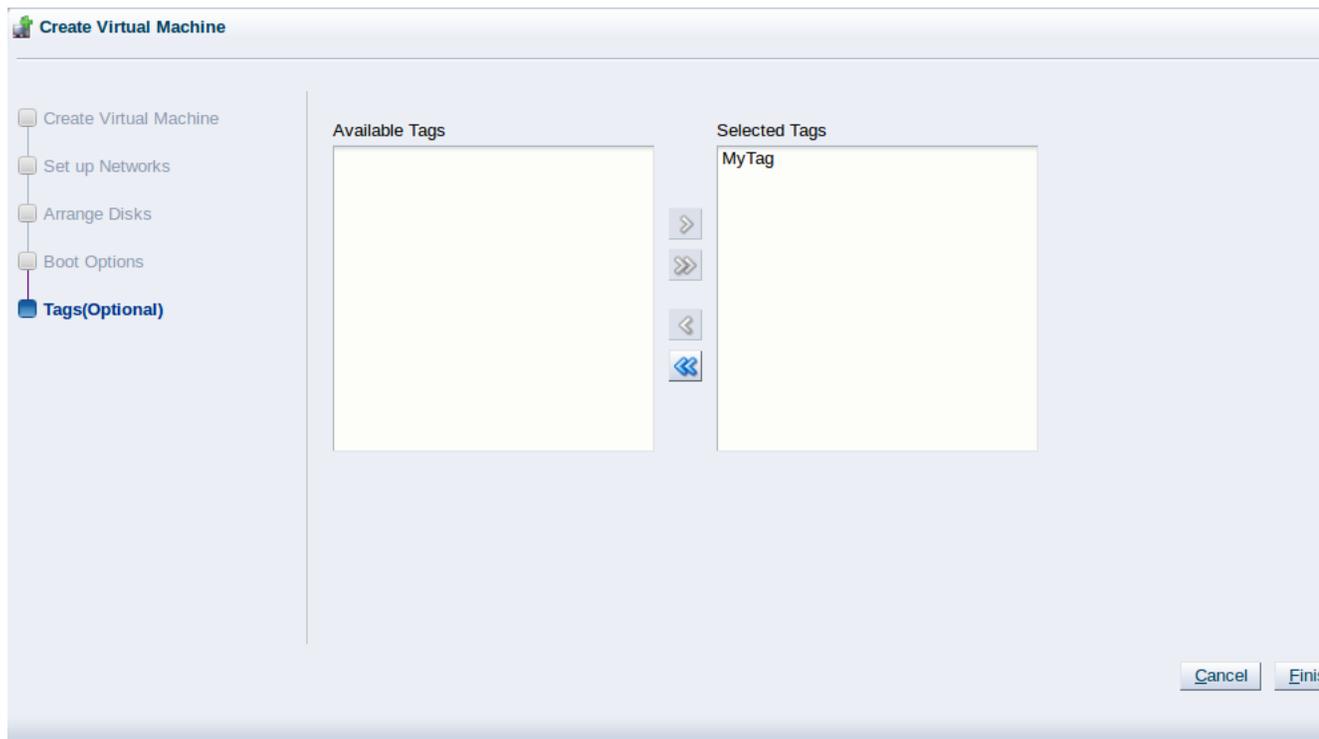
If you have defined tags and want to add any to this virtual machine, click **Next**. Otherwise, click **Finish** to create and deploy the virtual machine to the server pool.

8. The **Tags** step is optional and displays in the wizard if you clicked **Next** in the previous step.



Note

The virtual machine has already been created and deployed to the server pool at this point. This step is entirely optional. Cancelling the operation within this dialog does not prevent the virtual machine from being created.



If you have previously created tags, they appear in the **Available Tags** column. Select the tags you want to apply to the virtual machine and move them to the **Selected Tags** column. See [Section 1.17, “Tags and Tag Filters”](#) for more information on creating and managing tags. Click **Finish**.

If you created a PVM, there are some steps you should take after the operating system installation is completed:

1. Stop the virtual machine. See [Section 3.5.2.4, “Stop Virtual Machines”](#) for information on stopping a virtual machine.
2. Edit the virtual machine and remove **PXE** from the **Boot Order** column in the **Boot Options** step of the **Edit Virtual Machine** wizard. See [Section 3.5.2.1, “Edit Virtual Machine”](#) for information on editing a virtual machine.
3. Start the virtual machine and complete the installation if necessary. See [Section 3.5.2.3, “Start Virtual Machines”](#) for information on starting a virtual machine.

To edit the virtual machine configuration information, see [Section 3.5.2.1, “Edit Virtual Machine”](#).

3.4.2.2 Edit Server

You can edit the configuration information for an Oracle VM Server to change the name, description, any server pool roles, and to take it off-line to perform system maintenance. You can always edit the name

and description of an Oracle VM Server, even if it is not owned by the Oracle VM Manager instance. You cannot edit any other information if the Oracle VM Server, is not owned by the Oracle VM Manager instance. If you want to edit these other options, you should first take ownership of the server using the **Take Ownership of Server** field as described in the procedure below.

To edit the configuration information of an Oracle VM Server:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation pane. Click **Edit Server**  in the toolbar.
3. The **Edit Server** dialog box is displayed. In the **Configuration** tab, edit the information about the Oracle VM Server:
 - **Name:** The name of the Oracle VM Server.
 - **Description:** A description of the Oracle VM Server.
 - **NTP Server(s):** Allows you to specify the NTP server settings for each individual Oracle VM Server. You can add multiple NTP servers using a comma-separated list.



Note

If you need to batch edit the NTP servers for a large number of Oracle VM Servers in your environment, you should use the Oracle VM Manager Command Line Interface, [edit Server](#), or the Oracle VM Web Services API to do this programmatically.

- **Server in Maintenance Mode:** Select whether to place the Oracle VM Server in maintenance mode.

An Oracle VM Server can be placed into *maintenance mode* to perform hardware or software maintenance. When an Oracle VM Server is placed in maintenance mode, it is not possible to start any new virtual machines on the server. Furthermore, any virtual machines running on the Oracle VM Server are automatically migrated to other Oracle VM Servers in the server pool, if they are available. If any of these automatic processes fail, check the Oracle VM Server event log ([Section 3.5.10, “Events Perspective”](#)) for reasons why the failure occurred.



Note

- When a virtual machine is migrated to an alternate Oracle VM Server, no checks are performed to detect whether the target Oracle VM Server is configured correctly or capable of running the virtual machine correctly. It is up to you to ensure that the Oracle VM Servers within a server pool have consistent configurations.
- It is possible that some virtual machines fail to migrate if no target Oracle VM Server is found. In this case, maintenance mode may be set, but some virtual machines may continue to run on the Oracle VM Server.
- If a virtual machine relies on local storage, then no target Oracle VM Server is identified as the migration target. These virtual machines should be manually migrated using the Storage Live Migration feature. For more information, see [Section 3.5.2.11, “Migrate or Move Virtual Machines”](#)

You must determine the appropriate course of action for these virtual machines and perform the required actions manually using the tools provided within Oracle VM Manager.

When an Oracle VM Server is placed into maintenance mode its icon:  is updated in the navigation pane. When you have finished performing maintenance on the Oracle VM Server and you are ready for it to rejoin the server pool, ensure that the **Maintenance Mode** check box is unchecked.

- **Take Ownership of Server:** Select to take ownership of the Oracle VM Server. Server rediscovery is performed as part of this process, so that Oracle VM Manager can correctly determine whether or not the server is in an unowned state and the action can be completed successfully.



Note

Configuration of NTP for each Oracle VM Server takes place when a server changes ownership. If you release ownership of a server, its NTP configuration is updated to point locally to itself. When Oracle VM Manager takes ownership of a server, the server's NTP configuration is usually automatically updated to point to the Oracle VM Manager instance. This may only be evident after the server has been refreshed. You can find out more about the configuration of NTP in [Configure the NTP Service on the Oracle VM Manager Host](#) in the *Oracle VM Installation and Upgrade Guide*.



Tip

You cannot edit the ownership of an Oracle VM Server if it is included in a server pool or if a repository is presented to it.

- **Inbound Migration Locked:** Select whether to allow additional virtual machines to run on the Oracle VM Server. Selecting this option prevents new or migrated virtual machines to run on the Oracle VM Server. See [How Can I Protect Virtual Machines?](#) for more information on inbound migration lock.



Note

If you have HA configured for a server, this option does not protect a server from inbound migrations when failover occurs.

- **Oracle VM Agent password:** The password to connect to the Oracle VM Agent. The value for this field is required if you select to take ownership of the Oracle VM Server.
 - **Utility Server:** Select to designate the Oracle VM Server to perform utility functions such as importing, cloning and storage refresh.
 - **VM Server:** The virtual machine role is required to run virtual machines.
4. In the **IPMI** tab, select the **Enable Server IPMI** check box to enable the Intelligent Platform Management Interface (IPMI). IPMI allows you to remotely power on or power off an Oracle VM Server. If IPMI is either not available or not enabled on the Oracle VM Server, Oracle VM Manager may still be able to remotely power on an Oracle VM Server using a *Wake on LAN* message without having to physically press the power button, and it may be able to send a system power off message to shut it down. Select the **Change IPMI Password** check box if your IPMI setup requires a password to change the configuration. The **Change IPMI Password** check box is automatically selected when you enable IPMI.

To configure IPMI enter the following information in the fields:

- **IP Address:** The IP address of the IPMI.
- **Access Username:** The optional user name for the IPMI.

- **Password:** The optional password for the IPMI. Note that this field is always blank, regardless of whether the password has been set or not.
5. To edit the tags associated with the server, click the **Tags** tab. Using the controls provided, you can add or remove tags that can be used to identify the server and to group it with other objects within Oracle VM Manager. See [Section 1.17, “Tags and Tag Filters”](#) for more information on creating and managing tags.

Click **OK**. The Oracle VM Server is updated.

Batch Editing Oracle VM Servers

You can edit the information for more than one Oracle VM Server at a time by using the [multi-select functionality](#) provided within the Oracle VM Manager interface to select multiple items before clicking on the **Edit Server**  icon in the toolbar.

When editing a group of Oracle VM Servers in batch mode the options available to you are limited to actions that can be applied to all selected items. The following options are available:

- **Server in Maintenance Mode:** Checking this check box sets all selected items into Maintenance Mode.
- **Take Ownership of Server:** Checking this check box allows Oracle VM Manager to take ownership of all of the selected items.
- **Oracle VM Agent password:** The password to connect to the Oracle VM Agent. The value for this field is required if you select to take ownership of the selected items.
- **Utility Server:** Checking this check box changes the role of all selected items to Utility Servers.
- **VM Server:** Checking this check box changes the role of all selected items to Virtual Machine Servers.



Note

If the values set for the options provided vary across the selected servers, the dialog displays the values for the first server in the selection. Clicking OK updates all of the selected servers to have the same status.

3.4.2.3 Delete Server

When you delete an Oracle VM Server, it is removed from the Oracle VM Manager repository and becomes unmanaged. The Oracle VM Server is not stopped, nor is anything physically done to the Oracle VM Server.

Before you can delete an Oracle VM Server, you must stop any running virtual machines, or place the Oracle VM Server into maintenance mode to automatically migrate the running virtual machines.

To delete Oracle VM Servers from Oracle VM Manager:

1. Stop or migrate any running virtual machines. To stop the virtual machines see [Section 3.5.2.4, “Stop Virtual Machines”](#). To automatically migrate the virtual machines to other Oracle VM Servers in the server pool, place the Oracle VM Server into maintenance mode, see [Section 3.4.2.2, “Edit Server”](#).
2. Click the **Servers and VMs** tab.
3. Select the **Unassigned Servers** folder in the navigation tree. Select **Servers** from the **Perspective** drop-down list.

4. Select one or more Oracle VM Servers in the management pane. Click **Delete**  in the perspective toolbar.
5. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the Oracle VM Servers.

The Oracle VM Servers are deleted from Oracle VM Manager.

3.4.2.4 Start Server

When you start an Oracle VM Server, it is started using the Intelligent Platform Management Interface (IPMI), or Wake-on-LAN (WOL). If neither IPMI nor WOL have been configured, the job to start the Oracle VM Server cannot be completed and may need to be aborted. The Oracle VM Server must then be powered on manually. See [Section 3.4.2.2, “Edit Server”](#) for information on configuring IPMI. See [Section 8.1.5, “Abort Jobs”](#) for information on aborting a hanging job.

To start Oracle VM Servers:

1. Click the **Servers and VMs** tab.
2. Select the server pool in which the Oracle VM Server resides in the navigation tree.
3. Select **Servers** from the **Perspective** drop-down list. Select one or more Oracle VM Servers in the management pane, and click **Start Server**  in the perspective toolbar.

The Oracle VM Servers are started.

3.4.2.5 Stop Server

When you stop an Oracle VM Server, it is stopped using the Intelligent Platform Management Interface (IPMI), or a system power off command. Before you can stop an Oracle VM Server, you must stop any running virtual machines, or place the Oracle VM Server into maintenance mode to automatically migrate the running virtual machines.



Warning

Make sure that the IPMI is properly configured on the Oracle VM Server, otherwise it cannot be started again remotely. See [Section 3.4.2.2, “Edit Server”](#) for IPMI configuration. Alternatively, make sure that you activate the Wake-on-LAN (WOL) feature in the Oracle VM Server BIOS and that you have tested that it is properly working. If an Oracle VM Server cannot start through IPMI or WOL, it must be power-cycled manually.

To stop Oracle VM Servers:

1. Stop or migrate any running virtual machines. To stop the virtual machines see [Section 3.5.2.4, “Stop Virtual Machines”](#). To automatically migrate the virtual machines to other Oracle VM Servers in the server pool, place the Oracle VM Servers into maintenance mode, see [Section 3.4.2.2, “Edit Server”](#).
2. Click the **Servers and VMs** tab.
3. Select the server pool in which the Oracle VM Server resides in the navigation tree.
4. Select **Servers** from the **Perspective** drop-down list. Select one or more Oracle VM Servers in the management pane, and click **Stop Server**  in the perspective toolbar.

The Oracle VM Servers are powered off.

3.4.2.6 Restart Server

When you restart an Oracle VM Server, an operating system restart command is sent and the Oracle VM Server is restarted. Before you can restart an Oracle VM Server, you must stop any running virtual machines, or place the Oracle VM Server into maintenance mode to automatically migrate the running virtual machines.

When the Oracle VM Server is restarted and rejoins the server pool, any pending HA operations in the server pool are initiated. When Oracle VM Manager is notified that the Oracle VM Server is online and available, any pending state changes are reconciled before any policy actions are resumed.

There is more information on the implications of restarting servers covered in [Rebooting and Changing Power State of Oracle VM Servers](#) in the [Oracle VM Concepts Guide](#).

To restart Oracle VM Servers:

1. Stop or migrate any running virtual machines. To stop the virtual machines see [Section 3.5.2.4, “Stop Virtual Machines”](#). To automatically migrate the virtual machines to other Oracle VM Servers in the server pool, place the Oracle VM Servers into maintenance mode, see [Section 3.4.2.2, “Edit Server”](#).
2. Click the **Servers and VMs** tab.
3. Select the server pool in which the Oracle VM Server resides in the navigation tree.
4. Select **Servers** from the **Perspective** drop-down list. Select one or more Oracle VM Servers in the management pane, and click **Restart**  in the perspective toolbar.

The Oracle VM Servers are restarted.

3.4.2.7 Kill Server

To kill an Oracle VM Server is equivalent to performing a power off of an Oracle VM Server, similar to unplugging the power cable from the physical machine. This is not the recommended method of shutting down an Oracle VM Server, but may be used if the shut down command fails to shut down the Oracle VM Server.

To kill Oracle VM Servers:

1. Click the **Servers and VMs** tab.
2. Select the server pool in which the Oracle VM Server resides in the navigation tree.
3. Select **Servers** from the **Perspective** drop-down list. Select one or more Oracle VM Servers in the management pane, and click **Kill**  in the perspective toolbar. Click **OK** in the Confirmation dialog.

The Oracle VM Servers are powered off.

3.4.2.8 Rediscover Server

If there are either changes to the physical state of an Oracle VM Server or its attached storage, you should discover it again to update the configuration information in Oracle VM Manager.

To rediscover Oracle VM Servers:

1. Click the **Servers and VMs** tab.
2. Select the server pool in which the Oracle VM Servers reside in the navigation tree.
3. Select **Servers** from the **Perspective** drop-down list. Select one or more Oracle VM Servers in the management pane, and click **Rediscover Server**  in the perspective toolbar.

The configuration and storage information about the Oracle VM Servers is updated in Oracle VM Manager.

3.4.2.9 Rescan Physical Disks

You can rescan the physical disks available to an Oracle VM Server to determine if any disks have been changed, added, or removed.

To rescan the physical disks on Oracle VM Servers:

1. Click the **Servers and VMs** tab, and select the server pool in which the Oracle VM Servers reside in the navigation tree. Select **Servers** in the **Perspective** drop-down list in the management pane. Select the Oracle VM Servers in the management pane table.

Alternatively, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list.

2. Click **Rescan Physical Disks**  in the perspective toolbar.
3. A confirmation dialog box is displayed. Click **OK**.

3.4.2.10 Update Server

Software updates and upgrades to Oracle VM Servers can be performed using the global server update repository configured in the **Server Updates** subtab of the **Reports and Resources** tab. See [Section 7.3, “Server Update Groups”](#) for information on configuring a global server update repository. A repository can be overridden for a server pool if required. See [Section 3.4.6, “Server Update Repositories Perspective”](#) for information on overriding a global update repository for a server pool.

To see which version of the Oracle VM Server software is installed before and after an upgrade, click the **Servers and VMs** tab, select the Oracle VM Server in the navigation tree, and then select **Control Domains** in the **Perspective** drop-down list. See [Section 3.5.8, “Control Domains Perspective”](#) for information on control domains.

When an Oracle VM Server update is available, an *event* is posted to the Oracle VM Server and **Yes** is displayed in the **Update Required** column in the **Servers** perspective in the management pane.



Before upgrading Oracle VM Servers using the Oracle VM Manager Web Interface you should refer to the [Oracle VM Installation and Upgrade Guide](#). The Oracle VM Manager Web Interface can only be used to perform upgrades for servers that are running Oracle VM Server 3.3.x and up.

To update an Oracle VM Server, the virtual machines on the Oracle VM Server must first be stopped or migrated to another Oracle VM Server. You can manually stop or migrate the virtual machines, or, if you prefer, have the upgrade server job perform the virtual machine migrate automatically.

To update Oracle VM Servers:

1. Click the **Servers and VMs** tab, and select the server pool in which the Oracle VM Servers reside in the navigation tree.

2. Select **Servers** in the **Perspective** drop-down list in the management pane.
3. Select the Oracle VM Servers in the management pane table and click **Update Server**  from the perspective toolbar.

A confirmation dialog is displayed. Click **OK**. Each Oracle VM Server is placed into maintenance mode, and the update performed. Any virtual machines on the Oracle VM Servers are automatically migrated to another Oracle VM Server when it is put into maintenance mode. When the update is complete the Oracle VM Server is restarted and remains in maintenance mode.

4. To have the Oracle VM Servers rejoin the server pool as a fully functioning member, edit each the Oracle VM Server and take it out of maintenance mode.

For information on manually migrating virtual machines, see [Section 3.5.2.11, “Migrate or Move Virtual Machines”](#). For information on taking an Oracle VM Server out of maintenance mode, see [Section 3.4.2.2, “Edit Server”](#).

Note that you can upgrade multiple Oracle VM Servers in a server pool by using the multi-select functionality described in [Section 1.15, “Multi-Select Functionality”](#).

3.4.2.11 Send VM Messages

You can select one or more virtual machines, Oracle VM Servers or server pools, to select which running virtual machines are populated in the dialog box used to send messages to virtual machines.

To send a virtual machine a message you must have first installed the Oracle VM Guest Additions in the virtual machine. For information on installing the Oracle VM Guest Additions, and a more detailed description of the virtual machine messaging mechanism and its uses, see the [Oracle VM Administrator's Guide](#).

To send messages to virtual machines:

1. Click the **Servers and VMs** tab.
2. Determine the grouping of virtual machines that you wish to send a message to:
 - i. If you wish to send a message to virtual machines distributed across one or more server pools, click on the **Server Pools** folder in the navigation pane. Select **Server Pools** from the **Perspective** drop-down list. Select one or more server pools in the management pane.
 - ii. If you wish to send a message to virtual machines distributed across one or more servers in a particular server pool, expand the **Server Pools** folder in the navigation pane and select the server pool where the servers reside. Select **Servers** from the **Perspective** drop-down list. Select one or more servers in the management pane.
 - iii. If you wish to send a message to one or more virtual machines on a particular server, expand the **Server Pools** folder in the navigation pane and select the server pool where the servers reside. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane.
3. Click **Send VM Messages...**  in the perspective toolbar.

The **Send Messages to Virtual Machines** dialog box is displayed.

 **Send Messages to Virtual Machines**

Messages **Virtual Machines**

View ▾   

Log	Hide Message	Key	Message
Yes	No	com.oracle.linux.network.device.0	eth0
Yes	No	com.oracle.linux.network.onboot.0	yes
Yes	No	com.oracle.linux.network.bootpro...	dhcp
Yes	No	com.oracle.linux.root-password	v!rtu4l

- To create a message, click **Create Message...**  in the perspective toolbar to display the **Create VM Message** dialog box.



+ Create VM Message

* Key:

Log Message

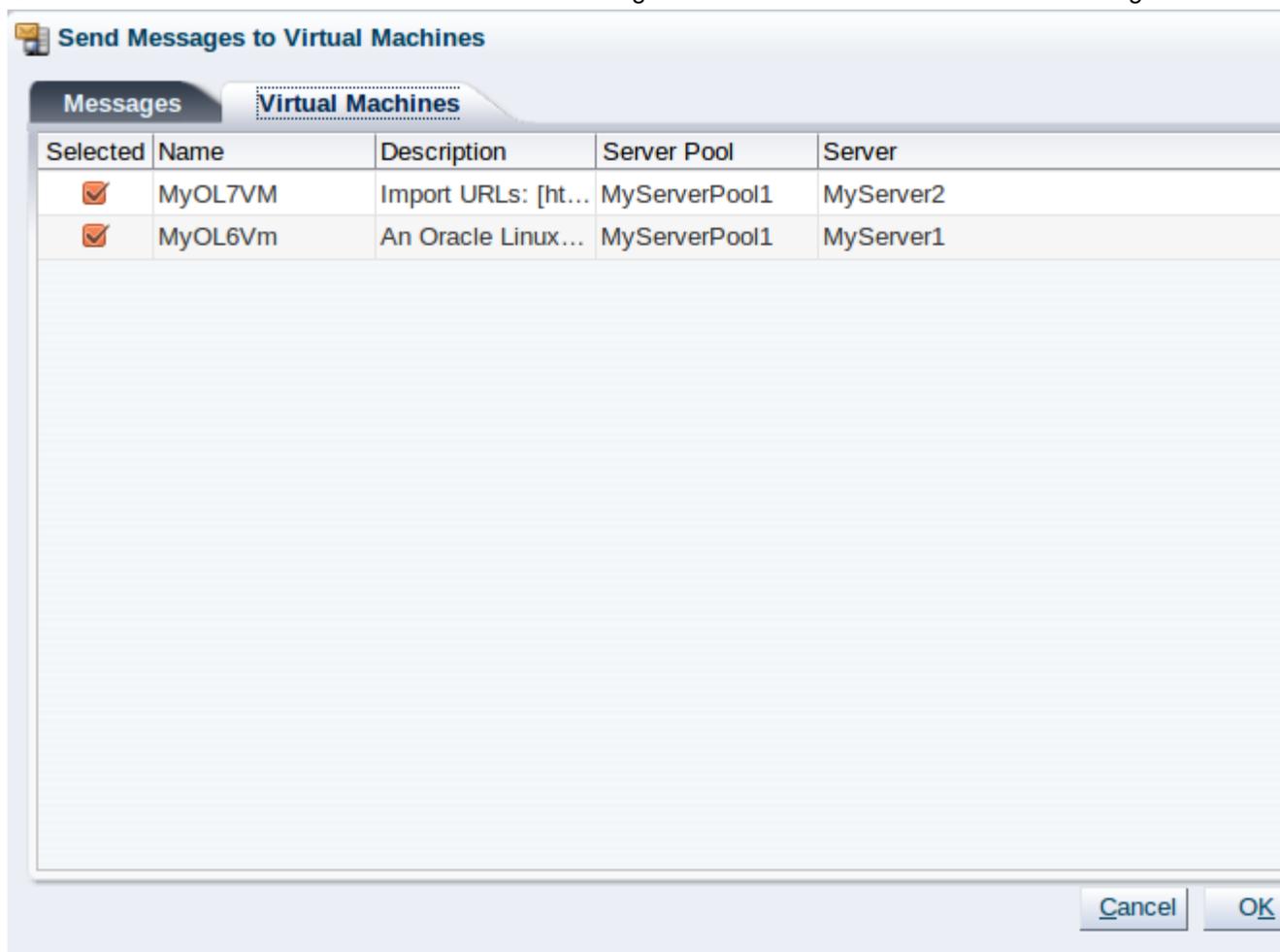
Hide Message

* Message:

Enter the message key value pair in the **Key** and **Message** fields. Check the **Log Message** field to retain a log of the message. Check the **Hide Message** field to hide the message of the key/value pair in the user interface. Click **OK** to save the message and return to the **Send Messages to Virtual Machines** dialog box.

- To edit a message, select the message and click **Edit...**  in the dialog box toolbar. To delete a message, select it and click **Delete**  in the dialog box toolbar.

6. Select the **Virtual Machines** tab to select which running virtual machines are to receive the messages.



Click **OK** to send the messages to the virtual machines.

3.4.2.12 Generate Report

You can generate an XML report on one or more Oracle VM Servers. For more information about object reporting, see [Section 7.1, "Reports"](#).

To generate a report on Oracle VM Servers:

1. Select a server pool in the **Server Pools** folder in the navigation pane.
2. Select the **Servers** perspective in the management pane.
3. Select one or more Oracle VM Servers in the management pane table.
4. Click  **Generate Report** in the management pane toolbar.
5. The report is generated and sent to the browser.

3.4.3 Virtual Machines Perspective

The **Virtual Machines** perspective lists the different virtual machines that belong to either a server pool or a server or the **Unassigned Virtual Machines** folder, depending on the item selected in the navigation

pane. Note that this perspective is not available for server items listed off the **Unassigned Servers** folder, since virtual machines cannot be assigned to servers that do not belong to a server pool. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the virtual machine.
- **Status:** The running status of the virtual machine.
- **Tag(s):** Any tags that have been applied to the virtual machine.
- **Event Severity:** What event severity level is currently indicated for the virtual machine.
- **Server:** The actual Oracle VM Server that the virtual machine is currently residing on.
- **Max. Memory (MB):** The maximum available memory (in megabytes) that the virtual machine is able to consume.
- **Memory (MB):** The amount of memory (in megabytes) that the virtual machine is currently consuming.
- **Max. Processors:** The number of processors that the virtual machine is allowed to make use of.
- **Processors:** The number of processors that the virtual machine is currently using.
- **Keymap:** The character keymap that has been configured for the virtual machine.
- **Operating System:** The operating system that the virtual machine is running.

Clicking on the arrow to the left of a virtual machine in the table displays a set of subtabs that show more detailed information about the virtual machine. These tabs are **Configuration**, **Networks**, and **Disks**. Click on a tab to display the information:

Configuration

- **Name:** The name that has been configured for the virtual machine.
- **Status:** The running status of the virtual machine.
- **Operating System:** The operating system type.
- **Keymap:** The character keymap that has been configured for the virtual machine.
- **Max. Processors:** The maximum number of CPUs that can be allocated.
- **Processors:** The number of CPUs that are allocated.
- **Processor Cap:** The percentage value configured for the processor cap.
- **Max. Memory (MB):** The maximum memory that can be allocated.
- **Memory (MB):** The memory that is allocated.
- **Priority:** The CPU priority allocated for the virtual machine.
- **Mouse Type:** The mouse type configured for the virtual machine.
- **Domain Type:** The hypervisor and virtual machine type configured for the virtual machine.
- **Start policy:** The start policy configured for the virtual machine.
- **High Availability:** Whether or not the High Availability flag is set for the virtual machine.

- **Repository for Configuration File:** The repository where the configuration file for the virtual machine is stored.
- **Huge Pages:** Whether or not the Huge Pages flag is set for the virtual machine.
- **Boot Order:** The configured boot order for disks attached to the virtual machine
- **Network Boot Path:** The network boot path configured for the virtual machine.
- **Restart Action On Crash:** The configured restart action in the instance that the virtual machine crashes.
- **Restart Action On Power Off:** The configured restart action in the instance that the virtual machine receives the power-off signal.
- **Restart Action On Restart:** The configured restart action in the instance that the virtual machine receives the restart signal.
- **ID:** The ID allocated by Oracle VM Manager for the virtual machine.
- **Origin:** The URL that was used to import the virtual machine or template, if it was imported.
- **Description:** The description of the virtual machine.
- **Config File Absolute Path:** The absolute path to the virtual machine configuration file.
- **Config File Mounted Path:** The mount point where the virtual machine configuration file is located on an Oracle VM Server.

Networks

- **VNIC:** The name of a VNIC configured for the virtual machine.
- **Ethernet Network:** The name of the ethernet network that the VNIC is attached to.
- **IP Addresses:** IP addresses configured for the VNIC. Note that the virtual machine must be running Oracle VM Guest Additions for this information to be populated. If no IP address is configured for this VNIC, the IP address is displayed as 0.0.0.0.

Disks

- **Slot:** The slot number for the disk.
- **Disk Type:** The type of disk that is attached.
- **Name:** The name of the disk within Oracle VM Manager.
- **Size (GiB):** The size of the disk.
- **Repository:** The repository where the disk is located.
- **Absolute Path:** The absolute path to the location of the disk.
- **Mounted Path:** The mount point where the disk is located on an Oracle VM Server.
- **Location:** The location of the disk as reported by Oracle VM Manager.

If this perspective is viewed from the **Unassigned Virtual Machines** folder, some of the toolbar icons that are usually available for this perspective are not included in the toolbar. The table below lists all of the

toolbar icons that are available for this perspective and indicates the items that are not available when the perspective is viewed from the **Unassigned Virtual Machines** folder.

Table 3.7 Virtual Machines Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Import Virtual Machine...		Displays the Import Virtual Machine dialog box. Use this option to import a virtual machine into Oracle VM Manager. This option is only available for Unassigned Virtual Machines.
Edit...		Displays the Edit Virtual Machine wizard. Use this option to edit a virtual machine.
Delete		Displays the Delete Confirmation dialog box. Use this option to delete the selected virtual machines.
Start		Starts up a stopped virtual machine. Not available for Unassigned Virtual Machines.
Stop		Shuts down a virtual machine. Not available for Unassigned Virtual Machines.
Launch Console		Launches the virtual machine VNC console in an x86-based server pool, which enables access to the virtual machine. Use this option to connect to a virtual machine's console and access the virtual machine directly. Not available for virtual machines in the Unassigned Virtual Machines folder, or virtual machines in a server pool, but not assigned to an Oracle VM Server.
Launch Serial Console		Launches the virtual machine serial console, which enables access to the virtual machine. Use this option to connect to a virtual machine's serial console and access the virtual machine directly. This service is commonly used for virtual machines running in a SPARC-based server pool, but is also available for virtual machines running on x86-based server pools. Not available for Unassigned Virtual Machines.
Restart		Restarts a running virtual machine. Not available for Unassigned Virtual Machines.
Kill		Shuts down a running virtual machine. Not available for Unassigned Virtual Machines.
Suspend		Suspends (pauses) a running virtual machine. Not available for Unassigned Virtual Machines.
Resume		Resumes (unpauses) a suspended virtual machine. Not available for Unassigned Virtual Machines.

Toolbar Icon Option	Icon	Description
Migrate or Move...		Migrates a virtual machine to another Oracle VM Server, or moves the configuration and virtual disks for a virtual machine to an alternate repository.
Clone Virtual Machine...		Displays the Clone Virtual Machine dialog box. Use this option to clone a virtual machine to create another virtual machine.
Export to Virtual Appliance...		Displays the Export to Virtual Appliance dialog box. Use this option to export a virtual machine as a virtual appliance.
Export to OCI...		Displays the Export Virtual Machine(s) to OCI dialog box. Use this option to export a virtual machine to Oracle Cloud Infrastructure.
Manage Clone Customizers...		Displays the Manage Clone Customizer dialog box. The clone customizer lets you set up clone parameters, such as networking, disks and ISO resources. Use this option to create, edit or delete a clone customizer.
Send VM Messages...		Send one or more virtual machines a message. Use this option to send messages to virtual machines that have the Oracle VM Guest Additions installed. Not available for Unassigned Virtual Machines.
Display VM Config File Content...		Displays the VM Config File Content dialog box. Displays a read-only view of the configuration file for the selected virtual machine. Use this option to view the content of the virtual machine configuration file.
Display VM Hierarchy Viewer		Displays a graphical report on a virtual machine.
Display Selected VM Events...		Displays the Events dialog box. Displays events for the selected virtual machine. Use this option to view or acknowledge error events for the virtual machine.
Generate Report		Generate an XML report on one or more virtual machines.
Help		Displays context sensitive help.

3.4.3.1 Edit Virtual Machine

Editing a virtual machine to changes the virtual machine configuration. If the virtual machine is running, you cannot edit specific settings such as the mouse device type, domain type, maximum amount of memory, maximum number of processors, restart action on crash, or huge pages support. To edit these settings, the virtual machine must be stopped so that the hypervisor can reload the virtual machine configuration when the virtual machine starts.

To edit a virtual machine:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine in the management pane, and click **Edit...**  in the management pane toolbar

- The **Edit Virtual Machine** dialog box is displayed. Select each tab to edit the virtual machine configuration. See [Section 3.1.3, “Create Virtual Machine”](#) for the details of each tab. Click **OK** to save the changes.

**Note**

It is not possible to dynamically change resources such as the number or processors or allocated memory for an Oracle Solaris virtual machine without first enabling the `drd` service on the virtual machine itself. To allow for these changes, connect to the virtual machine and make sure that the `drd` service is enabled:

```
# svcadm enable -s drd
# svcs drd
```

These commands should notify you that the service is online. When you have performed these actions, you are able to use Oracle VM Manager to dynamically change the allocation of resources.

**Note**

It is not possible to change the number of virtual network interfaces or virtual disks for a virtual machine while the virtual machine is in a suspended state. Attempting to add or remove such a device results in an exception and an error is returned.

**Note**

It is not possible to remove a virtual CD-ROM from a running virtual machine. Doing so results in an exception and an error is returned. To remove virtual CD-ROMs from running virtual machines, you must first stop the virtual machine and then remove the virtual CD-ROM.

3.4.3.2 Delete Virtual Machines

When you delete a virtual machine, all the files and data associated with this virtual machine are removed from Oracle VM Manager. Before deleting a virtual machine, make sure you do not need it any longer. You can only delete a virtual machine when the virtual machine status is **Stopped** or **Error**.

To delete virtual machines:

- Click the **Servers and VMs** tab.
- Select the server pool on which the virtual machines reside in the navigation tree.
- Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane, and click **Delete**  in the management pane toolbar.
- The **Delete Confirmation** dialog box is displayed. Select any virtual disks associated with the virtual machines to delete. The virtual machine's physical disks are listed if the storage on which they reside uses a non-generic Oracle VM Storage Connect plug-in. Before any physical disks are deleted, they are removed from any access groups. Click **OK** to delete the virtual machines and the selected virtual and physical disks.

3.4.3.3 Start Virtual Machines

After a virtual machine is created, you can start it. Starting a virtual machine is analogous to starting a computer by pressing the **Power On** button.

To start virtual machines:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machines reside in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane, and click **Start** ►.

The virtual machines are started.

3.4.3.4 Stop Virtual Machines

When a virtual machine is not in use, you should shut it down to release system resources. Stopping a virtual machine is analogous to a normal shutdown of a physical computer.

If you want to save the state of the virtual machine, you should suspend it. See [Section 3.5.2.9, “Suspend Virtual Machines”](#) for information on suspending virtual machines.

In some situations you may not be able to stop a virtual machine, for example, if you have tried to stop it while another job is in progress on the virtual machine such as a start virtual machine job. To resolve this type of situation, you should abort the job that is in progress, then kill the virtual machine. See [Section 8.1.5, “Abort Jobs”](#) for information on aborting jobs, and [Section 3.5.2.8, “Kill Virtual Machines”](#) for information on killing a virtual machine.

To stop virtual machines:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machines reside in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane, and click **Stop** ■.

**Note**

You can also shut down a virtual machine from within the virtual machine, the same way you shut down a physical computer.

After issuing the stop command, the status of the virtual machine is changed to *Stopped*. However, this only indicates that the command was acknowledged. There is no guarantee that the virtual machine is effectively shut down correctly. This is expected behavior since an operating system running on a physical PC may also *hang* during the shutdown sequence.

If the virtual machine fails to shut down, you can power it off using the kill virtual machine option, which is similar to unplugging the power cable from a physical machine. To perform a power off (kill) of virtual machines, see [Section 3.5.2.8, “Kill Virtual Machines”](#).

3.4.3.5 Launch Console

**Important**

The VNC Console can only be used to connect to virtual machines running on an x86 Oracle VM Server. If you are attempting to connect to a virtual machine running on Oracle VM Server for SPARC you should use the serial console. The **Launch**

Console  is greyed out when Oracle VM Manager detects that the virtual machine is running on an *L**D**O**M* hypervisor. See [Section 3.5.2.6, “Launch Serial Console”](#).

The VNC Console makes use of noVNC, that uses HTML5 (WebSockets, Canvas) to render a web-based VNC client accessible from any browser that properly supports HTML5. You can find out more about noVNC at <http://kanaka.github.io/noVNC/>.

The VNC Console is not available for virtual machines in the **Unassigned Virtual Machines** folder, or virtual machines in a server pool, but not assigned to an Oracle VM Server.

The key mapping for each VNC session is set when you create or edit a virtual machine, in the Keymap field. See [Section 3.1.3, “Create Virtual Machine”](#) and [Section 3.5.2.1, “Edit Virtual Machine”](#) for information on creating and editing a virtual machine.

To connect to a virtual machine's console:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine in the management pane, and click **Launch Console**  in the perspective toolbar
4. A new browser window or tab is opened.



Tip

If the console does not start, check that your web browser allows pop-ups to be displayed. If you are using Microsoft Internet Explorer, add the base URL of Oracle VM Manager (for example, <http://example.com>) to the list of trusted sites in the security settings. You may also need to downgrade the security level from medium to medium-low for the Trusted sites zone.

If the virtual machine's console is in use by another user, a message is displayed asking if you want to take over the connection. If you take over the connection, the other user's session is disconnected and the VNC session is started on your client computer. If the VNC client has trouble taking over the connection, you may need to close it and launch the VNC console again.

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

Connected (encrypted) to: MyOL7VM

Oracle VM Console

```
Starting RPC idmapd: [ OK ]
Starting system message bus: [ OK ]
Starting setroubleshootd: [ OK ]
Starting o2cb: [ OK ]
Starting Bluetooth services: [ OK ]
Mounting other filesystems: [ OK ]
Starting PC/SC smart card daemon (pcscd): [ OK ]
Starting HAL daemon: [ OK ]
Starting hidd: [ OK ]
Starting autofs: Loading autofs4: [ OK ]
Starting automount: [ OK ]
Starting hpiod: [ OK ]
Starting hpssd: [ OK ]
Starting sshd: [ OK ]
Starting cups: [ OK ]
Starting xinetd: [ OK ]
Starting ntpd: [ OK ]
Starting sendmail: [ OK ]
Starting sm-client: [ OK ]
Starting console mouse services: [ OK ]
Starting crond: [ OK ]
Starting xfs: [ OK ]
Starting anacron: [ OK ]
Starting atd: [ OK ]
Starting yum-updatesd: [ OK ]
Starting Avahi daemon... [ OK ]
Starting oraclevm-template...
Regenerating SSH host keys.
Stopping sshd: [ OK ]
Generating SSH1 RSA host key: [ OK ]
Generating SSH2 RSA host key: [ OK ]
Generating SSH2 DSA host key: [ OK ]
Starting sshd: [ OK ]
Regenerating up2date uuid.
Changing password for user root.
New UNIX password:
```

Note that, if you open a virtual machine console to a running virtual machine and use the Ctrl-Alt-Delete button to restart the virtual machine, the virtual machine restarts and the console reconnects but the control buttons for the console move out of the visible area in the dialog. This is expected behavior, related to the size of the VNC display returned by Oracle VM Server and the way in which HTML5 canvases work.

To view the control buttons for the virtual machine console after the virtual machine has restarted, you may either extend the right side of dialog, or close the dialog and open it again.

3.4.3.6 Launch Serial Console

You must use the *serial* console to connect to virtual machines on a SPARC-based server pool instead of the VNC console.

For virtual machines running on x86-based server pools, you should use the VNC console instead of the serial console. Output from the serial console is read-only and non-interactive when you use it to connect to virtual machines running on an x86-based server pool. Additionally, virtual machines running on an x86-based server pool must support, and be configured for, redirecting serial output. See [Section 3.4.3.5, "Launch Console"](#) for more information about using the VNC console.

To connect to a virtual machine's serial console:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine in the management pane, and click **Launch Serial Console**  in the management pane toolbar
4. A new browser window or tab is opened.



Tip

If the console does not start, check that your web browser allows pop-ups to be displayed. If you are using Microsoft Internet Explorer, add the base URL of Oracle VM Manager (for example, <http://example.com>) to the list of trusted sites in the security settings. You may also need to downgrade the security level from medium to medium-low for the Trusted sites zone.

If the virtual machine's console is in use by another user, a message is displayed asking if you want to take over the connection. If you take over the connection, the other user's session is disconnected and the terminal session is started on your client computer. If the terminal emulator has trouble taking over the connection, you may need to close it and launch the serial console again.

The virtual machine console is displayed. Log in and interact with the virtual machine as you would through any other console session. If required, enter the user name and password of the guest operating system to log in to the operating system.

3.4.3.7 Restart Virtual Machines

Restarting a virtual machine is analogous to rebooting a computer. You may need to restart a virtual machine if an operating system update requires you to restart the virtual machine, for example Microsoft Windows™ updates.

To restart virtual machines:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machines reside in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane, and click **Restart** .

The virtual machines are restarted.



Note

If a virtual machine has not fully started, a restart request may not succeed as the virtual machine may not be ready to initiate the request. In this case, you may need

to abort the restart job and try again later. Alternately, kill the virtual machine and start it again.

3.4.3.8 Kill Virtual Machines

Killing a virtual machine is equivalent to performing a power off of a virtual machine, similar to unplugging the power cable from a physical machine. This is not the recommended method of shutting down a virtual machine, but may be used if the shut down command fails to shut down the virtual machine.

To kill virtual machines:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane, and click **Kill** .

The virtual machines are powered off.

3.4.3.9 Suspend Virtual Machines

Suspending a virtual machine is analogous to putting a computer into sleep mode. When a virtual machine is suspended, the current state of the operating system, and applications is saved, and the virtual machine put into a suspended mode. When you resume the virtual machine, the operating system and applications continue from the same point you suspended the virtual machine.



Note

You cannot suspend virtual machines on SPARC-based server pools.

To suspend virtual machines:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane, and click **Suspend** .

The virtual machine state is saved and the virtual machines suspended.

To resume the virtual machine, see [Section 3.5.2.10, "Resume Virtual Machine"](#).

3.4.3.10 Resume Virtual Machine

Resuming a suspended virtual machine is analogous to waking up a computer that has been in sleep mode. When you resume a suspended virtual machine, the operating system and applications continue from the same point you suspended the virtual machine.



Note

You cannot resume virtual machines on SPARC-based server pools.

To resume a virtual machine:

1. Click the **Servers and VMs** tab.

2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to start in the management pane, and click **Resume** .

The virtual machine state is retrieved and the virtual machine started according to the VM Start Policy defined for the server pool.

3.4.3.11 Migrate or Move Virtual Machines

The **Migrate or Move**  option allows you to migrate and move virtual machines by opening the **Migrate or Move Virtual Machine** wizard that allows you to select and perform the appropriate actions depending on your requirements and the state of the virtual machine.

It is important to understand that [migrating](#) a virtual machine changes the Oracle VM Server or server pool where the virtual machine runs, while [moving](#) a virtual machine changes the repository where the virtual machine configuration or virtual disks are located.

A stopped virtual machine can be migrated to any Oracle VM Server, server pool, or to the **Unassigned Virtual Machines** folder. A running virtual machine can be migrated to any Oracle VM Server within the same server pool.

The steps below assume the virtual machine is deployed to an Oracle VM Server. If the virtual machine is located in the **Unassigned Virtual Machines** folder, select it in that folder to perform the migration.

To migrate or move a virtual machine:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to migrate in the management pane, and click **Migrate or Move** .

The **Migrate or Move Virtual Machine** dialog box is displayed.

4. Choose the appropriate option from the **Migrate or Move Virtual Machine** dialog box. Different options are available, depending on if the virtual machine is running or stopped.

If the virtual machine is **running**, you can select from the following options:

- [Migrate a running VM to a different Server within the same Server Pool](#)

This option changes the server where the virtual machine runs. The destination server must be within the same server pool as the source server. Likewise, the destination server must be able to access the virtual machine configuration and storage. You should choose this option to migrate virtual machines between servers within a server pool that use a shared repository.

Select this option and then click **Next** to proceed as follows:

1. Select the destination server to which you want to migrate the virtual machine from the [Specified Server](#) drop-down list.



Note

Some options are disabled because they apply only if you are migrating a virtual machine that is *stopped*.

2. Click **Finish** to complete the migration.

- [Migrate a running VM, and migrate its local storage, to a different Server within the same Server Pool](#)

This option changes the server where the virtual machine runs and moves its local storage. You can choose this option to migrate virtual machines between servers within the same server pool when:

- At least one virtual disk resides in a repository that is local to the source server.
- The destination repository is local to the destination server.



Note

If the virtual machine configuration file resides in a repository that is local to the source server only, the configuration file is copied to the destination repository. If the configuration file resides in a shared repository, it is not copied.

Select this option and then click **Next** to proceed as follows:

1. Select the destination server to which you want to migrate the virtual machine from the [Server to Migrate to](#) drop-down list.
2. Select the destination repository to which you want to move the virtual machine configuration and storage from the [Target Repository](#) drop-down list.



Note

You can select only repositories that are hosted on an OCFS2 file system.

3. Click **Finish** to complete the migration and move the virtual machine configuration and storage.

- [Move this VM to a different Repository](#)

This option changes the location of the virtual machine.



Note

Beginning in Oracle VM Manager 3.4.6, this option is available when the **Migrate or Move Virtual Machine** dialog box is displayed for a **running** virtual machine. This option makes it possible to move a `vm.cfg` file from one repository to another while the virtual machine is in running state by creating an empty clone customizer.



Important

When moving a **running** virtual machine, be sure to create an empty clone customer with no storage mappings attached. If a clone customizer is created with an attached virtual disk that is actively being used by the virtual machine, an error message is returned.

Select this option and then click **Next** to proceed as follows:

1. Click [Create](#) to create a new empty clone customizer with no storage mappings attached.
2. Select the destination repository to which you want to move the virtual machine configuration from the [Target Repository](#) drop-down list.
3. Click **Finish** to move the virtual machine.

If the virtual machine is **stopped**, you can select from the following options:

- [Migrate a VM to a different Server, Server Pool, or Unassigned State](#)

This option lets you change the virtual machine destination to either the **Unassigned Virtual Machines** folder or unassigned in the current server pool. This option also lets you change the server or server pool where the virtual machine runs as well as the location of the virtual machine configuration and storage.

Select this option and then click **Next** to proceed as follows:

1. Select one of the following destinations for the virtual machine:

- **Unassigned Virtual Machines Folder:** Removes the virtual machine from the server pool and moves it to the **Unassigned Virtual Machines** folder.
- **Unassigned in Current Server Pool:** Removes the virtual machine from the Oracle VM Server. The virtual machine stays in the same server pool; it is removed from the Oracle VM Server only.
- **Specified Server:** Moves the virtual machine to the selected Oracle VM Server. Stopped virtual machines can be migrated to Oracle VM Servers in other server pools that share the same repository, so Oracle VM Servers from other server pools might be listed here.
- **Server Pool:** Moves the virtual machine to the selected server pool. Stopped virtual machines can be migrated to other server pools. The virtual machine is not deployed to a particular Oracle VM Server within the destination pool; you must start the virtual machine in the destination server pool to deploy it to an Oracle VM Server.

2. Click **Finish** to complete the migration.

- [Move this VM to a different Repository](#)

This option changes the location where the virtual machine, and its configuration and local storage, reside. You should choose this option to move the virtual machine between servers in different server pools.

- Select this option and then click **Next** to proceed as follows:

1. Select a clone customer from the [Clone Customizer](#) drop-down list or click [Create](#) to create a new clone customizer.

Clone customizers can be used to determine storage mappings for the virtual machine so that you can define where the virtual disks for a virtual machine should be located.

If you create a new clone customizer, the **Create Clone Customizer** wizard is displayed. You can read more on the options provided by this wizard in [Create a Clone Customizer](#).

2. Select the destination repository to which you want to move the virtual machine configuration and storage from the [Target Repository](#) drop-down list.

3. Click **Finish** to move the virtual machine.

To migrate multiple virtual machines:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machines reside in the navigation tree.

3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machines to migrate in the management pane and drag and drop them to the Oracle VM Server, server pool or the **Unassigned Virtual Machines** folder in the navigation tree to which you want to migrate the virtual machines. See [Section 1.13, “Drag and Drop”](#) for information on using the drag and drop feature.
4. The virtual machines are migrated.

3.4.3.12 Clone a Virtual Machine or Template

Cloning a virtual machine or a template means making a copy of it, so that you can create multiple virtual machines or templates from the original.

A clone can also be performed using two other file copy methods: [sparse copy](#), and [non-sparse copy](#). These two cloning methods can be used when cloning from and to different repositories, and when the storage used for the storage repository uses a generic Oracle VM Storage Connect plug-in. These cloning methods are slower than thin cloning, but more versatile.



Note

The virtual machine cloning procedure below uses the same dialog box to clone a virtual machine and a template.

To create a clone of a virtual machine or template:

1. Select the virtual machine or template to clone and display the **Clone** dialog box. You display this dialog box from different locations, depending on whether you are cloning a virtual machine or a template.
 - **Virtual Machine:** Click the **Servers and VMs** tab. Select the server pool on which the virtual machine resides in the navigation tree. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to clone in the management pane, and click **Clone Virtual Machine** .
 - **Virtual Machine Template:** Click the **Repositories** tab. In the navigation tree, select the repository in which the template resides, then **VM Templates**. Select the template in the management pane and click **Clone Template** .
2. The **Clone (Virtual Machine or Template)** dialog box is displayed.

Select or enter the following:

- **Clone to a:** Select the clone type, either **Virtual Machine** or **Template**, to specify the objects to create from the clone.
- **Clone Count:** The number of clones to create.
- **Name Index:** The start index number to use for the clone name suffix. The default is **0**. This is used in conjunction with the **Clone Name** field to create the name for each clone.
- **Clone Name:** An optional name for the virtual machines or templates. The maximum name length is 256 characters and may contain any character. The name need not be unique. If no value is given, the default is the name of the virtual machine or template being cloned. Each clone is suffixed with a dot (.) and the clone index number, starting with the value for the **Name Index** field. For example, if the **Clone Name** field is set to *MyVM*, and the **Name Index** field is set to **1**, the resulting clones would be named *MyVM.1*, *MyVM.2* and so on.
- **Target Server Pool:** The server pool on which the clone is to be deployed.



Note

The list of server pools that are available in the drop-down is limited to valid server pools that are capable of handling the cloning process correctly. This

helps you to prevent cloning to a server pool that may fail to process the request. If this list is empty, you should refer to the table presented under the **Why don't I see other server pools to clone to?** element in this dialog.

- **Description:** A description for the virtual machines or templates.
- **Advanced Clone:** Whether to use a clone customizer to set preferences for the clone operation.
- **Clone Customizer:** The clone customizer to create the clones. This is used to set virtual disk mappings to enable you to copy disks to other storage locations. It also allows you to create network mappings so you can use new VNICs and other networks for the clone. Click **Create...** to create a new clone customizer. See [Section 3.5.2.14, "Manage Clone Customizers"](#) for information on creating a clone customizer. This field is enabled if **Advanced Clone** is checked.
- **Target Repository:** The repository to store the cloned virtual machine configuration file. This does not affect any clone disk mappings you set using a clone customizer; this option is only for the virtual machine configuration file. This field is enabled if **Advanced Clone** is checked.
- **Why don't I see other server pools to clone to?** A collapsed window element, providing a table of server pools that do not meet the requirements to accept a clone request. Expanding any of the entries in this table displays the reason that the server pool does not qualify.



Tip

If you clone a virtual machine or template without using a clone customizer, the storage repository is locked for the duration of the cloning job; this may be some time in some circumstances. To quickly create clones and not lock the storage repository, use a clone customizer.

Click **OK**.

The virtual machines are created and deployed to the server pool. The templates are created in the storage repository.

It is important to understand that older templates may use a different device type to attach virtual disks. This may affect your ability to attach new virtual disks, such as a virtual CDROM device. There are some limitations on mixing virtual disks of differing device types on a virtual machine. See [How are Virtual Disks Managed?](#) in the *Oracle VM Concepts Guide* for more information about how device types are allocated to virtual disks and what you may need to do to solve any issues surrounding this problem.

3.4.3.13 Export a Virtual Machine

Exporting a virtual machine lets you reuse [virtual machines](#) with other instances of Oracle VM, or with other virtualization environments that support the Open Virtualization Format (OVA).

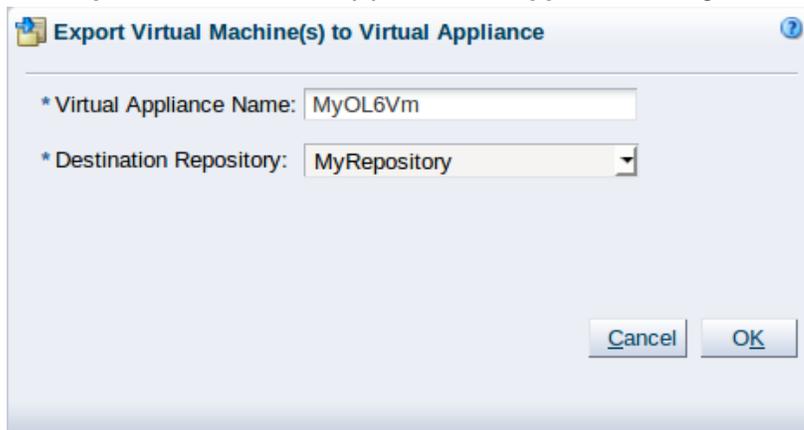
Export to Virtual Appliance

Exporting a [virtual appliance](#) lets you reuse [virtual machines](#) with other instances of Oracle VM, or with other virtualization environments that support the Open Virtualization Format (OVA).

You can export one or more virtual machines to a virtual appliance. Exporting a virtual machine to a virtual appliance creates an OVA file in the storage repository. The OVA file contains the virtual disk file(s) in VMDK format, an OVF file that holds the virtual machine(s) configuration, and other files such as a manifest and certificate.

To export to a virtual appliance:

1. Click the **Servers and VMs** tab. Select the server pool on which the virtual machine resides in the navigation tree. Select **Virtual Machines** from the **Perspective** drop-down list.
2. Make sure each virtual machine to export is in the **Stopped** state.
See [Section 3.5.2.4, “Stop Virtual Machines”](#) for more information on stopping virtual machines.
3. Select the virtual machine(s) to export in the management pane, and click **Export to Virtual Appliance** .
4. The **Export Virtual Machine(s) to Virtual Appliance** dialog box is displayed.



Specify a name for the virtual appliance in the **Virtual Appliance Name** field and select the storage repository to which you want to save the virtual appliance from the **Destination Repository** menu and then click **OK**.

The virtual appliance is located under the [Assemblies](#) directory on the Oracle VM Server instance where the storage repository is presented to, as follows: `/OVS/Repositories/repository_id/Assemblies/virtual-appliance_id/package.ova`. See the [Chapter 4, Repositories Tab](#) for information about obtaining the repository and virtual appliance ID.

Export to Oracle Cloud Infrastructure Using Oracle VM Exporter Appliance

Exporting an Oracle VM virtual machine using the [Oracle VM Exporter Appliance](#) transfers the virtual machine to [Oracle Cloud Infrastructure](#). Exporting a virtual machine does not remove the virtual machine from Oracle VM. You can export a virtual machine to other places in Oracle Cloud Infrastructure.



Note

Before using the Oracle VM Exporter Appliance, you must first download and configure the Oracle VM Exporter Appliance Open Virtual Appliance (OVA) and make sure the Oracle VM Exporter Appliance virtual machine is running. For more information, see [Installing and Configuring the Oracle VM Exporter Appliance](#)

You can start, one after another, up to four virtual machine exports to run simultaneously (they will not start simultaneously) with a single Oracle VM Exporter Appliance. If you start a fifth export operation for one Oracle VM Exporter Appliance, the export is queued until one of the running exports completes. If you need to run more than four exports at the same time, you can add another Oracle VM Exporter Appliance

to the virtual machines. You can only export a stopped virtual machine. A virtual machine being exported by the Oracle VM Exporter Appliance cannot be started.



Note

Before Windows VMs can be exported to OCI, they have to be shutdown without fast restart. To shutdown without fast restart:

- Use the `shutdown /s` command, or
- Click the Windows **Start** Button (or Windows symbol button or the Start Menu), then click **Power** and then press the **Shift** key while clicking on **Shutdown** option.

Export a Virtual Machine to Oracle Cloud Infrastructure

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. You can also select the virtual machine directly if the virtual machine is on the screen.



Note

Windows virtual machines need to have virtio-win drivers installed before exporting to Oracle Cloud Infrastructure. For more information see <https://docs.oracle.com/en/operating-systems/oracle-linux/kvm-user/>.

4. Stop the virtual machine.

See [Section 3.5.2.4, “Stop Virtual Machines”](#) for more information on stopping virtual machines.

5. With the stopped virtual machine highlighted, click the **Export to OCI** icon (📁) in the **Virtual Machine Perspective** task icon bar or right-click on the stopped virtual machine and select **Export to OCI**.

The **Export VM to OCI** wizard displays information about the Oracle VM Exporter Appliance virtual machine.

Export VM to OCI: Win2K19-Server-brmL06G04

Please select Exporter Appliance and its IP or enter Hostname/IP and Port manually below.

Appliance:

* Appliance's IP Address:

Hostname or IP:

* Port:

6. Select or enter the following Exporter Appliance information:

- From the **Appliance** drop-down list, select the name of the Oracle VM Exporter Appliance.

**Note**

If you named the Oracle VM Exporter Appliance **Exporter Appliance**, that name is already filled in. If you have changed the name, you have to select it from a list of virtual machines. One of the choices is **Please Select**, which is an option to enter the **Hostname or IP** information.

- From the **Appliance's IP Address** drop-down list, select the IP address of the Oracle VM Exporter Appliance.

**Note**

The IP address for the **eth0** interface is pre-selected, if it exists. There might be more than one IP address assigned to the Oracle VM Exporter Appliance. Make sure you select the correct one.

If you selected **Please Select** for the Appliance name, the Appliance's IP Address defaults to **Please Select or Enter Below**.

- If you selected **Please Select or Enter Below** from the **Appliance's IP Address** drop-down list, enter the hostname or IP address for the Oracle VM Exporter Appliance.
- Enter a port number if you have changed the default port number that the Oracle VM Exporter Appliance uses to receive packets.

**Note**

Be aware that if you change the default port number of 8443 can complicate Oracle VM Exporter Appliance communications.

7. Click **Next**.

The **OCI Information** options display.

8. If the Oracle VM Exporter Appliance has been set up correctly, the **API Public Key** and **Fingerprint** fields display the public key and fingerprint of the Oracle VM Exporter Appliance selected for the export. This public key must be uploaded to Oracle Cloud Infrastructure or the export authentication fails.

The other fields may contain values from previous export operations. These fields contain Oracle Cloud Infrastructure user ID (**User OCID**), Oracle Cloud Infrastructure region (**Region**), and Oracle Cloud Infrastructure tenancy ID (**Tenancy OCID**). These values are all obtained from an Oracle Cloud Infrastructure tenancy account. For more information on these fields, see [Installing and Configuring the Oracle VM Exporter Appliance](#).

Enter the following Oracle Cloud Infrastructure information:

- Enter the **User OCID**.
- Enter the **Region** where you want to upload the exported virtual machine.
- Enter the **Tenancy OCID**.

9. Click **Next**.

Before the **Instance Info** options display, the Oracle VM Exporter Appliance validates the information provided with Oracle Cloud Infrastructure account.



Note

If you get an error here, validate all Oracle Cloud Infrastructure information.

10. Enter information about Oracle Cloud Infrastructure instance.

- **(Optional)** Enter a new **Instance Name**.



Note

By default, the instance name is the same as the virtual machine name, but you can enter a customized name between 1 and 255 characters long.

- Select the **Compartment** from the drop-down list.
- Select the **Availability Domain** from the drop-down list.
- Enter the **Instance Shape**.

11. Click **Next**. The **VM Disk** options display.

12. Enter additional information about the virtual machine disks exported with the virtual machine to Oracle Cloud Infrastructure.

- Select the **Bucket Compartment** from the drop-down list.
- Select the **Bucket Name** from the drop-down list.
- Select the **Custom Image Compartment** from the drop-down list.

**Note**

The rest of the **VM Disk** items are determined by local information.

- Select the **Boot Disk** from the drop-down list.
- **(Optional)** Change the **Boot Volume Size (GiB)** from the default size. The range for a Linux VM is from 50 GiB to 32 TiB. The range for the Windows VM is from 256 GiB to 32 TiB.

**Note**

If the boot volume size entered is less than the actual virtual machine system image (boot disk) size, the export fails in the instance creation phase.

- **(Optional)** Check the **Additional Disks to Upload** box next to each disk in the list you want to upload.

**Note**

You can select up to 32 disks to upload. ISO images attached to the virtual machine are not uploaded.

The Oracle VM Exporter Appliance lets you select and upload the same shared disk when exporting two or more virtual machines that share the disks. You need to select the shared disk for upload *only once* when exporting one of the virtual machines that shares the disk. If you select the same shared disk for each virtual machine, you create multiple copies of the same shared disk.

13. Click **Next**.

The **VNICs** options display.

14. Select or enter the following information about the virtual NICs (vNICs) created and used by Oracle Cloud Infrastructure for the Virtual Cloud Network (VCN) when the export operation has completed.



Note

The **Slot** and **Current Network** information is supplied by Oracle VM and cannot be changed.

- **VCN Compartment**
- **VCN**
- **Subnet Compartment**
- **Subnet**
- **Assign Public IP**

15. Click **Next**.

The **Summary** of your choices display.

16. Once you have entered all the required information, the Oracle VM Exporter Appliance displays a summary of the key information supplied during the wizard navigation. If all information in the summary is correct, click **Finish** to begin the export operation.

Tracking the Export Operation

The export is a multi-stage operation tracked by an Oracle VM job listed in the running and completed task section of the Oracle VM Manager. You can track the progress of the export to make sure it completes successfully.

- Once the export process has ended, you can check the **Job Summary** details in the Oracle VM Manager virtual machine perspective.



Note

You can also log into the Oracle VM Exporter Appliance and tail the `vmexporter` log using the following command: `$ tail -f /var/log/vmexporter/vmexporter.log`

- Even after the export job completes successfully, be sure to check the **Export Summary** tab in **Job Details** to make sure the **Successfully exported OVM VM to OCI** result appears and to see if any other related steps are needed. For example, additional steps are needed to connect a data Block Volume to the exported virtual machine.
- If you need to connect a data block volume, the directions are listed in the job summary. The steps are different for exported Windows and Linux virtual machines.

Windows virtual machine example:

```
Successfully exported OVM VM to OCI
OVM VM ID           : <ovm-vm-id>
OCI Instance ID     : <oci-instance-id>
OCI Instance Name   : <oci-instance-name>
OCI Compartment ID  : <oci-compartment-id>
OCI OS Type         : Windows - Server 2019 Standard
```

Additional Disk Data:

One or more data disks have been uploaded to OCI Object Storage as a disk image. To get your data on the disk block volume, this disk image has to be transferred to OCI Instance and written to disk block volume. Please ensure you have sufficient space to transfer the disk image.

```
Object Storage Bucket      : <object-storage-bucket-name>
Object Name                : <object-name>
Object Size                : 2.0GB
Pre-Authenticated Request URL : <url>
Block Volume ID           : <block-volume-id>
Block Volume Attachment ID : <block-volume-attachment-id>
Block Volume Attachment Access: READ/WRITE
```

1. Run these commands in the OCI Instance as an administrator in Windows Powershell to connect to the attached block volume.

```
Set-Service -Name msiscsi -StartupType Automatic
Start-Service msiscsi
iscsicli.exe QAddTargetPortal <ip>
iscsicli.exe QLoginTarget <iqn>
iscsicli.exe PersistentLoginTarget <iqn> * * * * *
```

2. Download the disk image: <disk-image-location> to the OCI Instance.
3. Go to Disk Management and mark Disk 2 "Online."
4. Write the downloaded disk image to Disk 2 using a Windows Disk Image Writer program such as NetBSD Rawrite32.
5. Delete the downloaded disk image from OCI Instance.
6. Delete the disk image '<disk-image-name>' from OCI Object Storage.

```
Object Storage Bucket      : <object-storage-bucket>
Object Name                : <object-name>
Object Size                : 1.0GB
Pre-Authenticated Request URL : <url>
Block Volume ID           : <block-volume-id>
Block Volume Attachment ID : <block-volume-attachment-id>
Block Volume Attachment Access: READ/WRITE
```

1. Run these commands in the OCI Instance as an administrator in Windows Powershell to connect to the attached block volume.

```
Set-Service -Name msiscsi -StartupType Automatic
Start-Service msiscsi
iscsicli.exe QAddTargetPortal <ip>
iscsicli.exe QLoginTarget <iqn>
iscsicli.exe PersistentLoginTarget <iqn> * * * * *
```

2. Download the disk image: <disk-image-location> to the OCI Instance.
3. Go to Disk Management and mark Disk 3 "Online."
4. Write the downloaded disk image to Disk 3 using a Windows Disk Image Writer program such as NetBSD Rawrite32.
5. Delete the downloaded disk image from OCI Instance.
6. Delete the disk image '<disk-image-name>' from OCI Object Storage.

Linux virtual machine example:

Successfully exported OVM VM to OCI

```
OVM VM ID      : <ovm-vm-id>
OCI Instance ID : <oci-instance-id>
OCI Instance Name : <oci-instance-name>
```

```
OCI Compartment ID : <oci-compartment-id>
OCI OS Type       : Linux

Additional Disk Data:

One or more data disks have been uploaded to OCI Object Storage as a disk image. To get
your data on the disk block volume, please install 'iscsi-initiator-utils' and
'wget' yum packages on your Instance, if not already installed, and do the following:

Object Storage Bucket      : <object-storage-bucket>
Object Name                : <object-name>
Object Size                : 2.0GB
Pre-Authenticated Request URL : <url>
Block Volume ID           : <block-volume-id>
Block Volume Attachment ID : <block-volume-attachment-id>
Block Volume Attachment Access: READ/WRITE

1. Run these commands to connect to the attached block volume:
    sudo iscsiadm -m node -o new -T <iqn> -p <ip:port>
    sudo iscsiadm -m node -o update -T <iqn> -n node.startup -v automatic
    sudo iscsiadm -m node -T <iqn> -p <ip:port> -l
2. Run the following command:
    sudo wget <url> -O /dev/sdb
3. If disk mount in /etc/fstab is with UUID, the disk can be mounted at its mount point.
   If UUID is not used, please update /etc/fstab to use UUID or use /dev/sdb.
4. Reboot the instance and check data in disk block volume. Reboot can be deferred until all
   data disks have been processed.
5. Delete the disk image '<disk-image-name>' from OCI Object
   Storage.

Object Storage Bucket      : <object-storage-bucket>
Object Name                : <object-name>
Object Size                : 1.0GB
Pre-Authenticated Request URL : <url>
Block Volume ID           : <block-volume-id>
Block Volume Attachment ID : <block-volume-attachment-id>
Block Volume Attachment Access: READ/WRITE

1. Run these commands to connect to the attached block volume:
    sudo iscsiadm -m node -o new -T <iqn> -p <ip:port>
    sudo iscsiadm -m node -o update -T <iqn> -n node.startup -v automatic
    sudo iscsiadm -m node -T <iqn> -p <ip:port> -l60 -l
2. Run the following command:
    sudo wget <yrl> -O /dev/sdc
3. If disk mount in /etc/fstab is with UUID, the disk can be mounted at its mount point.
   If UUID is not used, please update /etc/fstab to use UUID or use /dev/sdc.
4. Reboot the instance and check data in disk block volume. Reboot can be deferred until
   all data disks have been processed.
5. Delete the disk image '<disk-image-name>' from OCI
   Object Storage.
```

You are prompted once for each data disk that the Oracle VM Exporter Appliance has exported.

- If you have exported a virtual machine with multiple VNICs, there are additional steps needed because of the way that Oracle Cloud Infrastructure handles new virtual machines with multiple VNICs. For more information on this issue and solutions, see <https://docs.cloud.oracle.com/en-us/iaas/Content/Network/Tasks/managingVNICs.htm>

Connecting a Shared Block Volume to Exported Virtual Machines

You can use the Oracle VM **Export to OCI** function to export two or more virtual machines that share disks (for example, an OCFS2 cluster) to Oracle Cloud Infrastructure. However, after successful creation of the virtual machine instances in Oracle Cloud Infrastructure, additional steps must be followed to connect the

shared Oracle Cloud Infrastructure block volumes and, in the case of an OCFS2 cluster, restart the cluster services.

If you export two or more Oracle VM virtual machines sharing one or more disks (such as an OCFS2 cluster), you should avoid creating duplicate copies of the shared disk in Oracle Cloud Infrastructure. Although you only have to upload the shared disks *once* with an exported virtual machine, you must attach the shared disks, which are now block volumes in Oracle Cloud Infrastructure, to the other virtual machines after the export succeeds.



Important

The Oracle VM Exporter Appliance does not prevent you from selecting and uploading the same shared disk when exporting two or more virtual machines that share the disks. You need to select the shared disk only once when exporting one of the virtual machines to Oracle Cloud Infrastructure or duplicate, unnecessary copies are created.

As an example of this process, consider a set of three Oracle VM virtual machines (VM1, VM2, and VM3) sharing two disks (Shared Disk1 and Shared Disk2).

You export this group as three virtual machines, but upload the shared disks only *once* with one of the virtual machines. To avoid duplicated effort and results, these virtual machines and shared disks are exported to Oracle Cloud Infrastructure as two types of export: one virtual machine with the upload of the shared disks, and two virtual machines without any uploaded disks.

So, VM1 has Shared Disk1 and Shared Disk2 attached, but the exported VM2 and VM3 do not.

Because the goal is to establish the original configuration from Oracle VM in Oracle Cloud Infrastructure, the shared disks from Oracle VM, which are now block volumes in Oracle Cloud Infrastructure, must be re-attached to the exported virtual machine instances in Oracle Cloud Infrastructure.

In this case, Shared Disk1 and Shared Disk2 are to be attached to the exported virtual machine instances VM2 and VM3 in Oracle Cloud Infrastructure.



Note

Only VM1's **Export Summary** of the **Export to OCI** job has the details to attach Oracle Cloud Infrastructure block volumes to an instance. VM2 and VM3 do not have this information because the shared disks were not exported with VM2 and VM3, only with VM1. However, the same steps listed for VM1 must be repeated for VM2 and VM3.

Once all exports have completed successfully, the following are the high-level steps for connecting an Oracle Cloud Infrastructure shared block volume to an exported virtual machine instance. Some steps have to be repeated for each disk or virtual machine instance:

1. In Oracle Cloud Infrastructure, attach the same set of shared block volumes to the virtual machine instances that share them in Oracle Cloud Infrastructure.
2. For VM1, follow the instructions in the **Export Summary** (under the **Jobs** tab) in Oracle VM for a successful export with uploaded shared disks.
3. For VM2 and VM3, follow the instructions in the **Export Summary** (under the **Jobs** tab) in Oracle VM for a successful export of virtual machines without uploaded shared disks.

If you have OCFS2 disks attached to the virtual machines you have exported, there are two additional steps to take:

1. In Oracle Cloud Infrastructure, re-establish the cluster and make modifications to the `cluster.conf` file for each virtual machine instance that is part of the cluster. This step is necessary because the IP address and hostname are changed when the virtual machine is exported.
2. In Oracle Cloud Infrastructure, mount the data disk on the virtual machine instances in the cluster.

Detailed Example

There are three general steps to follow when connecting exported disks to virtual machine instances on Oracle Cloud Infrastructure.

1. In Oracle Cloud Infrastructure, attach the same set of shared block volumes to the virtual machine instances that share them in Oracle Cloud Infrastructure. Information about the block volumes to attach can be found in one of the following ways:

- In the **Export Summary** of VM1's export **Job** in Oracle VM
- In the **Attached Block Volumes** of VM1's Oracle Cloud Infrastructure instance.

Repeat the following steps for *each* of the shared volumes (Shared Disk1 and Shared Disk2) that need to be attached to a virtual machine instance (VM2 and VM3):

- a. Click on **Compute**.
- b. Click on **Instances**.
- c. Click on the hyperlink for the virtual machine **Instance**.
- d. Click on the **Attached Block Volumes** in the **Resources** column.
- e. Click on the **Attach Block Volume** blue button.
- f. Enter the applicable information on the **Attach Block Volume** page:
 - i. **Attachment Type:** iSCSI (this is the default).
 - ii. Make sure **Select Volume** is selected (this is the default)
 - iii. Make sure the Block Volume from Step 1 above is correct in the drop-down.



Note

For the drop-down list **Block Volume in `Compartment_Name`**, make sure you select the *same* uploaded shared block volume (Shared Disk1 and Shared Disk2) that was attached to the virtual machine sharing the disks (VM1) before the export.

- iv. **Access:** Select `Read/Write - Shareable`

2. If you have not already done so, follow the instructions in the **Additional Disk Data** section under the **Export Summary** tab in **Job Details** of a successful export **Job** of VM1 in Oracle VM. These instructions are included in the **Tracking the Export Operation** section above.



Note

For more information on finding jobs and job details, see [Job Details...](#)

3. On VM2 and VM3, which have block volumes that were not uploaded with the virtual machine instance, you must manually attach the shared disks uploaded from Oracle VM.

For Linux-based virtual machine instances, do the following:

- a. Run the commands listed under *Step 1: Run these commands to connect to the attached block volume* under the [Additional Disk Data](#) in the **Export Summary** for VM1 in Oracle VM. Shared disks are those with a **Block Volume Attachment Access** set to [Read/Write - Shareable](#).
- b. Reboot

For Windows-based virtual machine instances, do the following:

- a. Run the commands listed under *Step 1: Run these commands in the OCI Instance as an administrator in Windows Powershell to connect to the attached block volume* under the [Additional Disk Data](#) in the **Export Summary** for VM1 in Oracle VM. Shared disks are those with a **Block Volume Attachment Access** set to [Read/Write - Shareable](#).
- b. Go to **Disk Management** and mark the disk [Online](#)

Detailed Example for OCFS2

There are two more OCFS2-specific steps to follow when connecting exported disks to virtual machine instances on Oracle Cloud Infrastructure. These steps only apply to OCFS2.

1. For OCFS2, in Oracle Cloud Infrastructure, re-establish the cluster and make modifications to the [cluster.conf](#) file for each virtual machine instance that is part of the cluster. This is necessary because the IP address and hostname are changed when the virtual machine is exported.

To recreate or re-establish the cluster configuration, do the following:

- a. Set the hostname if it is not already set:

```
$ nmcli general hostname <Fully Qualified Domain Name>
$ systemctl restart systemd-hostnamed
$ vi /etc/hosts <add new hostname and IP address on primary VNIC>
```

- b. Verify that the OCFS2 cluster is set to [offline](#):

```
$ o2cb cluster-status
```

- c. Verify that the volumes, labels, and UUIDs are listed.

```
$ mountd.ocfs2 -d
```

- d. Perform the next *two* commands on *only one* virtual machine instance.

Using the editor, modify the [cluster.conf](#) file to change each node's IP address and hostname to reflect the new IP address (the IP address used for the cluster connection) and hostname of the exported virtual machine instance.

```
$ vi /etc/ocfs2/cluster.conf
```

Copy the updated [/etc/ocfs2/cluster.conf](#) file to all other nodes or virtual machine instances that were originally part of the cluster.

```
$ scp /etc/ocfs2/cluster.conf root@<vm_clusterIP>:/etc/ocfs2/
```

- e. Perform the next *three* commands on *all* virtual machines in the cluster.

Ping each node or virtual machine cluster IP address from each virtual machine in the cluster. Verify that the ping succeeds, then put the cluster back online.

```
$ ping <vm1_cluster_ip...vmN_cluster_ip>
$ /sbin/o2cb.init start
```

Verify that the cluster is back online, the heartbeat is set to `active`, and, if the cluster is using global heartbeat, that the `UID` of the device being used is the one listed in the output of the `mountd.ocfs2 -d` command above.

```
$ /sbin/o2cb.init status
```

2. For OCFS2, in Oracle Cloud Infrastructure, mount the data disk on the virtual machine instances in the cluster.

For each virtual machine instance in the cluster, do the following:

- a. Check the `/etc/fstab` to verify that the correct device is used to mount the shared block volumes (see the **Export Summary** above).
- b. Mount the cluster file systems:

```
$ mount -d
$ df
```

Verify that the shared block volumes are mounted on the cluster file system, and that the files created in Oracle VM still exist, intact, and are the same on all cluster nodes.

Once these steps are completed, the OCFS2 disks have been successfully exported from Oracle VM to Oracle Cloud Infrastructure and re-attached.

Accessing the Exported Virtual Machine Serial Console

After exporting a virtual machine with the Oracle VM Exporter Appliance, in some cases you must modify the exported virtual machine's GRUB bootloader to access the serial console.

For Oracle Linux 7 or Oracle Linux 8, which include GRUB2, do the following:

1. Update the `/etc/default/grub` file to include the following:

```
GRUB_TIMEOUT=5
GRUB_DISTRIBUTOR="$(sed 's, release .*$, ,g' /etc/system-release)"
GRUB_DEFAULT=saved
GRUB_DISABLE_SUBMENU=true
GRUB_TERMINAL_OUTPUT="console"
GRUB_TERMINAL="serial"
GRUB_SERIAL_COMMAND="serial --speed=9600 --unit=0 --word=8 --parity=no
--stop=1"
GRUB_CMDLINE_LINUX="resume=/dev/mapper/ol-swap rd.lvm.lv=ol/root
rd.lvm.lv=ol/swap console=ttyS0,9600n8 console=tty0"
GRUB_DISABLE_RECOVERY="true"
GRUB_ENABLE_BLSCFG=true
```

2. Regenerate the `grub.cfg` file by running the command

```
$ grub2-mkconfig -o /boot/grub2/grub.cfg
```

3. Reboot the exported virtual machine to connect it to the serial console.

For information about virtual machine serial console access in Oracle Linux 6, which shipped with GRUB, see My Oracle Support (MOS) article 1505124.1 at <http://metalink.oracle.com>.

For more information about virtual machine issues, see <https://docs.oracle.com/en/virtualization/oracle-vm/3.4/admin/vmadm-tshoot-vmachines.html>

Resuming a Failed or Aborted Export Operation

The export operation using the Oracle VM Exporter Appliance is a lengthy process and is tracked in the virtual machine Jobs tab like any other operation. You can resume a failed or aborted export operation attempted by the Oracle VM Exporter Appliance.



Note

When resuming an export operation, you should not change these Oracle Cloud Infrastructure parameters:

- Tenancy
- Region
- Instance Name
- Storage-related Compartments

To resume an export operation that has failed or been aborted:

1. Make sure you select the virtual machine that has failed or been aborted.



Note

If the previous export failure was due to a quota limit, a custom image for the virtual machine might exist, depending on when the quota limit was reached. If you delete this custom image, you cannot resume the export operation. However, the custom image is deleted automatically after a successful export operation.

2. Click on the **Export to OCI** icon from the **Virtual Machine Perspective** or right-click the highlighted virtual machine to export, then choose **Export to OCI**.

The **Exporter Appliance** dialog displays.

3. Click **Next**.

The **Failed** or **Aborted** messages display.

- For a **Failed** export operation, a **Retry/Resume** window displays the following information:

```
Previous export attempt of VM <vm-name> failed while
<previous-status-from-returned-data>.
Message: <message-text>
Continuing here will retry from the failed step and resume export operation.
Any changes to Instance configuration will be applied for remainder of the steps.
Changes that pertain to previously completed steps will be ignored.
To discard progress and restart export from beginning, check the checkbox below.

[ ] Discard state and restart export from beginning
```

- Check the **Discard** option to start the process from the beginning and then click **Continue**.

From the **Delete Saved Export?** pop-up window confirm that you want to delete the saved export information by answering **Are you sure you want to discard current progress and restart export from beginning?**

Click **No** to return to the **Retry/Resume** window.

Click **Yes** to delete the export information and advance to the **OCI Information** step to enter new information for the export.

- Do **NOT** check the **Discard** option to start the process from the point of failure and then click **Continue**.



Note

The wizard takes you to the **OCI Information** step where the previous entries from the failed export have been saved and filled in. You still have the option to make some modifications.

- For an **Aborted** export operation, the **Abort in Progress** window or the **Retry/Resume** window opens and displays the following information:

- **Abort in Progress**

```
A previous export operation for virtual machine <vm-name> is being
aborted in the backend.
It can take some time to fully abort. A new export operation cannot be started until
the previous export is fully aborted.
Please try again later.
```

Click **OK** to dismiss this message.

- **Retry/Resume**

```
Message: VM export aborted.
Continuing here will retry from the failed step and resume export operation.
Any changes to Instance configuration will be applied for remainder of the steps.
Changes that pertain to previously completed steps will be ignored.
To discard progress and restart export from beginning, check the checkbox below.

[ ] Discard state and restart export from beginning
```

- Check the **Discard** option to start the process from the beginning and then click **Continue**.

From the **Delete Saved Export?** pop-up window confirm that you want to delete the saved export information by answering **Are you sure you want to discard current progress and restart export from beginning?**

Click **No** to return to the **Retry/Resume** window.

Click **Yes** to delete the export information and advance to the **OCI Information** step to enter new information for the export.

- Do **NOT** check the **Discard** option to start the process from the point where it aborted and then click **Continue**.

**Note**

The wizard takes you to the **OCI Information** wizard step where the previous entries from the failed export have been saved and filled in throughout the wizard dialog steps. You still have the option to make modifications.

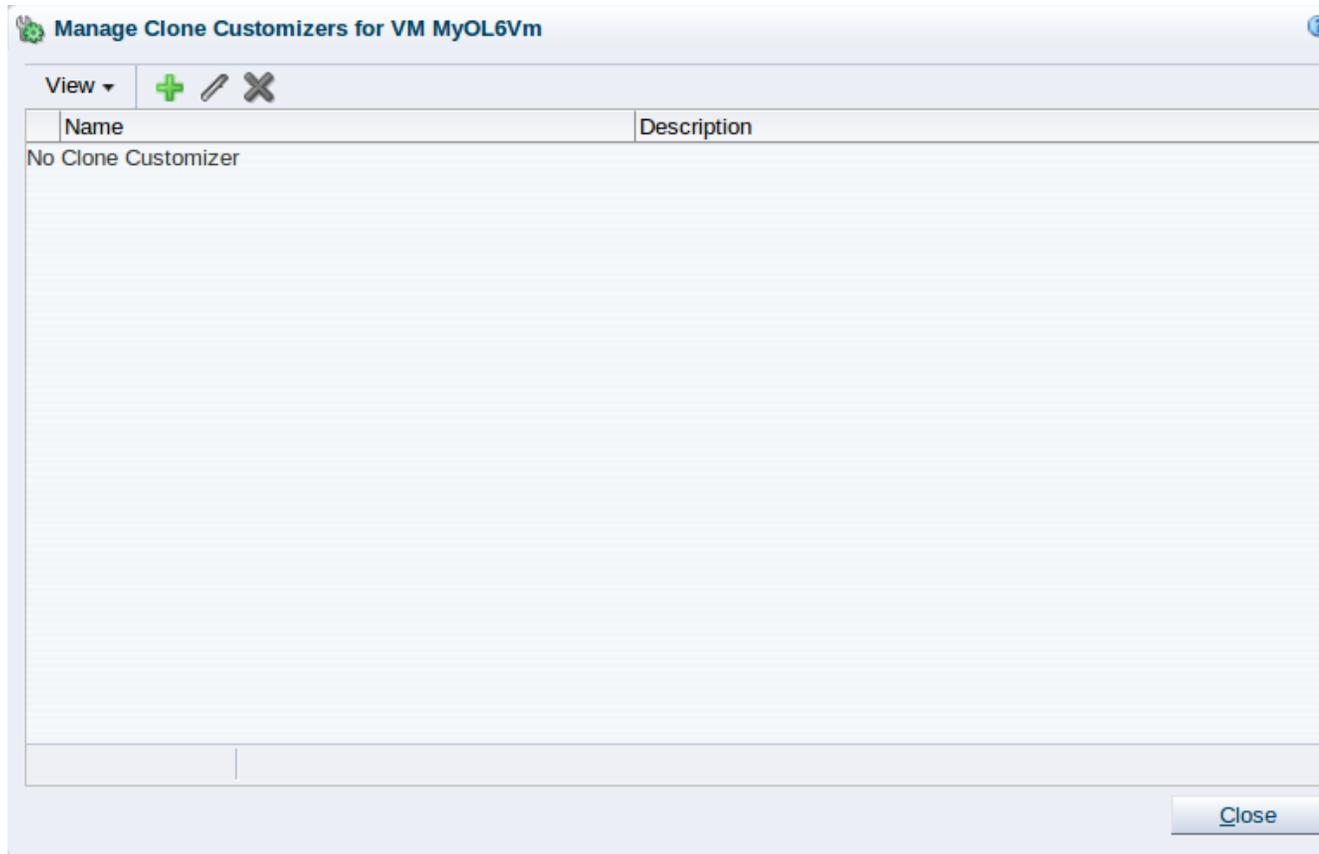
3.4.3.14 Manage Clone Customizers

Cloning a virtual machine or template means making a copy of it, so that you can create multiple virtual machines or templates from the original. You can create a clone customizer to set up the clone parameters, such as networking, and the virtual disk, and ISO resources. A clone customizer is also used when moving a virtual machine or template.

Create a Clone Customizer

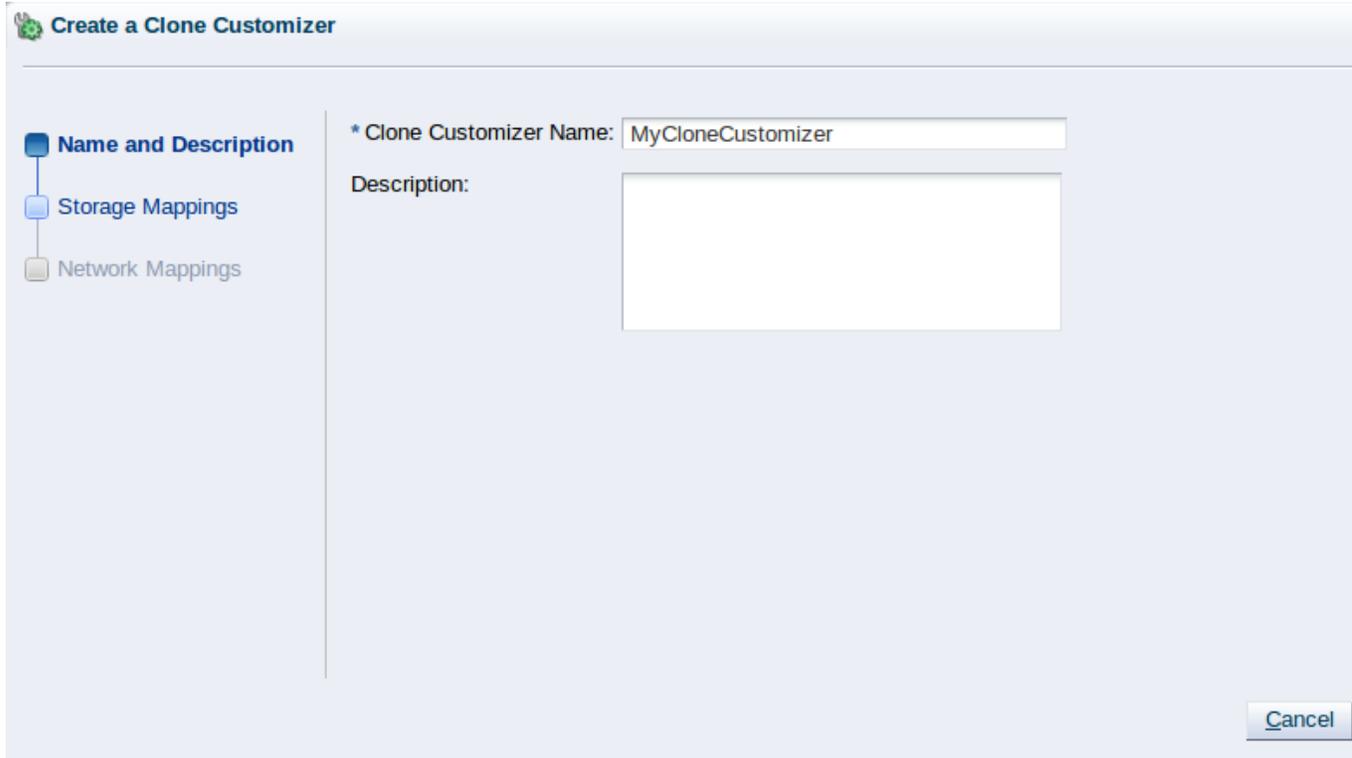
To create a clone customizer:

1. Select the virtual machine or template and display the **Manage Clone Customizers for (Virtual Machine or Template)** dialog box by:
 - **Virtual Machine:** Click the **Servers and VMs** tab. Select the server pool on which the virtual machine resides in the navigation tree. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to clone in the management pane, and click **Manage Clone Customizers...** .
 - **Virtual Machine Template:** Click the **Repositories** tab. In the navigation tree, select the repository in which the template resides, then **VM Templates**. Select the template in the management pane and click **Manage Clone Customizers** .



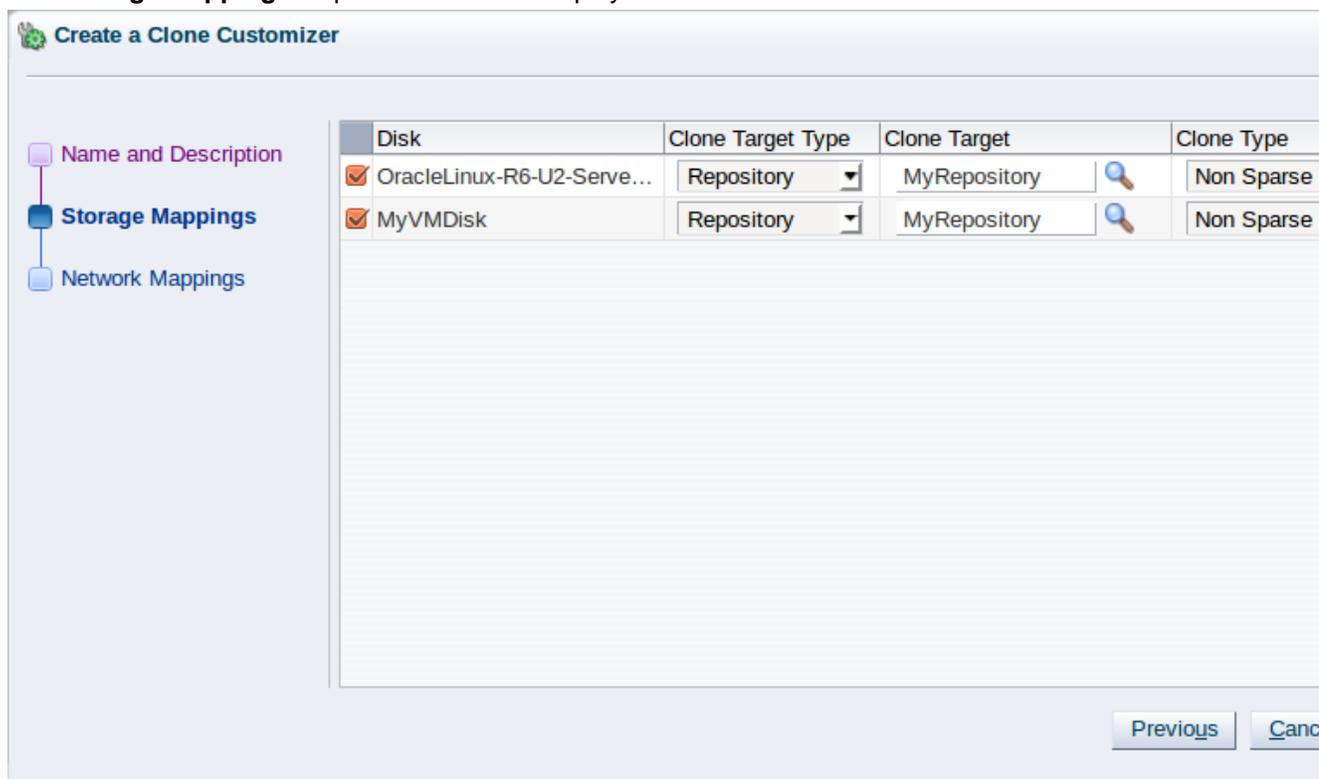
2. Select **Create Clone Customizer...** + .

3. The **Create a Clone Customizer** wizard is displayed.



In the **Name and Description** step of the wizard, enter a **Name** and **Description** for the clone customizer, and click **Next**.

4. The **Storage Mappings** step of the wizard is displayed.



Select the following storage mappings:

- **Disk:** The disks to include in the clone.
- **Clone Target Type:** The type of storage location where the disk is to be created, either a **Repository** or a **Physical Disk**.
- **Clone Target:** The location on the storage type where the disk is to be created.
- **Clone Type:** Whether to use a sparse or non-sparse files for the disk.

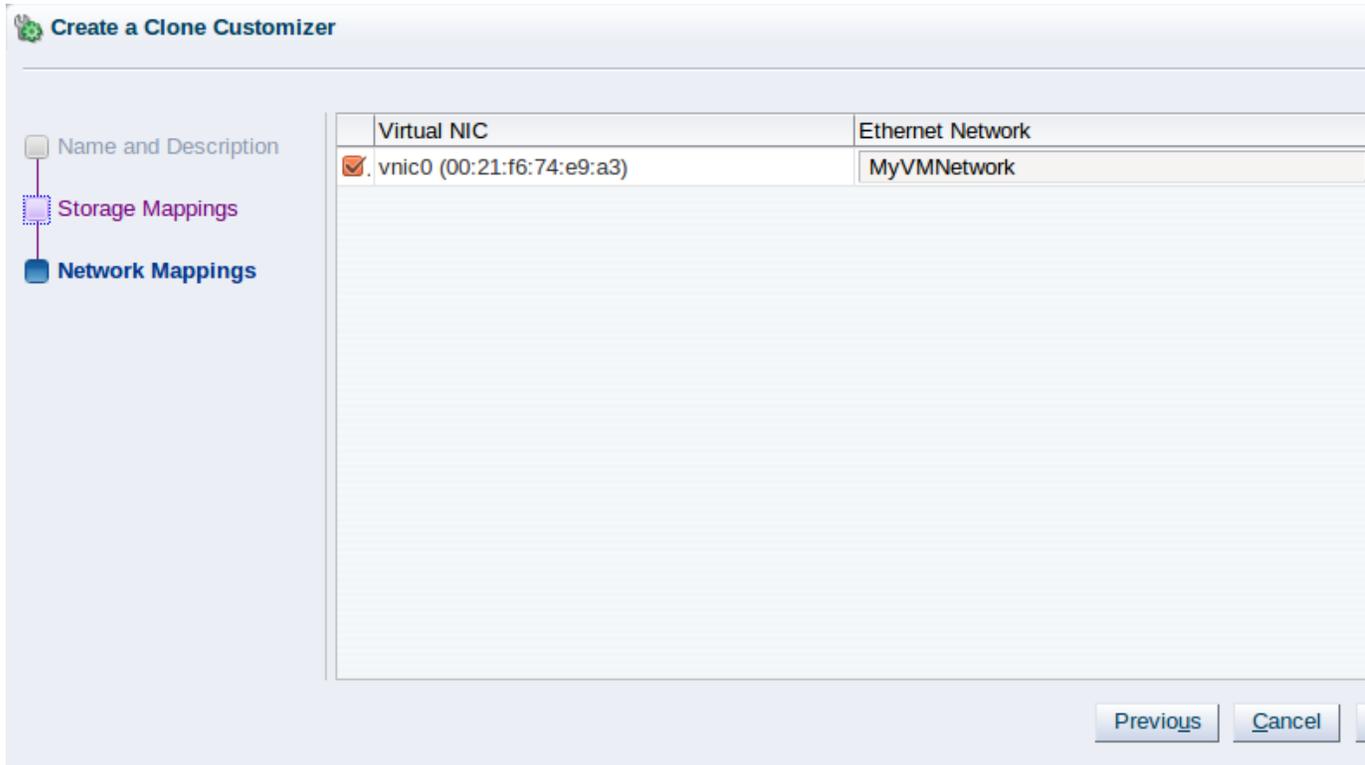


Caution

When sparse virtual disk space allocation is used, the available space in a repository can be over-subscribed. Sparse allocation is useful to increase virtual machine density. However, errors occur if the space allocated to a storage repository becomes exhausted, so the administrator must carefully monitor disk space.

Click **Next**.

5. The **Network Mappings** step of the wizard is displayed.



Select the **Virtual NICs** to include in the clone customizer, and the **Ethernet Network** to which they should belong.



Note

The network configuration is not changed when moving a virtual machine or template. It is only used when cloning a virtual machine or template.

Click **Finish**.

The clone customizer is now available to use to create a virtual machine, or template. See [Section 4.7.1.4, “Clone a Virtual Machine or Template”](#) for information on using the clone customizer to create a virtual machine or template.

Edit a Clone Customizer

To edit a clone customizer:

1. Select the object to which the clone customizer belongs, either a virtual machine, or a virtual machine template. Click **Manage Clone Customizers...** .
2. The **Manage Clone Customizers for (VM or Template)** dialog box is displayed. Select the clone customizer to edit and click **Edit Clone Customizer...** .
3. The **Edit Clone Customizer** dialog box is displayed. Edit the clone customizer.

Click **OK**. The changes to the clone customizer are saved.

Delete a Clone Customizer

To delete a clone customizer:

1. Select the object to which the clone customizer belongs, either a virtual machine, or a virtual machine template. Click **Manage Clone Customizers...** .
2. The **Manage Clone Customizers for (VM or Template)** dialog box is displayed. Select the clone customizer to delete and click **Delete Clone Customizer** .
3. A dialog box is displayed to confirm you want to delete the clone customizer. Confirm you want to delete the clone customizer and click **OK**. The clone customizer is deleted.

3.4.3.15 Send VM Messages

You can select one or more virtual machines, Oracle VM Servers or server pools, to select which running virtual machines are populated in the dialog box used to send messages to virtual machines.

To send a virtual machine a message you must have first installed the Oracle VM Guest Additions in the virtual machine. For information on installing the Oracle VM Guest Additions, and a more detailed description of the virtual machine messaging mechanism and its uses, see the [Oracle VM Administrator's Guide](#).

To send messages to virtual machines:

1. Click the **Servers and VMs** tab.
2. Determine the grouping of virtual machines that you wish to send a message to:
 - i. If you wish to send a message to virtual machines distributed across one or more server pools, click on the **Server Pools** folder in the navigation pane. Select **Server Pools** from the **Perspective** drop-down list. Select one or more server pools in the management pane.
 - ii. If you wish to send a message to virtual machines distributed across one or more servers in a particular server pool, expand the **Server Pools** folder in the navigation pane and select the server pool where the servers reside. Select **Servers** from the **Perspective** drop-down list. Select one or more servers in the management pane.
 - iii. If you wish to send a message to one or more virtual machines on a particular server, expand the **Server Pools** folder in the navigation pane and select the server pool where the servers reside. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane.
3. Click **Send VM Messages...**  in the perspective toolbar.

The **Send Messages to Virtual Machines** dialog box is displayed.

Send Messages to Virtual Machines

Messages Virtual Machines

View   

Log	Hide Message	Key	Message
Yes	No	com.oracle.linux.network.device.0	eth0
Yes	No	com.oracle.linux.network.onboot.0	yes
Yes	No	com.oracle.linux.network.bootpro...	dhcp
Yes	No	com.oracle.linux.root-password	v!rtu4l

Cancel OK

4. To create a message, click **Create Message...**  in the perspective toolbar to display the **Create VM Message** dialog box.



+ Create VM Message

* Key:

Log Message

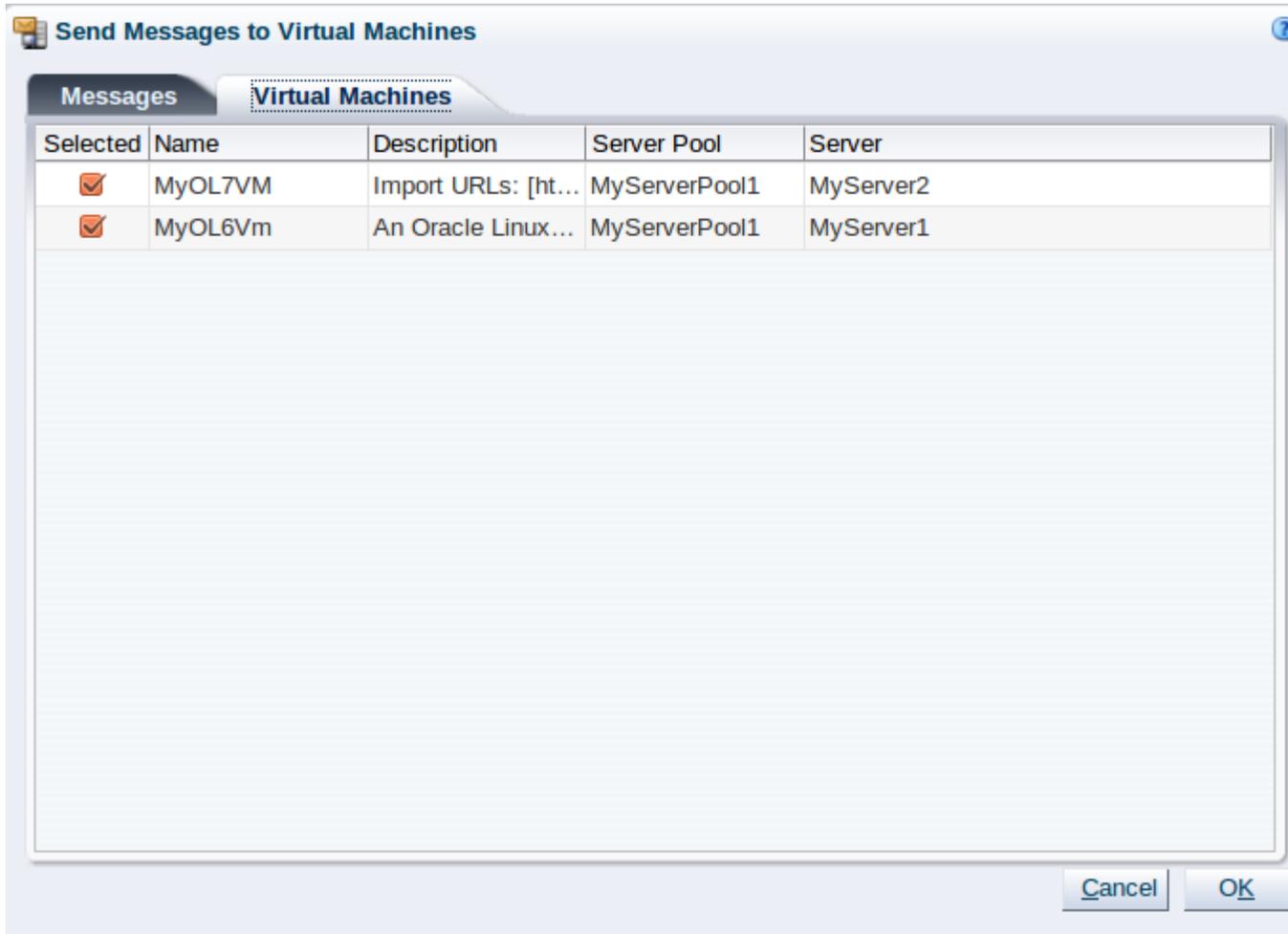
Hide Message

* Message:

Enter the message key value pair in the **Key** and **Message** fields. Check the **Log Message** field to retain a log of the message. Check the **Hide Message** field to hide the message of the key/value pair in the user interface. Click **OK** to save the message and return to the **Send Messages to Virtual Machines** dialog box.

5. To edit a message, select the message and click **Edit...**  in the dialog box toolbar. To delete a message, select it and click **Delete**  in the dialog box toolbar.

6. Select the **Virtual Machines** tab to select which running virtual machines are to receive the messages.



Click **OK** to send the messages to the virtual machines.

3.4.3.16 View Virtual Machine Configuration File

You can view the content of a virtual machine configuration file. The content is not editable but you can view and copy the text according to your needs.

To view a virtual machine configuration file:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machines reside in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to which the configuration file belongs. Click **VM Config File Content...** .
4. The **VM Config File Content** dialog box is displayed with the content of the virtual machine configuration file. You can view and copy the text according to your needs.
5. Click **OK** to close the dialog.

3.4.3.17 Display VM Hierarchy Viewer

You can generate a graphical report on a virtual machine. For more information about object reporting, see [Section 7.1, “Reports”](#).

To generate a graphical report on a virtual machine:

1. Select a server pool in the **Server Pools** folder in the navigation pane.
2. Select the **Virtual Machines** perspective in the management pane.
3. Select a virtual machine in the management pane table.
4. Click  **Display VM Hierarchy Viewer** in the management pane toolbar.

The **VM Hierarchy Viewer** window is displayed. This window contains some extra controls to manipulate the report display. These controls are described in the following table.

Table 3.8 Virtual machine graphical report controls

Control	Purpose
	Reposition the hierarchy viewer component within the viewport.
	Zoom a hierarchy viewer component so that all nodes are visible within the viewport.
	Zoom the hierarchy viewer component.
	Hide or show the control panel.
	Change the layout of the hierarchy viewer component from the layout you defined to one of the layout options.

5. To create an XML report of the graphical report, click **Generate Report**. The report is generated and sent to the browser.

3.4.3.18 View Virtual Machine Events

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 3.9 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** .
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** , or click **Acknowledge All**  to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** , or click **Acknowledge All**  to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers, SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** , or click **Acknowledge All**  to clear all user acknowledgeable errors.

3.4.3.19 Generate Report

You can generate an XML report on one or more virtual machines. For more information about object reporting, see [Section 7.1, "Reports"](#).

To generate a report on virtual machines:

1. Select a server pool in the **Server Pools** folder in the navigation pane.
2. Select the **Virtual Machines** perspective in the management pane.
3. Select one or more virtual machines in the management pane table.
4. Click  **Generate Report** in the management pane toolbar.
5. The report is generated and sent to the browser.

3.4.4 Anti-Affinity Groups Perspective

The Anti-Affinity Groups perspective lists the different anti-affinity groups that have been created and the virtual machines that belong to them.

Anti-affinity groups specify that specific [virtual machines](#) should never run on the same Oracle VM Server. An anti-affinity group applies to all the Oracle VM Servers in a server pool. You may want to set up anti-

affinity groups when you want to build-in redundancy or load balancing of specific applications in your environment.

If you add a virtual machine to an anti-affinity group that already has a virtual machine in the group running on the same Oracle VM Server, the job is aborted and the virtual machine is not added to the group. To add the virtual machine to the anti-affinity group, migrate it to another Oracle VM Server, then add it to the group.

The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the anti-affinity group.
- **Description:** The description that has been configured for the anti-affinity group.
- **Virtual Machines:** A comma-separated list of the virtual machines that belong to the anti-affinity group.

This perspective includes a toolbar that consists of the following options:

Table 3.10 Anti-Affinity Groups Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create New Anti-Affinity Group...		Displays the Create Anti-Affinity Group wizard. Use this option to create a new anti-affinity group.
Edit Anti-Affinity Group...		Displays the Edit Create Anti-Affinity Group dialog box. Use this option to change the configuration for an anti-affinity group.
Delete Anti-Affinity Group		Displays the Delete Confirmation dialog box. Use this option to delete the selected anti-affinity group..
Help		Displays context sensitive help.

3.4.4.1 Create Anti-Affinity Group

To create an anti-affinity group:

1. Click the **Servers and VMs** tab. Select a server pool in the navigation pane.
2. From the **Perspective** field in the management pane, select **Anti-Affinity Group** from the drop-down list. Click **Create New Anti-Affinity Group...**  in the perspective toolbar.
3. The **Create Anti-Affinity Group** wizard is displayed.

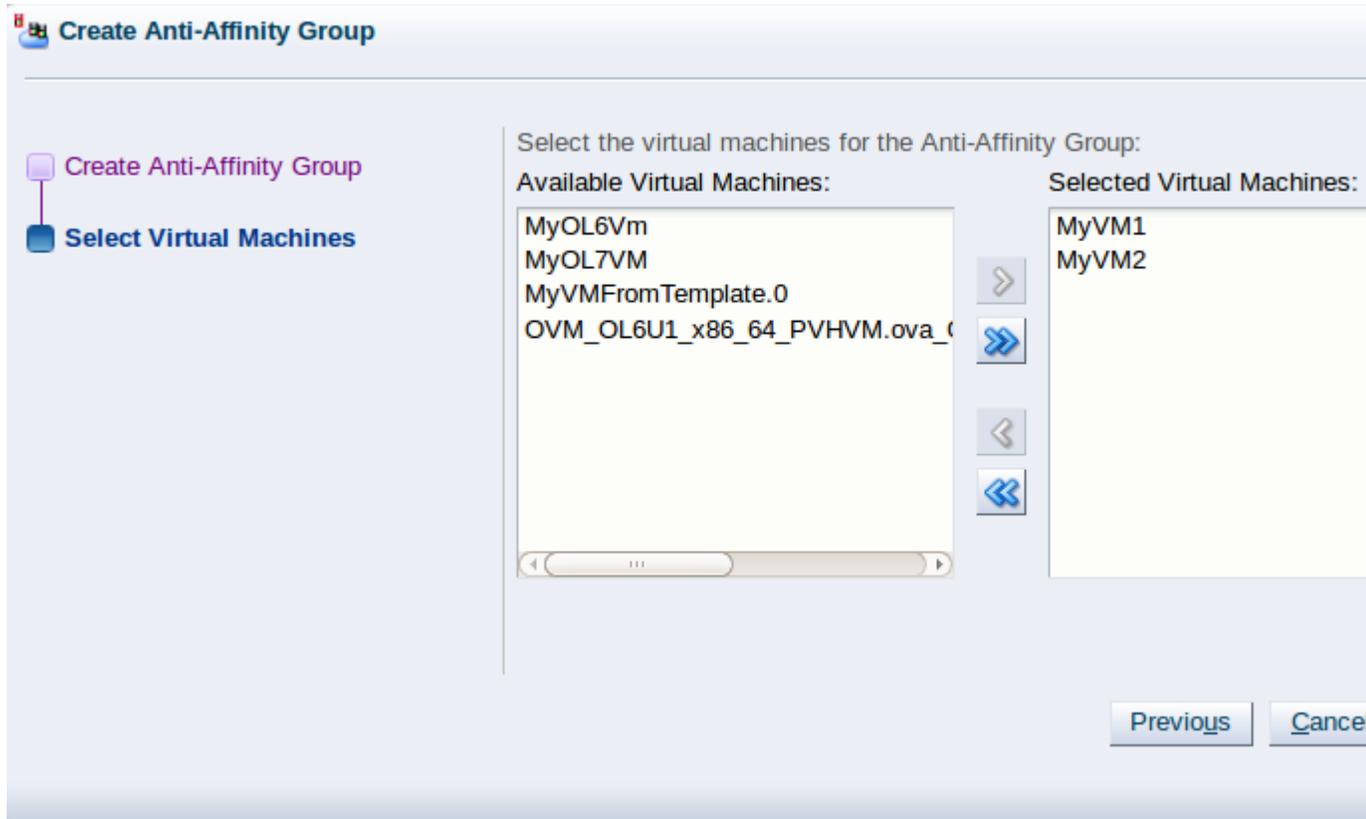
The screenshot shows a wizard window titled "Create Anti-Affinity Group". On the left, there is a navigation pane with two steps: "Create Anti-Affinity Group" (which is currently selected) and "Select Virtual Machines". The main area of the wizard is divided into two sections. The top section is labeled "* Anti-Affinity Group Name:" and contains a text input field with the value "MyAAGroup". The bottom section is labeled "Description:" and contains a text area with the text "An anti-affinity group to stop virtual machines running on the same Oracle VM server." There is a small "Next" button visible in the bottom right corner of the wizard.

Enter the anti-affinity group information:

- **Anti-Affinity Group Name:** Enter the name of the anti-affinity group.
- **Description:** A description of the anti-affinity group.

Click **Next**.

4. The **Select Virtual Machines** step of the **Create Anti-Affinity Group** wizard is displayed.



Select the virtual machines to include in the anti-affinity group and move them from the **Available Virtual Machines** column to the **Selected Virtual Machines** column.

Click **Finish**.

The anti-affinity group is created and listed in the **Anti-Affinity Group** table in the management pane.

3.4.4.2 Edit Anti-Affinity Group

To edit an anti-affinity group:

1. In the **Servers and VMs** tab, select the server pool to which the anti-affinity group belongs in the navigation pane.
2. From the **Perspective** field in the management pane, select **Anti-Affinity Group** from the drop-down list. Select the anti-affinity group in the **Anti-Affinity Group** table and click **Edit Anti-Affinity Group...** in the perspective toolbar.
3. The **Edit Anti-Affinity Group** dialog box is displayed. Edit the anti-affinity group as required. To edit the virtual machines in the anti-affinity group, click the **Virtual Machines** tab. For more information on the tabs in this wizard, see [Section 3.4.4.1, "Create Anti-Affinity Group"](#).

Click **OK**.

The anti-affinity group is edited and displayed in the **Anti-Affinity Group** table in the management pane.

3.4.4.3 Delete Anti-Affinity Group

To delete an anti-affinity group:

1. In the **Servers and VMs** tab, select the server pool to which the anti-affinity group belongs in the navigation pane.
2. From the **Perspective** field in the management pane, select **Anti-Affinity Group** from the drop-down list. Select the anti-affinity group in the **Anti-Affinity Group** table and click **Delete Anti-Affinity Group... X** in the perspective toolbar.
3. A confirmation dialog box is displayed. Click **OK** to delete the anti-affinity group.

The anti-affinity group is deleted.

3.4.5 Policies Perspective

The Policies perspective provides information about the policies that are currently configured for a server pool. These policies define how virtual machines are managed across the server pool depending on power or resource consumption. Policies also apply to network availability and are applied here as well.

The following information is available in this perspective:

- **Policy Control**
 - **Policy Type:** If a policy is set, this field indicates the type of policy applied (either DRS or DPM).
 - **Time Period (minutes):** The number of minutes between policy job runs.
- **Server Processors**
 - **Enable:** Whether or not CPU performance and utilization are logged for policy enactment.
 - **Threshold (%):** The maximum amount of CPU percentage usage allowed before the policy must be enacted. You can enter a number between 25 and 99.
- **Servers**
 - **Servers:** A comma-separated list of the servers to which the policy applies.
- **Networks:** Displays a table of networks and how the policy applies. The following columns are included in the table:
 - **Network:** The name of the network that the policy applies to.
 - **Enable:** Whether the policy is enabled on the network.
 - **Threshold (%):** The percentage threshold of network usage that triggers the policy. You can enter a number between 25 and 99.

This perspective includes a toolbar that consists of the following options:

Table 3.11 Policies Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Edit...		Displays the Configure DRS/DPM wizard. Use this option to set or edit resource policies for the server pool.

Toolbar Icon Option	Icon	Description
		Select a server pool in the Servers and VMs tab to enable this option.
Help		Displays context sensitive help.

3.4.5.1 Define or Edit Server Pool Policies

It is possible to define server pool policies to improve power and resource usage across the servers within your server pool. The two policies you can set are for:

- [Distributed Resource Scheduling \(DRS\)](#): Optimizes virtual machine resource utilization in a server pool.
- [Distributed Power Management \(DPM\)](#): Increases the consolidation ratio to use fewer Oracle VM Servers during periods of relative low resource utilization.

The policy is also able to be set for networks used in a server pool. You can set the server pool to use either [DRS](#), or [DPM](#), but not both at the same time.

See [What are Server Pool Policies?](#) in the [Oracle VM Concepts Guide](#) for more information on these server pool policies.

To set a server pool policy:

1. Click the **Servers and VMs** tab.
2. Select the server pool in the **Server Pools** folder in the navigation pane.
3. From the **Perspective** field in the management pane, select **Policies** from the drop-down list. Click **Edit**  in the toolbar. The **Configure Policy** step of the **Configure DRS/DPM** wizard is displayed.

Configure DRS/DPM

Configure Policy

Policy Control

Policy Type:

Time Period (Minutes):

Server Processors

Enable:

Threshold (%):

Servers

Available Server(s)

Selected Server(s)

MyServer1
MyServer2
MyServer3

Cancel

Enter the server pool policy information:

- **Policy Control:**
 - **Policy Type:** You can choose from either DRS, DPM, or none. You cannot set both DRS and DPM to be active at the same time.
 - **Time Period (Minutes):** The time period for the policy job to run. This sets the policy job to run every n minutes, for example, 10 sets the policy job to run every 10 minutes. You can enter a number between 2 and 60.
- **Server CPU:**
 - **Enable:** Set whether to enable or disable logging of CPU performance and utilization.
 - **Threshold (%):** The maximum amount of CPU percentage usage allowed before the policy must be enacted. You can enter a number between 25 and 99.



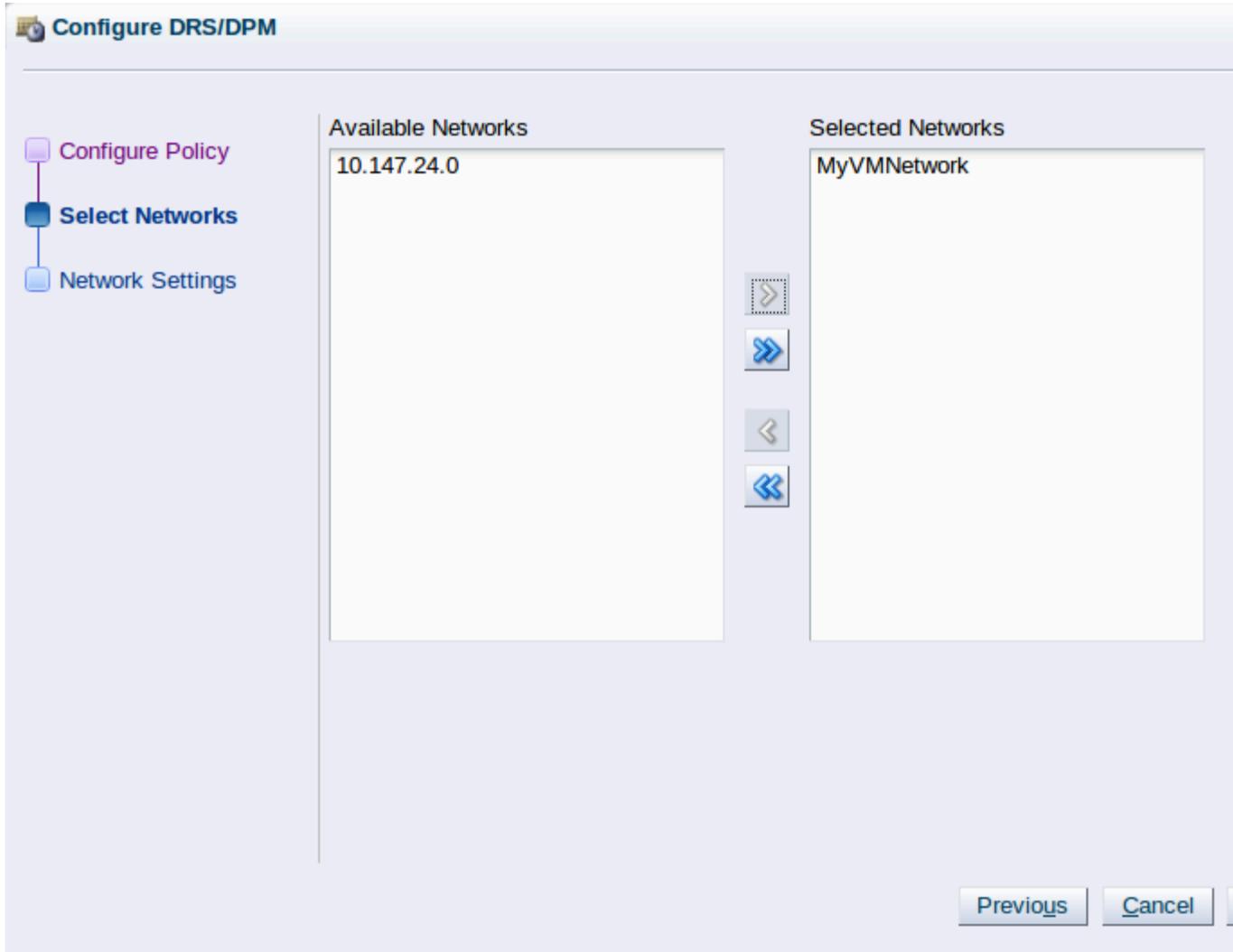
Note

The **Enable** check box must be selected before a value can be specified for the **Threshold (%)** field.

- **Servers:** Select the Oracle VM Servers for which the policy is to be enabled by moving the selected Oracle VM Servers from the **Available Servers** to the **Selected Servers** shuttle box.

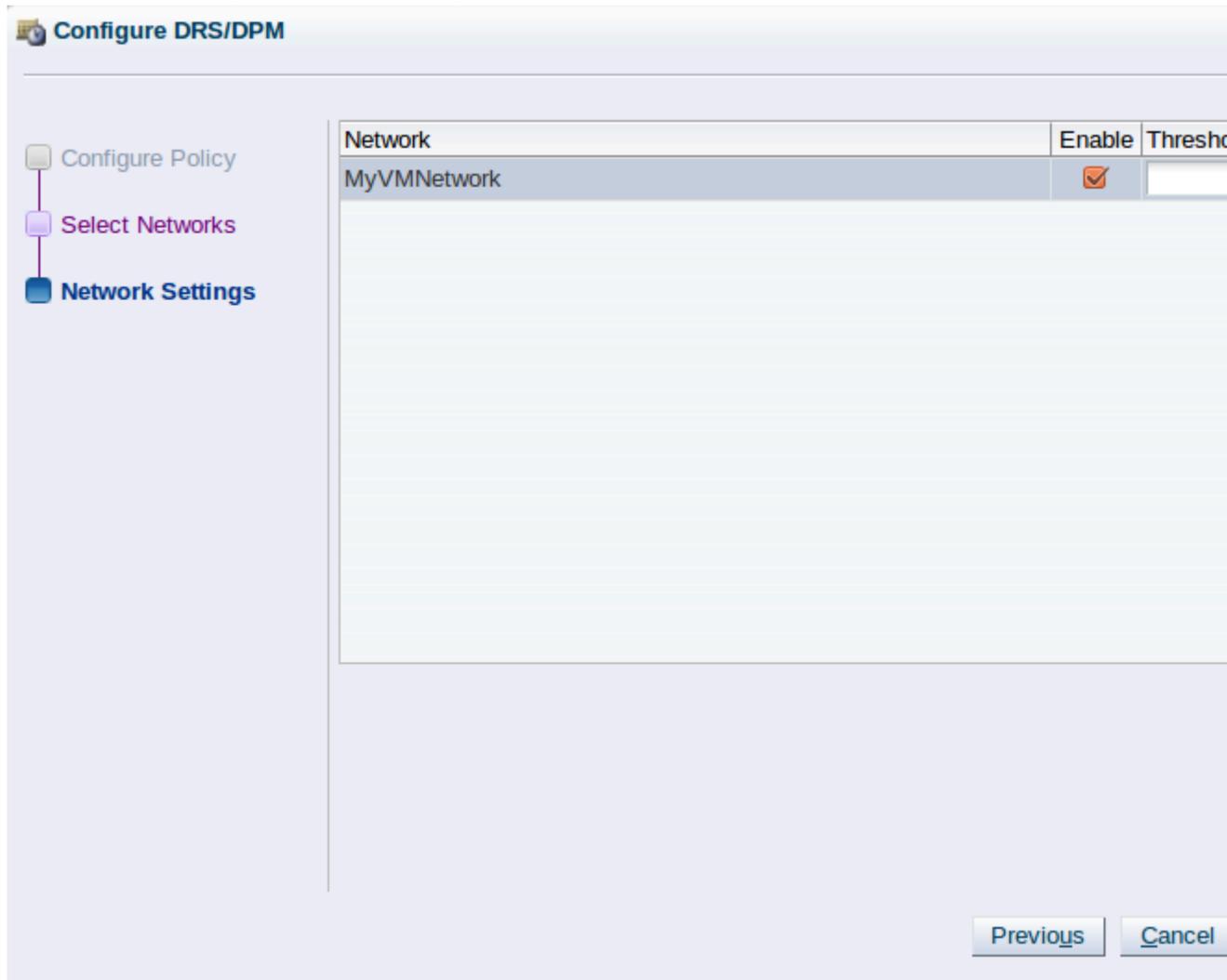
Click **Next**.

4. The **Select Networks** step of the **Configure DRS/DPM** wizard is displayed.



Select the networks to be included in the policy. Click **Next**.

5. The **Network Settings** step of the **Configure DRS/DPM** wizard is displayed.



Select whether to enable the policy on the network, and select the threshold at which the policy is to be enacted for the network. Click **Finish**.

The policy is set for the server pool.

3.4.6 Server Update Repositories Perspective

The **Server Update Repositories** perspective provides the facilities to add, edit and delete server update (YUM or IPS) repositories for a server pool. These repositories override any repositories for Oracle VM Servers set up in the **Server Updates Group** subtab of the **Reports and Resources** tab (see [Section 7.3, “Server Update Groups”](#)). Before you can create a server update group for a server pool, make sure the server pool allows the global repositories to be overridden using the **Override Global Server Update Group** check box in the **Edit Server Pool** dialog box. See [Section 3.3.1.5, “Edit Server Pool”](#) for information on editing a server pool.

These options can be accessed using the toolbar at the top of the tab when you click on an item within the management pane table.

The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the repository.
- **Repository Name:** The unique name that has been configured for the repository.
- **Enabled:** Whether the repository is enabled.
- **Package Signature Type:** The type of verification signature for the repository.
- **URL:** The URL for the repository.
- **Description:** The description that has been configured for the repository.

This perspective includes a toolbar that consists of the following options:

Table 3.12 Server Update Repositories Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create New Server Update Repository...		Displays the Create Server Update Repository dialog box. Use this option to create a new server update repository.
Edit Server Update Repository...		Displays the Edit Server Update Repository dialog box. Use this option to edit an existing server update repository.
Delete Server Update Repository		Displays the Delete Confirmation dialog box. Use this option to delete the selected server update repository.
Help		Displays context sensitive help.

3.4.6.1 Create Server Update Repository

To create a server update repository:

1. Click the **Servers and VMs** tab. Select a server pool in the navigation pane.
2. From the **Perspective** field in the management pane, select **Server Update Repositories** from the drop-down list.
3. Click **Create New Server Update Repository**  in the toolbar to display the **Create Server Update Repository** dialog box. Enter or select the fields as described in [Section 7.3.1, "Create New Server Update Repository"](#) to create the server update repository. Click **OK**.

The server update repository is created.

3.4.6.2 Edit Server Update Repository

To edit a server update repository:

1. Click the **Servers and VMs** tab. Select a server pool in the navigation pane.
2. From the **Perspective** field in the management pane, select **Server Update Repositories** from the drop-down list.
3. Select a repository from the table in the management pane.
4. Click **Edit Server Update Repository**  in the toolbar to display the **Edit Server Update Repository** dialog box. Enter or select the fields as described in [Section 7.3.1, "Create New Server Update Repository"](#) to edit the server update repository. Click **OK**.

The server update repository is updated.

3.4.6.3 Delete Server Update Repository

To delete a server update repository:

1. Click the **Servers and VMs** tab. Select a server pool in the navigation pane.
2. From the **Perspective** field in the management pane, select **Server Update Repositories** from the drop-down list.
3. Select a repository from the table in the management pane.
4. Click **Delete Server Update Repository** .
5. A confirmation dialog is displayed. Click **OK** to delete the repository.

The server update repository is deleted.

3.4.7 Events Perspective

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 3.13 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...**  .
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

3.5 Server Item

Each server configured within the environment is displayed as a server navigation item belonging to either a particular server pool navigation item, or to the Unassigned Servers folder. These server navigation items are labelled according to the server name that is configured within Oracle VM Manager. The structure of the navigation provided in the navigation tree is discussed in more detail in [Section 3.2, “Summary”](#).

Clicking on a server navigation item in the navigation tree allows you to access different perspectives in the management pane. Each perspective provides its own view of the server within Oracle VM Manager. Most of the perspectives also include separate perspective toolbars that enable you to perform various configuration or management tasks specific to the view currently displayed within the management pane. A server navigation item offers the following perspectives within the management pane:

- [Info Perspective](#)
- [Virtual Machines Perspective](#)
- [Ethernet Ports Perspective](#)
- [Bond Ports Perspective](#)
- [CPUs Perspective](#)
- [Physical Disks Perspective](#)
- [Storage Initiators Perspective](#)
- [Control Domains Perspective](#)
- [Repository Exports Perspective](#)
- [Events Perspective](#)

3.5.1 Info Perspective

The Info perspective is common to many elements within the Oracle VM Manager Web Interface. This perspective always shows the individually configured parameters for an item that is currently selected in the navigation tree. Some of these configured parameters may be automatically populated through a discovery process, while others may have been configured manually during the creation of the object that is selected.

The Info perspective or dialog contains a perspective toolbar with the following options:

Table 3.14 Info Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Help		Displays context sensitive help.

This perspective includes the following information:

- **Server Name:** The configured name for the server.
- **Host Name:** The hostname of the server on the management network channel.
- **Status:** The running status of the server. If the status is `UNKNOWN`, this may be because the server is not owned by the instance of Oracle VM Manager. To take ownership of an Oracle VM Server, see [Section 3.4.2.2, "Edit Server"](#).
- **Processors:** The number of processors on the server.
- **Ethernet Ports:** The number of Ethernet ports detected on the server.
- **Maintenance Mode:** Whether or not the server is configured in maintenance mode.
- **Inbound Migration Locked:** Whether or not the server allows additional virtual machines to run.
- **Ownership:** Whether or not the server is owned by the current Oracle VM Manager instance.
- **Server Pool:** The name of the server pool that the server belongs to.
- **Roles:** Whether the server has the Utility Server role, VM Server role, or both.
- **NTP Servers:** A list of NTP servers that are configured for the server.
- **Description:** The description provided for the server when it was created or edited.
- **IP Address:** The configured IP address for the server.
- **Processor Speed (GHz):** The speed of the processors on the server.
- **Memory (GiB):** The memory on the server in [GiB](#).
- **Bond Ports:** The number of bond ports that are configured on the server.
- **CPU Compatibility Group:** The name of the server processor compatibility group that the server belongs to.
- **Processor Type:** The processor type used for the server.
- **Hypervisor Type:** The hypervisor used for the server.
- **Up To Date:** Whether or not the server has the most recent update from the server update repository.
- **Version:** The version number of the Oracle VM Server software on the server.
- **Advanced:**
 - **ID:** The UUID assigned to the server by Oracle VM Manager.
 - **Manufacturer:** The manufacturer of the server reported by the server BIOS.
 - **Serial Number:** The serial number of the server reported by the server BIOS.
 - **Product Name:** The product name of the server reported by the server BIOS.
 - **Processor Family:** The processor family reported by the server BIOS.
 - **Processor Model:** The processor model reported by the server BIOS.
 - **Cache Size (KB):** The processor cache size reported by the server BIOS.
 - **BIOS Version:** The BIOS version number for the server.

- **BIOS Release Date:** The BIOS version release date for the server.
- **Sockets Filled:** The number of processor sockets that are in use on the server.
- **Manager UUID:** The UUID of the Oracle VM Manager instance that owns this server.

- **Server Abilities:**
 - **Cluster:** Whether or not the server supports clustering.
 - **Nfs:** Whether or not the server is capable of mounting NFS shares.
 - **iSCSI:** Whether or not the server is capable of mounting iSCSI LUNs.
 - **Fibre Channel:** Whether or not the server is capable of mounting Fibre Channel LUNs.
 - **HighAvailability:** Whether or not the server supports high availability for virtual machines.
 - **VMSuspend:** Whether or not the server supports suspending a virtual machine.
 - **Per VM CPUOverSubscribe:** Whether or not each virtual machine can be configured to perform CPU over-subscription.
 - **All VM CPUOverSubscribe:** Whether or not all virtual machines on the server can be configured to perform CPU over-subscription.
 - **Bondmode Active Backup:** Whether or not the server supports active backup network bonds.
 - **Bondmode Link Aggregation:** Whether or not the server supports link aggregation network bonds.
 - **Bondmode Load Balanced:** Whether or not the server supports load balancing for a network bonds.
 - **Mtu Configuration:** Whether or not MTU settings for network interfaces can be configured on the server.
 - **Local Storage Element:** Whether or not a local disk be used for storage on a server.
 - **VM Memory Alignment:** The size of the data alignment block that is used for offsetting memory requirements for each virtual machine to ensure better performance.
 - **Vnc Console:** Whether or not the server supports VNC.
 - **Serial Console:** Whether or not the server supports Serial Console.
 - **Migration Setup:** An internal facility to perform setup requirements for virtual machine migration, typically used for SPARC deployments.
 - **Vm Live Storage Migration:** Whether or not the server supports migration of virtual machines that have virtual disks located on a repository hosted on local storage.
 - **HVM Max Vnics:** The maximum number of VNICs that can be assigned to a hardware virtualized virtual machine.
 - **Server Package Update:** Whether or not the server supports package updates.
 - **PowerOn WOL:** Whether or not the server supports Wake On LAN.
 - **Repo On SharedDisk:** Whether or not the server supports a repository on a shared disk, such as iSCSI or Fibre Channel.
 - **Repo On LocalDisk:** Whether or not the server supports a repository on a local disk.
 - **ClusterFs On PhysicalDisk:** Whether or not the server is capable of creating an OCFS2 file system on a physical disk, such as an iSCSI LUN or Fibre Channel LUN.

- **VmEmptyCdrom:** Whether or not the server supports an empty virtual CDROM on a virtual machine. SPARC servers do not support an empty virtual CDROM.
- **Vm Restart Actions:** Whether or not the server supports different restart actions in the event that a virtual machine crashes.
- **Vm Live Storage Migration:** Whether or not the server supports migrating a running virtual machine and virtual disks from one local repository to another.

This perspective includes a toolbar that consists of the following options:

Table 3.15 Info Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Help		Displays context sensitive help.

3.5.2 Virtual Machines Perspective

The **Virtual Machines** perspective lists the different virtual machines that belong to either a server pool or a server or the **Unassigned Virtual Machines** folder, depending on the item selected in the navigation pane. Note that this perspective is not available for server items listed off the **Unassigned Servers** folder, since virtual machines cannot be assigned to servers that do not belong to a server pool. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the virtual machine.
- **Status:** The running status of the virtual machine.
- **Tag(s):** Any tags that have been applied to the virtual machine.
- **Event Severity:** What event severity level is currently indicated for the virtual machine.
- **Server:** The actual Oracle VM Server that the virtual machine is currently residing on.
- **Max. Memory (MB):** The maximum available memory (in megabytes) that the virtual machine is able to consume.
- **Memory (MB):** The amount of memory (in megabytes) that the virtual machine is currently consuming.
- **Max. Processors:** The number of processors that the virtual machine is allowed to make use of.
- **Processors:** The number of processors that the virtual machine is currently using.
- **Keymap:** The character keymap that has been configured for the virtual machine.
- **Operating System:** The operating system that the virtual machine is running.

Clicking on the arrow to the left of a virtual machine in the table displays a set of subtabs that show more detailed information about the virtual machine. These tabs are **Configuration**, **Networks**, and **Disks**. Click on a tab to display the information:

Configuration

- **Name:** The name that has been configured for the virtual machine.
- **Status:** The running status of the virtual machine.
- **Operating System:** The operating system type.
- **Keymap:** The character keymap that has been configured for the virtual machine.

- **Max. Processors:** The maximum number of CPUs that can be allocated.
- **Processors:** The number of CPUs that are allocated.
- **Processor Cap:** The percentage value configured for the processor cap.
- **Max. Memory (MB):** The maximum memory that can be allocated.
- **Memory (MB):** The memory that is allocated.
- **Priority:** The CPU priority allocated for the virtual machine.
- **Mouse Type:** The mouse type configured for the virtual machine.
- **Domain Type:** The hypervisor and virtual machine type configured for the virtual machine.
- **Start policy:** The start policy configured for the virtual machine.
- **High Availability:** Whether or not the High Availability flag is set for the virtual machine.
- **Repository for Configuration File:** The repository where the configuration file for the virtual machine is stored.
- **Huge Pages:** Whether or not the Huge Pages flag is set for the virtual machine.
- **Boot Order:** The configured boot order for disks attached to the virtual machine
- **Network Boot Path:** The network boot path configured for the virtual machine.
- **Restart Action On Crash:** The configured restart action in the instance that the virtual machine crashes.
- **Restart Action On Power Off:** The configured restart action in the instance that the virtual machine receives the power-off signal.
- **Restart Action On Restart:** The configured restart action in the instance that the virtual machine receives the restart signal.
- **ID:** The ID allocated by Oracle VM Manager for the virtual machine.
- **Origin:** The URL that was used to import the virtual machine or template, if it was imported.
- **Description:** The description of the virtual machine.
- **Config File Absolute Path:** The absolute path to the virtual machine configuration file.
- **Config File Mounted Path:** The mount point where the virtual machine configuration file is located on an Oracle VM Server.

Networks

- **VNIC:** The name of a VNIC configured for the virtual machine.
- **Ethernet Network:** The name of the ethernet network that the VNIC is attached to.
- **IP Addresses:** IP addresses configured for the VNIC. Note that the virtual machine must be running Oracle VM Guest Additions for this information to be populated. If no IP address is configured for this VNIC, the IP address is displayed as 0.0.0.0.

Disks

- **Slot:** The slot number for the disk.

- **Disk Type:** The type of disk that is attached.
- **Name:** The name of the disk within Oracle VM Manager.
- **Size (GiB):** The size of the disk.
- **Repository:** The repository where the disk is located.
- **Absolute Path:** The absolute path to the location of the disk.
- **Mounted Path:** The mount point where the disk is located on an Oracle VM Server.
- **Location:** The location of the disk as reported by Oracle VM Manager.

If this perspective is viewed from the **Unassigned Virtual Machines** folder, some of the toolbar icons that are usually available for this perspective are not included in the toolbar. The table below lists all of the toolbar icons that are available for this perspective and indicates the items that are not available when the perspective is viewed from the **Unassigned Virtual Machines** folder.

Table 3.16 Virtual Machines Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Import Virtual Machine...		Displays the Import Virtual Machine dialog box. Use this option to import a virtual machine into Oracle VM Manager. This option is only available for Unassigned Virtual Machines.
Edit...		Displays the Edit Virtual Machine wizard. Use this option to edit a virtual machine.
Delete		Displays the Delete Confirmation dialog box. Use this option to delete the selected virtual machines.
Start		Starts up a stopped virtual machine. Not available for Unassigned Virtual Machines.
Stop		Shuts down a virtual machine. Not available for Unassigned Virtual Machines.
Launch Console		Launches the virtual machine VNC console in an x86-based server pool, which enables access to the virtual machine. Use this option to connect to a virtual machine's console and access the virtual machine directly. Not available for virtual machines in the Unassigned Virtual Machines folder, or virtual machines in a server pool, but not assigned to an Oracle VM Server.
Launch Serial Console		Launches the virtual machine serial console, which enables access to the virtual machine. Use this option to connect to a virtual machine's serial console and access the virtual machine directly. This service is commonly used for virtual machines running in a SPARC-based server pool, but is also available for virtual machines running on x86-based server pools. Not available for Unassigned Virtual Machines.

Toolbar Icon Option	Icon	Description
Restart		Restarts a running virtual machine. Not available for Unassigned Virtual Machines.
Kill		Shuts down a running virtual machine. Not available for Unassigned Virtual Machines.
Suspend		Suspends (pauses) a running virtual machine. Not available for Unassigned Virtual Machines.
Resume		Resumes (unpauses) a suspended virtual machine. Not available for Unassigned Virtual Machines.
Migrate or Move...		Migrates a virtual machine to another Oracle VM Server, or moves the configuration and virtual disks for a virtual machine to an alternate repository.
Clone Virtual Machine...		Displays the Clone Virtual Machine dialog box. Use this option to clone a virtual machine to create another virtual machine.
Export to Virtual Appliance...		Displays the Export to Virtual Appliance dialog box. Use this option to export a virtual machine as a virtual appliance.
Export to OCI...		Displays the Export Virtual Machine(s) to OCI dialog box. Use this option to export a virtual machine to Oracle Cloud Infrastructure.
Manage Clone Customizers...		Displays the Manage Clone Customizer dialog box. The clone customizer lets you set up clone parameters, such as networking, disks and ISO resources. Use this option to create, edit or delete a clone customizer.
Send VM Messages...		Send one or more virtual machines a message. Use this option to send messages to virtual machines that have the Oracle VM Guest Additions installed. Not available for Unassigned Virtual Machines.
Display VM Config File Content...		Displays the VM Config File Content dialog box. Displays a read-only view of the configuration file for the selected virtual machine. Use this option to view the content of the virtual machine configuration file.
Display VM Hierarchy Viewer		Displays a graphical report on a virtual machine.
Display Selected VM Events...		Displays the Events dialog box. Displays events for the selected virtual machine. Use this option to view or acknowledge error events for the virtual machine.
Generate Report		Generate an XML report on one or more virtual machines.
Help		Displays context sensitive help.

3.5.2.1 Edit Virtual Machine

Editing a virtual machine to changes the virtual machine configuration. If the virtual machine is running, you cannot edit specific settings such as the mouse device type, domain type, maximum amount of memory,

maximum number of processors, restart action on crash, or huge pages support. To edit these settings, the virtual machine must be stopped so that the hypervisor can reload the virtual machine configuration when the virtual machine starts.

To edit a virtual machine:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine in the management pane, and click **Edit...**  in the management pane toolbar
4. The **Edit Virtual Machine** dialog box is displayed. Select each tab to edit the virtual machine configuration. See [Section 3.1.3, “Create Virtual Machine”](#) for the details of each tab. Click **OK** to save the changes.



Note

It is not possible to dynamically change resources such as the number or processors or allocated memory for an Oracle Solaris virtual machine without first enabling the `drd` service on the virtual machine itself. To allow for these changes, connect to the virtual machine and make sure that the `drd` service is enabled:

```
# svcadm enable -s drd
# svcs drd
```

These commands should notify you that the service is online. When you have performed these actions, you are able to use Oracle VM Manager to dynamically change the allocation of resources.



Note

It is not possible to change the number of virtual network interfaces or virtual disks for a virtual machine while the virtual machine is in a suspended state. Attempting to add or remove such a device results in an exception and an error is returned.



Note

It is not possible to remove a virtual CD-ROM from a running virtual machine. Doing so results in an exception and an error is returned. To remove virtual CD-ROMs from running virtual machines, you must first stop the virtual machine and then remove the virtual CD-ROM.

3.5.2.2 Delete Virtual Machines

When you delete a virtual machine, all the files and data associated with this virtual machine are removed from Oracle VM Manager. Before deleting a virtual machine, make sure you do not need it any longer. You can only delete a virtual machine when the virtual machine status is **Stopped** or **Error**.

To delete virtual machines:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machines reside in the navigation tree.

3. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane, and click **Delete**  in the management pane toolbar.
4. The **Delete Confirmation** dialog box is displayed. Select any virtual disks associated with the virtual machines to delete. The virtual machine's physical disks are listed if the storage on which they reside uses a non-generic Oracle VM Storage Connect plug-in. Before any physical disks are deleted, they are removed from any access groups. Click **OK** to delete the virtual machines and the selected virtual and physical disks.

3.5.2.3 Start Virtual Machines

After a virtual machine is created, you can start it. Starting a virtual machine is analogous to starting a computer by pressing the **Power On** button.

To start virtual machines:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machines reside in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane, and click **Start** .

The virtual machines are started.

3.5.2.4 Stop Virtual Machines

When a virtual machine is not in use, you should shut it down to release system resources. Stopping a virtual machine is analogous to a normal shutdown of a physical computer.

If you want to save the state of the virtual machine, you should suspend it. See [Section 3.5.2.9, “Suspend Virtual Machines”](#) for information on suspending virtual machines.

In some situations you may not be able to stop a virtual machine, for example, if you have tried to stop it while another job is in progress on the virtual machine such as a start virtual machine job. To resolve this type of situation, you should abort the job that is in progress, then kill the virtual machine. See [Section 8.1.5, “Abort Jobs”](#) for information on aborting jobs, and [Section 3.5.2.8, “Kill Virtual Machines”](#) for information on killing a virtual machine.

To stop virtual machines:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machines reside in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane, and click **Stop** .



Note

You can also shut down a virtual machine from within the virtual machine, the same way you shut down a physical computer.

After issuing the stop command, the status of the virtual machine is changed to *Stopped*. However, this only indicates that the command was acknowledged. There is no guarantee that the virtual machine is effectively shut down correctly. This is

expected behavior since an operating system running on a physical PC may also *hang* during the shutdown sequence.

If the virtual machine fails to shut down, you can power it off using the kill virtual machine option, which is similar to unplugging the power cable from a physical machine. To perform a power off (kill) of virtual machines, see [Section 3.5.2.8, “Kill Virtual Machines”](#).

3.5.2.5 Launch Console



Important

The VNC Console can only be used to connect to virtual machines running on an x86 Oracle VM Server. If you are attempting to connect to a virtual machine running on Oracle VM Server for SPARC you should use the serial console. The **Launch Console**  is greyed out when Oracle VM Manager detects that the virtual machine is running on an *LDOM* hypervisor. See [Section 3.5.2.6, “Launch Serial Console”](#).

The VNC Console makes use of noVNC, that uses HTML5 (WebSockets, Canvas) to render a web-based VNC client accessible from any browser that properly supports HTML5. You can find out more about noVNC at <http://kanaka.github.io/noVNC/>.

The VNC Console is not available for virtual machines in the **Unassigned Virtual Machines** folder, or virtual machines in a server pool, but not assigned to an Oracle VM Server.

The key mapping for each VNC session is set when you create or edit a virtual machine, in the Keymap field. See [Section 3.1.3, “Create Virtual Machine”](#) and [Section 3.5.2.1, “Edit Virtual Machine”](#) for information on creating and editing a virtual machine.

To connect to a virtual machine's console:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine in the management pane, and click **Launch Console**  in the perspective toolbar
4. A new browser window or tab is opened.



Tip

If the console does not start, check that your web browser allows pop-ups to be displayed. If you are using Microsoft Internet Explorer, add the base URL of Oracle VM Manager (for example, <http://example.com>) to the list of trusted sites in the security settings. You may also need to downgrade the security level from medium to medium-low for the Trusted sites zone.

If the virtual machine's console is in use by another user, a message is displayed asking if you want to take over the connection. If you take over the connection, the other user's session is disconnected and the VNC session is started on your client computer. If the VNC client has trouble taking over the connection, you may need to close it and launch the VNC console again.

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

Connected (encrypted) to: MyOL7VM Ctrl

Oracle VM Console

```

Starting RPC idmapd: [ OK ]
Starting system message bus: [ OK ]
Starting setroubleshootd: [ OK ]
Starting o2cb: [ OK ]
Starting Bluetooth services: [ OK ]
Mounting other filesystems: [ OK ]
Starting PC/SC smart card daemon (pcscd): [ OK ]
Starting HAL daemon: [ OK ]
Starting hidd: [ OK ]
Starting autofs: Loading autofs4: [ OK ]
Starting automount: [ OK ]
[ OK ]
Starting hpiod: [ OK ]
Starting hpssd: [ OK ]
Starting sshd: [ OK ]
Starting cups: [ OK ]
Starting xinetd: [ OK ]
Starting ntpd: [ OK ]
Starting sendmail: [ OK ]
Starting sm-client: [ OK ]
Starting console mouse services: [ OK ]
Starting crond: [ OK ]
Starting xfs: [ OK ]
Starting anacron: [ OK ]
Starting atd: [ OK ]
Starting yum-updatesd: [ OK ]
Starting Avahi daemon... [ OK ]
Starting oraclevm-template...
Regenerating SSH host keys.
Stopping sshd: [ OK ]
Generating SSH1 RSA host key: [ OK ]
Generating SSH2 RSA host key: [ OK ]
Generating SSH2 DSA host key: [ OK ]
Starting sshd: [ OK ]
Regenerating up2date uuid.
Changing password for user root.
New UNIX password:

```

Note that, if you open a virtual machine console to a running virtual machine and use the Ctrl-Alt-Delete button to restart the virtual machine, the virtual machine restarts and the console reconnects but the control buttons for the console move out of the visible area in the dialog. This is expected behavior, related to the size of the VNC display returned by Oracle VM Server and the way in which HTML5 canvases work.

To view the control buttons for the virtual machine console after the virtual machine has restarted, you may either extend the right side of dialog, or close the dialog and open it again.

3.5.2.6 Launch Serial Console

You must use the *serial* console to connect to virtual machines on a SPARC-based server pool instead of the VNC console.

For virtual machines running on x86-based server pools, you should use the VNC console instead of the serial console. Output from the serial console is read-only and non-interactive when you use it to connect to virtual machines running on an x86-based server pool. Additionally, virtual machines running on an x86-based server pool must support, and be configured for, redirecting serial output. See [Section 3.4.3.5, "Launch Console"](#) for more information about using the VNC console.

To connect to a virtual machine's serial console:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine in the management pane, and click **Launch Serial Console**  in the management pane toolbar
4. A new browser window or tab is opened.



Tip

If the console does not start, check that your web browser allows pop-ups to be displayed. If you are using Microsoft Internet Explorer, add the base URL of Oracle VM Manager (for example, <http://example.com>) to the list of trusted sites in the security settings. You may also need to downgrade the security level from medium to medium-low for the Trusted sites zone.

If the virtual machine's console is in use by another user, a message is displayed asking if you want to take over the connection. If you take over the connection, the other user's session is disconnected and the terminal session is started on your client computer. If the terminal emulator has trouble taking over the connection, you may need to close it and launch the serial console again.

The virtual machine console is displayed. Log in and interact with the virtual machine as you would through any other console session. If required, enter the user name and password of the guest operating system to log in to the operating system.

3.5.2.7 Restart Virtual Machines

Restarting a virtual machine is analogous to rebooting a computer. You may need to restart a virtual machine if an operating system update requires you to restart the virtual machine, for example Microsoft Windows™ updates.

To restart virtual machines:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machines reside in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane, and click **Restart** .

The virtual machines are restarted.



Note

If a virtual machine has not fully started, a restart request may not succeed as the virtual machine may not be ready to initiate the request. In this case, you may need

to abort the restart job and try again later. Alternately, kill the virtual machine and start it again.

3.5.2.8 Kill Virtual Machines

Killing a virtual machine is equivalent to performing a power off of a virtual machine, similar to unplugging the power cable from a physical machine. This is not the recommended method of shutting down a virtual machine, but may be used if the shut down command fails to shut down the virtual machine.

To kill virtual machines:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane, and click **Kill** .

The virtual machines are powered off.

3.5.2.9 Suspend Virtual Machines

Suspending a virtual machine is analogous to putting a computer into sleep mode. When a virtual machine is suspended, the current state of the operating system, and applications is saved, and the virtual machine put into a suspended mode. When you resume the virtual machine, the operating system and applications continue from the same point you suspended the virtual machine.



Note

You cannot suspend virtual machines on SPARC-based server pools.

To suspend virtual machines:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane, and click **Suspend** .

The virtual machine state is saved and the virtual machines suspended.

To resume the virtual machine, see [Section 3.5.2.10, “Resume Virtual Machine”](#).

3.5.2.10 Resume Virtual Machine

Resuming a suspended virtual machine is analogous to waking up a computer that has been in sleep mode. When you resume a suspended virtual machine, the operating system and applications continue from the same point you suspended the virtual machine.



Note

You cannot resume virtual machines on SPARC-based server pools.

To resume a virtual machine:

1. Click the **Servers and VMs** tab.

2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to start in the management pane, and click **Resume** .

The virtual machine state is retrieved and the virtual machine started according to the VM Start Policy defined for the server pool.

3.5.2.11 Migrate or Move Virtual Machines

The **Migrate or Move**  option allows you to migrate and move virtual machines by opening the **Migrate or Move Virtual Machine** wizard that allows you to select and perform the appropriate actions depending on your requirements and the state of the virtual machine.

It is important to understand that [migrating](#) a virtual machine changes the Oracle VM Server or server pool where the virtual machine runs, while [moving](#) a virtual machine changes the repository where the virtual machine configuration or virtual disks are located.

A stopped virtual machine can be migrated to any Oracle VM Server, server pool, or to the **Unassigned Virtual Machines** folder. A running virtual machine can be migrated to any Oracle VM Server within the same server pool.

The steps below assume the virtual machine is deployed to an Oracle VM Server. If the virtual machine is located in the **Unassigned Virtual Machines** folder, select it in that folder to perform the migration.

To migrate or move a virtual machine:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to migrate in the management pane, and click **Migrate or Move** .

The **Migrate or Move Virtual Machine** dialog box is displayed.

4. Choose the appropriate option from the **Migrate or Move Virtual Machine** dialog box. Different options are available, depending on if the virtual machine is running or stopped.

If the virtual machine is **running**, you can select from the following options:

- [Migrate a running VM to a different Server within the same Server Pool](#)

This option changes the server where the virtual machine runs. The destination server must be within the same server pool as the source server. Likewise, the destination server must be able to access the virtual machine configuration and storage. You should choose this option to migrate virtual machines between servers within a server pool that use a shared repository.

Select this option and then click **Next** to proceed as follows:

1. Select the destination server to which you want to migrate the virtual machine from the [Specified Server](#) drop-down list.



Note

Some options are disabled because they apply only if you are migrating a virtual machine that is *stopped*.

2. Click **Finish** to complete the migration.

- [Migrate a running VM, and migrate its local storage, to a different Server within the same Server Pool](#)

This option changes the server where the virtual machine runs and moves its local storage. You can choose this option to migrate virtual machines between servers within the same server pool when:

- At least one virtual disk resides in a repository that is local to the source server.
- The destination repository is local to the destination server.



Note

If the virtual machine configuration file resides in a repository that is local to the source server only, the configuration file is copied to the destination repository. If the configuration file resides in a shared repository, it is not copied.

Select this option and then click **Next** to proceed as follows:

1. Select the destination server to which you want to migrate the virtual machine from the [Server to Migrate to](#) drop-down list.
2. Select the destination repository to which you want to move the virtual machine configuration and storage from the [Target Repository](#) drop-down list.



Note

You can select only repositories that are hosted on an OCFS2 file system.

3. Click **Finish** to complete the migration and move the virtual machine configuration and storage.

- [Move this VM to a different Repository](#)

This option changes the location of the virtual machine.



Note

Beginning in Oracle VM Manager 3.4.6, this option is available when the **Migrate or Move Virtual Machine** dialog box is displayed for a **running** virtual machine. This option makes it possible to move a `vm.cfg` file from one repository to another while the virtual machine is in running state by creating an empty clone customizer.



Important

When moving a **running** virtual machine, be sure to create an empty clone customer with no storage mappings attached. If a clone customizer is created with an attached virtual disk that is actively being used by the virtual machine, an error message is returned.

Select this option and then click **Next** to proceed as follows:

1. Click [Create](#) to create a new empty clone customizer with no storage mappings attached.
2. Select the destination repository to which you want to move the virtual machine configuration from the [Target Repository](#) drop-down list.
3. Click **Finish** to move the virtual machine.

If the virtual machine is **stopped**, you can select from the following options:

- [Migrate a VM to a different Server, Server Pool, or Unassigned State](#)

This option lets you change the virtual machine destination to either the **Unassigned Virtual Machines** folder or unassigned in the current server pool. This option also lets you change the server or server pool where the virtual machine runs as well as the location of the virtual machine configuration and storage.

Select this option and then click **Next** to proceed as follows:

1. Select one of the following destinations for the virtual machine:

- **Unassigned Virtual Machines Folder:** Removes the virtual machine from the server pool and moves it to the **Unassigned Virtual Machines** folder.
- **Unassigned in Current Server Pool:** Removes the virtual machine from the Oracle VM Server. The virtual machine stays in the same server pool; it is removed from the Oracle VM Server only.
- **Specified Server:** Moves the virtual machine to the selected Oracle VM Server. Stopped virtual machines can be migrated to Oracle VM Servers in other server pools that share the same repository, so Oracle VM Servers from other server pools might be listed here.
- **Server Pool:** Moves the virtual machine to the selected server pool. Stopped virtual machines can be migrated to other server pools. The virtual machine is not deployed to a particular Oracle VM Server within the destination pool; you must start the virtual machine in the destination server pool to deploy it to an Oracle VM Server.

2. Click **Finish** to complete the migration.

- [Move this VM to a different Repository](#)

This option changes the location where the virtual machine, and its configuration and local storage, reside. You should choose this option to move the virtual machine between servers in different server pools.

• Select this option and then click **Next** to proceed as follows:

1. Select a clone customer from the [Clone Customizer](#) drop-down list or click [Create](#) to create a new clone customizer.

Clone customizers can be used to determine storage mappings for the virtual machine so that you can define where the virtual disks for a virtual machine should be located.

If you create a new clone customizer, the **Create Clone Customizer** wizard is displayed. You can read more on the options provided by this wizard in [Create a Clone Customizer](#).

2. Select the destination repository to which you want to move the virtual machine configuration and storage from the [Target Repository](#) drop-down list.
3. Click **Finish** to move the virtual machine.

To migrate multiple virtual machines:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machines reside in the navigation tree.

3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machines to migrate in the management pane and drag and drop them to the Oracle VM Server, server pool or the **Unassigned Virtual Machines** folder in the navigation tree to which you want to migrate the virtual machines. See [Section 1.13, “Drag and Drop”](#) for information on using the drag and drop feature.
4. The virtual machines are migrated.

3.5.2.12 Clone a Virtual Machine or Template

Cloning a virtual machine or a template means making a copy of it, so that you can create multiple virtual machines or templates from the original.

A clone can also be performed using two other file copy methods: [sparse copy](#), and [non-sparse copy](#). These two cloning methods can be used when cloning from and to different repositories, and when the storage used for the storage repository uses a generic Oracle VM Storage Connect plug-in. These cloning methods are slower than thin cloning, but more versatile.



Note

The virtual machine cloning procedure below uses the same dialog box to clone a virtual machine and a template.

To create a clone of a virtual machine or template:

1. Select the virtual machine or template to clone and display the **Clone** dialog box. You display this dialog box from different locations, depending on whether you are cloning a virtual machine or a template.
 - **Virtual Machine:** Click the **Servers and VMs** tab. Select the server pool on which the virtual machine resides in the navigation tree. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to clone in the management pane, and click **Clone Virtual Machine** .
 - **Virtual Machine Template:** Click the **Repositories** tab. In the navigation tree, select the repository in which the template resides, then **VM Templates**. Select the template in the management pane and click **Clone Template** .
2. The **Clone (Virtual Machine or Template)** dialog box is displayed.

Select or enter the following:

- **Clone to a:** Select the clone type, either **Virtual Machine** or **Template**, to specify the objects to create from the clone.
- **Clone Count:** The number of clones to create.
- **Name Index:** The start index number to use for the clone name suffix. The default is 0. This is used in conjunction with the **Clone Name** field to create the name for each clone.
- **Clone Name:** An optional name for the virtual machines or templates. The maximum name length is 256 characters and may contain any character. The name need not be unique. If no value is given, the default is the name of the virtual machine or template being cloned. Each clone is suffixed with a dot (.) and the clone index number, starting with the value for the **Name Index** field. For example, if the **Clone Name** field is set to `MyVM`, and the **Name Index** field is set to 1, the resulting clones would be named `MyVM.1`, `MyVM.2` and so on.
- **Target Server Pool:** The server pool on which the clone is to be deployed.



Note

The list of server pools that are available in the drop-down is limited to valid server pools that are capable of handling the cloning process correctly. This

helps you to prevent cloning to a server pool that may fail to process the request. If this list is empty, you should refer to the table presented under the **Why don't I see other server pools to clone to?** element in this dialog.

- **Description:** A description for the virtual machines or templates.
- **Advanced Clone:** Whether to use a clone customizer to set preferences for the clone operation.
- **Clone Customizer:** The clone customizer to create the clones. This is used to set virtual disk mappings to enable you to copy disks to other storage locations. It also allows you to create network mappings so you can use new VNICs and other networks for the clone. Click **Create...** to create a new clone customizer. See [Section 3.5.2.14, "Manage Clone Customizers"](#) for information on creating a clone customizer. This field is enabled if **Advanced Clone** is checked.
- **Target Repository:** The repository to store the cloned virtual machine configuration file. This does not affect any clone disk mappings you set using a clone customizer; this option is only for the virtual machine configuration file. This field is enabled if **Advanced Clone** is checked.
- **Why don't I see other server pools to clone to?** A collapsed window element, providing a table of server pools that do not meet the requirements to accept a clone request. Expanding any of the entries in this table displays the reason that the server pool does not qualify.



Tip

If you clone a virtual machine or template without using a clone customizer, the storage repository is locked for the duration of the cloning job; this may be some time in some circumstances. To quickly create clones and not lock the storage repository, use a clone customizer.

Click **OK**.

The virtual machines are created and deployed to the server pool. The templates are created in the storage repository.

It is important to understand that older templates may use a different device type to attach virtual disks. This may affect your ability to attach new virtual disks, such as a virtual CDROM device. There are some limitations on mixing virtual disks of differing device types on a virtual machine. See [How are Virtual Disks Managed?](#) in the *Oracle VM Concepts Guide* for more information about how device types are allocated to virtual disks and what you may need to do to solve any issues surrounding this problem.

3.5.2.13 Export a Virtual Machine

Exporting a virtual machine lets you reuse [virtual machines](#) with other instances of Oracle VM, or with other virtualization environments that support the Open Virtualization Format (OVA).

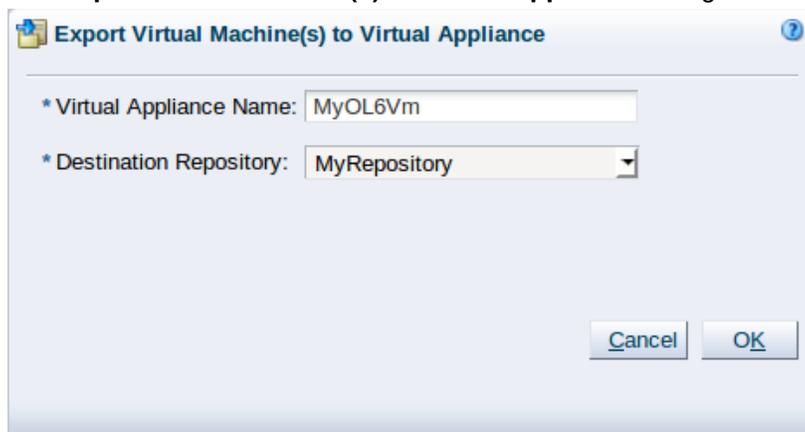
Export to Virtual Appliance

Exporting a [virtual appliance](#) lets you reuse [virtual machines](#) with other instances of Oracle VM, or with other virtualization environments that support the Open Virtualization Format (OVA).

You can export one or more virtual machines to a virtual appliance. Exporting a virtual machine to a virtual appliance creates an OVA file in the storage repository. The OVA file contains the virtual disk file(s) in VMDK format, an OVF file that holds the virtual machine(s) configuration, and other files such as a manifest and certificate.

To export to a virtual appliance:

1. Click the **Servers and VMs** tab. Select the server pool on which the virtual machine resides in the navigation tree. Select **Virtual Machines** from the **Perspective** drop-down list.
2. Make sure each virtual machine to export is in the **Stopped** state.
See [Section 3.5.2.4, “Stop Virtual Machines”](#) for more information on stopping virtual machines.
3. Select the virtual machine(s) to export in the management pane, and click **Export to Virtual Appliance** .
4. The **Export Virtual Machine(s) to Virtual Appliance** dialog box is displayed.



Specify a name for the virtual appliance in the **Virtual Appliance Name** field and select the storage repository to which you want to save the virtual appliance from the **Destination Repository** menu and then click **OK**.

The virtual appliance is located under the [Assemblies](#) directory on the Oracle VM Server instance where the storage repository is presented to, as follows: `/OVS/Repositories/repository_id/Assemblies/virtual-appliance_id/package.ova`. See the [Chapter 4, Repositories Tab](#) for information about obtaining the repository and virtual appliance ID.

Export to Oracle Cloud Infrastructure Using Oracle VM Exporter Appliance

Exporting an Oracle VM virtual machine using the [Oracle VM Exporter Appliance](#) transfers the virtual machine to [Oracle Cloud Infrastructure](#). Exporting a virtual machine does not remove the virtual machine from Oracle VM. You can export a virtual machine to other places in Oracle Cloud Infrastructure.

**Note**

Before using the Oracle VM Exporter Appliance, you must first download and configure the Oracle VM Exporter Appliance Open Virtual Appliance (OVA) and make sure the Oracle VM Exporter Appliance virtual machine is running. For more information, see [Installing and Configuring the Oracle VM Exporter Appliance](#)

You can start, one after another, up to four virtual machine exports to run simultaneously (they will not start simultaneously) with a single Oracle VM Exporter Appliance. If you start a fifth export operation for one Oracle VM Exporter Appliance, the export is queued until one of the running exports completes. If you need to run more than four exports at the same time, you can add another Oracle VM Exporter Appliance

to the virtual machines. You can only export a stopped virtual machine. A virtual machine being exported by the Oracle VM Exporter Appliance cannot be started.



Note

Before Windows VMs can be exported to OCI, they have to be shutdown without fast restart. To shutdown without fast restart:

- Use the `shutdown /s` command, or
- Click the Windows **Start** Button (or Windows symbol button or the Start Menu), then click **Power** and then press the **Shift** key while clicking on **Shutdown** option.

Export a Virtual Machine to Oracle Cloud Infrastructure

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. You can also select the virtual machine directly if the virtual machine is on the screen.



Note

Windows virtual machines need to have virtio-win drivers installed before exporting to Oracle Cloud Infrastructure. For more information see <https://docs.oracle.com/en/operating-systems/oracle-linux/kvm-user/>.

4. Stop the virtual machine.
See [Section 3.5.2.4, “Stop Virtual Machines”](#) for more information on stopping virtual machines.
5. With the stopped virtual machine highlighted, click the **Export to OCI** icon (🌐) in the **Virtual Machine Perspective** task icon bar or right-click on the stopped virtual machine and select **Export to OCI**.

The **Export VM to OCI** wizard displays information about the Oracle VM Exporter Appliance virtual machine.

6. Select or enter the following Exporter Appliance information:

- From the **Appliance** drop-down list, select the name of the Oracle VM Exporter Appliance.

**Note**

If you named the Oracle VM Exporter Appliance **Exporter Appliance**, that name is already filled in. If you have changed the name, you have to select it from a list of virtual machines. One of the choices is **Please Select**, which is an option to enter the **Hostname or IP** information.

- From the **Appliance's IP Address** drop-down list, select the IP address of the Oracle VM Exporter Appliance.

**Note**

The IP address for the **eth0** interface is pre-selected, if it exists. There might be more than one IP address assigned to the Oracle VM Exporter Appliance. Make sure you select the correct one.

If you selected **Please Select** for the Appliance name, the Appliance's IP Address defaults to **Please Select or Enter Below**.

- If you selected **Please Select or Enter Below** from the **Appliance's IP Address** drop-down list, enter the hostname or IP address for the Oracle VM Exporter Appliance.
- Enter a port number if you have changed the default port number that the Oracle VM Exporter Appliance uses to receive packets.

**Note**

Be aware that if you change the default port number of 8443 can complicate Oracle VM Exporter Appliance communications.

7. Click **Next**.

The **OCI Information** options display.

8. If the Oracle VM Exporter Appliance has been set up correctly, the **API Public Key** and **Fingerprint** fields display the public key and fingerprint of the Oracle VM Exporter Appliance selected for the export. This public key must be uploaded to Oracle Cloud Infrastructure or the export authentication fails.

The other fields may contain values from previous export operations. These fields contain Oracle Cloud Infrastructure user ID (**User OCID**), Oracle Cloud Infrastructure region (**Region**), and Oracle Cloud Infrastructure tenancy ID (**Tenancy OCID**). These values are all obtained from an Oracle Cloud Infrastructure tenancy account. For more information on these fields, see [Installing and Configuring the Oracle VM Exporter Appliance](#).

Enter the following Oracle Cloud Infrastructure information:

- Enter the **User OCID**.
- Enter the **Region** where you want to upload the exported virtual machine.
- Enter the **Tenancy OCID**.

9. Click **Next**.

Before the **Instance Info** options display, the Oracle VM Exporter Appliance validates the information provided with Oracle Cloud Infrastructure account.



Note

If you get an error here, validate all Oracle Cloud Infrastructure information.

10. Enter information about Oracle Cloud Infrastructure instance.

- **(Optional)** Enter a new **Instance Name**.



Note

By default, the instance name is the same as the virtual machine name, but you can enter a customized name between 1 and 255 characters long.

- Select the **Compartment** from the drop-down list.
- Select the **Availability Domain** from the drop-down list.
- Enter the **Instance Shape**.

11. Click **Next**. The **VM Disk** options display.

12. Enter additional information about the virtual machine disks exported with the virtual machine to Oracle Cloud Infrastructure.

- Select the **Bucket Compartment** from the drop-down list.
- Select the **Bucket Name** from the drop-down list.
- Select the **Custom Image Compartment** from the drop-down list.

**Note**

The rest of the **VM Disk** items are determined by local information.

- Select the **Boot Disk** from the drop-down list.
- **(Optional)** Change the **Boot Volume Size (GiB)** from the default size. The range for a Linux VM is from 50 GiB to 32 TiB. The range for the Windows VM is from 256 GiB to 32 TiB.

**Note**

If the boot volume size entered is less than the actual virtual machine system image (boot disk) size, the export fails in the instance creation phase.

- **(Optional)** Check the **Additional Disks to Upload** box next to each disk in the list you want to upload.

**Note**

You can select up to 32 disks to upload. ISO images attached to the virtual machine are not uploaded.

The Oracle VM Exporter Appliance lets you select and upload the same shared disk when exporting two or more virtual machines that share the disks. You need to select the shared disk for upload *only once* when exporting one of the virtual machines that shares the disk. If you select the same shared disk for each virtual machine, you create multiple copies of the same shared disk.

13. Click **Next**.

The **VNICs** options display.

14. Select or enter the following information about the virtual NICs (vNICs) created and used by Oracle Cloud Infrastructure for the Virtual Cloud Network (VCN) when the export operation has completed.

**Note**

The **Slot** and **Current Network** information is supplied by Oracle VM and cannot be changed.

- **VCN Compartment**
- **VCN**
- **Subnet Compartment**
- **Subnet**
- **Assign Public IP**

15. Click **Next**.

The **Summary** of your choices display.

16. Once you have entered all the required information, the Oracle VM Exporter Appliance displays a summary of the key information supplied during the wizard navigation. If all information in the summary is correct, click **Finish** to begin the export operation.

Tracking the Export Operation

The export is a multi-stage operation tracked by an Oracle VM job listed in the running and completed task section of the Oracle VM Manager. You can track the progress of the export to make sure it completes successfully.

- Once the export process has ended, you can check the **Job Summary** details in the Oracle VM Manager virtual machine perspective.

**Note**

You can also log into the Oracle VM Exporter Appliance and tail the `vmexporter` log using the following command: `$ tail -f /var/log/vmexporter/vmexporter.log`

- Even after the export job completes successfully, be sure to check the **Export Summary** tab in **Job Details** to make sure the **Successfully exported OVM VM to OCI** result appears and to see if any other related steps are needed. For example, additional steps are needed to connect a data Block Volume to the exported virtual machine.
- If you need to connect a data block volume, the directions are listed in the job summary. The steps are different for exported Windows and Linux virtual machines.

Windows virtual machine example:

```
Successfully exported OVM VM to OCI
OVM VM ID           : <ovm-vm-id>
OCI Instance ID     : <oci-instance-id>
OCI Instance Name   : <oci-instance-name>
OCI Compartment ID  : <oci-compartment-id>
OCI OS Type         : Windows - Server 2019 Standard
```

Additional Disk Data:

One or more data disks have been uploaded to OCI Object Storage as a disk image. To get your data on the disk block volume, this disk image has to be transferred to OCI Instance and written to disk block volume. Please ensure you have sufficient space to transfer the disk image.

```
Object Storage Bucket      : <object-storage-bucket-name>
Object Name                 : <object-name>
Object Size                 : 2.0GB
Pre-Authenticated Request URL : <url>
Block Volume ID            : <block-volume-id>
Block Volume Attachment ID  : <block-volume-attachment-id>
Block Volume Attachment Access: READ/WRITE
```

1. Run these commands in the OCI Instance as an administrator in Windows Powershell to connect to the attached block volume.

```
Set-Service -Name msiscsi -StartupType Automatic
Start-Service msiscsi
iscsicli.exe QAddTargetPortal <ip>
iscsicli.exe QLoginTarget <iqn>
iscsicli.exe PersistentLoginTarget <iqn> * * * * *
```

2. Download the disk image: <disk-image-location> to the OCI Instance.
3. Go to Disk Management and mark Disk 2 "Online."
4. Write the downloaded disk image to Disk 2 using a Windows Disk Image Writer program such as NetBSD Rawrite32.
5. Delete the downloaded disk image from OCI Instance.
6. Delete the disk image '<disk-image-name>' from OCI Object Storage.

```
Object Storage Bucket      : <object-storage-bucket>
Object Name                 : <object-name>
Object Size                 : 1.0GB
Pre-Authenticated Request URL : <url>
Block Volume ID            : <block-volume-id>
Block Volume Attachment ID  : <block-volume-attachment-id>
Block Volume Attachment Access: READ/WRITE
```

1. Run these commands in the OCI Instance as an administrator in Windows Powershell to connect to the attached block volume.

```
Set-Service -Name msiscsi -StartupType Automatic
Start-Service msiscsi
iscsicli.exe QAddTargetPortal <ip>
iscsicli.exe QLoginTarget <iqn>
iscsicli.exe PersistentLoginTarget <iqn> * * * * *
```

2. Download the disk image: <disk-image-location> to the OCI Instance.
3. Go to Disk Management and mark Disk 3 "Online."
4. Write the downloaded disk image to Disk 3 using a Windows Disk Image Writer program such as NetBSD Rawrite32.
5. Delete the downloaded disk image from OCI Instance.
6. Delete the disk image '<disk-image-name>' from OCI Object Storage.

Linux virtual machine example:

Successfully exported OVM VM to OCI

```
OVM VM ID      : <ovm-vm-id>
OCI Instance ID : <oci-instance-id>
OCI Instance Name : <oci-instance-name>
```

```

OCI Compartment ID : <oci-compartment-id>
OCI OS Type       : Linux

Additional Disk Data:

One or more data disks have been uploaded to OCI Object Storage as a disk image. To get
your data on the disk block volume, please install 'iscsi-initiator-utils' and
'wget' yum packages on your Instance, if not already installed, and do the following:

Object Storage Bucket      : <object-storage-bucket>
Object Name                : <object-name>
Object Size                : 2.0GB
Pre-Authenticated Request URL : <url>
Block Volume ID           : <block-volume-id>
Block Volume Attachment ID : <block-volume-attachment-id>
Block Volume Attachment Access: READ/WRITE

1. Run these commands to connect to the attached block volume:
    sudo iscsiadm -m node -o new -T <iqn> -p <ip:port>
    sudo iscsiadm -m node -o update -T <iqn> -n node.startup -v automatic
    sudo iscsiadm -m node -T <iqn> -p <ip:port> -l
2. Run the following command:
    sudo wget <url> -O /dev/sdb
3. If disk mount in /etc/fstab is with UUID, the disk can be mounted at its mount point.
   If UUID is not used, please update /etc/fstab to use UUID or use /dev/sdb.
4. Reboot the instance and check data in disk block volume. Reboot can be deferred until all
   data disks have been processed.
5. Delete the disk image '<disk-image-name>' from OCI Object
   Storage.

Object Storage Bucket      : <object-storage-bucket>
Object Name                : <object-name>
Object Size                : 1.0GB
Pre-Authenticated Request URL : <url>
Block Volume ID           : <block-volume-id>
Block Volume Attachment ID : <block-volume-attachment-id>
Block Volume Attachment Access: READ/WRITE

1. Run these commands to connect to the attached block volume:
    sudo iscsiadm -m node -o new -T <iqn> -p <ip:port>
    sudo iscsiadm -m node -o update -T <iqn> -n node.startup -v automatic
    sudo iscsiadm -m node -T <iqn> -p <ip:port> -l60 -l
2. Run the following command:
    sudo wget <yrl> -O /dev/sdc
3. If disk mount in /etc/fstab is with UUID, the disk can be mounted at its mount point.
   If UUID is not used, please update /etc/fstab to use UUID or use /dev/sdc.
4. Reboot the instance and check data in disk block volume. Reboot can be deferred until
   all data disks have been processed.
5. Delete the disk image '<disk-image-name>' from OCI
   Object Storage.

```

You are prompted once for each data disk that the Oracle VM Exporter Appliance has exported.

- If you have exported a virtual machine with multiple VNICs, there are additional steps needed because of the way that Oracle Cloud Infrastructure handles new virtual machines with multiple VNICs. For more information on this issue and solutions, see <https://docs.cloud.oracle.com/en-us/iaas/Content/Network/Tasks/managingVNICs.htm>

Connecting a Shared Block Volume to Exported Virtual Machines

You can use the Oracle VM **Export to OCI** function to export two or more virtual machines that share disks (for example, an OCFS2 cluster) to Oracle Cloud Infrastructure. However, after successful creation of the virtual machine instances in Oracle Cloud Infrastructure, additional steps must be followed to connect the

shared Oracle Cloud Infrastructure block volumes and, in the case of an OCFS2 cluster, restart the cluster services.

If you export two or more Oracle VM virtual machines sharing one or more disks (such as an OCFS2 cluster), you should avoid creating duplicate copies of the shared disk in Oracle Cloud Infrastructure. Although you only have to upload the shared disks *once* with an exported virtual machine, you must attach the shared disks, which are now block volumes in Oracle Cloud Infrastructure, to the other virtual machines after the export succeeds.



Important

The Oracle VM Exporter Appliance does not prevent you from selecting and uploading the same shared disk when exporting two or more virtual machines that share the disks. You need to select the shared disk only once when exporting one of the virtual machines to Oracle Cloud Infrastructure or duplicate, unnecessary copies are created.

As an example of this process, consider a set of three Oracle VM virtual machines (VM1, VM2, and VM3) sharing two disks (Shared Disk1 and Shared Disk2).

You export this group as three virtual machines, but upload the shared disks only *once* with one of the virtual machines. To avoid duplicated effort and results, these virtual machines and shared disks are exported to Oracle Cloud Infrastructure as two types of export: one virtual machine with the upload of the shared disks, and two virtual machines without any uploaded disks.

So, VM1 has Shared Disk1 and Shared Disk2 attached, but the exported VM2 and VM3 do not.

Because the goal is to establish the original configuration from Oracle VM in Oracle Cloud Infrastructure, the shared disks from Oracle VM, which are now block volumes in Oracle Cloud Infrastructure, must be re-attached to the exported virtual machine instances in Oracle Cloud Infrastructure.

In this case, Shared Disk1 and Shared Disk2 are to be attached to the exported virtual machine instances VM2 and VM3 in Oracle Cloud Infrastructure.



Note

Only VM1's **Export Summary** of the **Export to OCI** job has the details to attach Oracle Cloud Infrastructure block volumes to an instance. VM2 and VM3 do not have this information because the shared disks were not exported with VM2 and VM3, only with VM1. However, the same steps listed for VM1 must be repeated for VM2 and VM3.

Once all exports have completed successfully, the following are the high-level steps for connecting an Oracle Cloud Infrastructure shared block volume to an exported virtual machine instance. Some steps have to be repeated for each disk or virtual machine instance:

1. In Oracle Cloud Infrastructure, attach the same set of shared block volumes to the virtual machine instances that share them in Oracle Cloud Infrastructure.
2. For VM1, follow the instructions in the **Export Summary** (under the **Jobs** tab) in Oracle VM for a successful export with uploaded shared disks.
3. For VM2 and VM3, follow the instructions in the **Export Summary** (under the **Jobs** tab) in Oracle VM for a successful export of virtual machines without uploaded shared disks.

If you have OCFS2 disks attached to the virtual machines you have exported, there are two additional steps to take:

1. In Oracle Cloud Infrastructure, re-establish the cluster and make modifications to the `cluster.conf` file for each virtual machine instance that is part of the cluster. This step is necessary because the IP address and hostname are changed when the virtual machine is exported.
2. In Oracle Cloud Infrastructure, mount the data disk on the virtual machine instances in the cluster.

Detailed Example

There are three general steps to follow when connecting exported disks to virtual machine instances on Oracle Cloud Infrastructure.

1. In Oracle Cloud Infrastructure, attach the same set of shared block volumes to the virtual machine instances that share them in Oracle Cloud Infrastructure. Information about the block volumes to attach can be found in one of the following ways:

- In the **Export Summary** of VM1's export **Job** in Oracle VM
- In the **Attached Block Volumes** of VM1's Oracle Cloud Infrastructure instance.

Repeat the following steps for *each* of the shared volumes (Shared Disk1 and Shared Disk2) that need to be attached to a virtual machine instance (VM2 and VM3):

- a. Click on **Compute**.
- b. Click on **Instances**.
- c. Click on the hyperlink for the virtual machine **Instance**.
- d. Click on the **Attached Block Volumes** in the **Resources** column.
- e. Click on the **Attach Block Volume** blue button.
- f. Enter the applicable information on the **Attach Block Volume** page:
 - i. **Attachment Type:** iSCSI (this is the default).
 - ii. Make sure **Select Volume** is selected (this is the default)
 - iii. Make sure the Block Volume from Step 1 above is correct in the drop-down.



Note

For the drop-down list **Block Volume in `Compartment_Name`**, make sure you select the *same* uploaded shared block volume (Shared Disk1 and Shared Disk2) that was attached to the virtual machine sharing the disks (VM1) before the export.

- iv. **Access:** Select `Read/Write - Shareable`

2. If you have not already done so, follow the instructions in the **Additional Disk Data** section under the **Export Summary** tab in **Job Details** of a successful export **Job** of VM1 in Oracle VM. These instructions are included in the **Tracking the Export Operation** section above.



Note

For more information on finding jobs and job details, see [Job Details...](#)

- On VM2 and VM3, which have block volumes that were not uploaded with the virtual machine instance, you must manually attach the shared disks uploaded from Oracle VM.

For Linux-based virtual machine instances, do the following:

- Run the commands listed under *Step 1: Run these commands to connect to the attached block volume* under the [Additional Disk Data](#) in the **Export Summary** for VM1 in Oracle VM. Shared disks are those with a **Block Volume Attachment Access** set to [Read/Write - Shareable](#).
- Reboot

For Windows-based virtual machine instances, do the following:

- Run the commands listed under *Step 1: Run these commands in the OCI Instance as an administrator in Windows Powershell to connect to the attached block volume* under the [Additional Disk Data](#) in the **Export Summary** for VM1 in Oracle VM. Shared disks are those with a **Block Volume Attachment Access** set to [Read/Write - Shareable](#).
- Go to **Disk Management** and mark the disk [Online](#)

Detailed Example for OCFS2

There are two more OCFS2-specific steps to follow when connecting exported disks to virtual machine instances on Oracle Cloud Infrastructure. These steps only apply to OCFS2.

- For OCFS2, in Oracle Cloud Infrastructure, re-establish the cluster and make modifications to the `cluster.conf` file for each virtual machine instance that is part of the cluster. This is necessary because the IP address and hostname are changed when the virtual machine is exported.

To recreate or re-establish the cluster configuration, do the following:

- Set the hostname if it is not already set:

```
$ nmcli general hostname <Fully Qualified Domain Name>
$ systemctl restart systemd-hostnamed
$ vi /etc/hosts <add new hostname and IP address on primary VNIC>
```

- Verify that the OCFS2 cluster is set to `offline`:

```
$ o2cb cluster-status
```

- Verify that the volumes, labels, and UUIDs are listed.

```
$ mountd.ocfs2 -d
```

- Perform the next *two* commands on *only one* virtual machine instance.

Using the editor, modify the `cluster.conf` file to change each node's IP address and hostname to reflect the new IP address (the IP address used for the cluster connection) and hostname of the exported virtual machine instance.

```
$ vi /etc/ocfs2/cluster.conf
```

Copy the updated `/etc/ocfs2/cluster.conf` file to all other nodes or virtual machine instances that were originally part of the cluster.

```
$ scp /etc/ocfs2/cluster.conf root@<vm_clusterIP>:/etc/ocfs2/
```

- e. Perform the next *three* commands on *all* virtual machines in the cluster.

Ping each node or virtual machine cluster IP address from each virtual machine in the cluster. Verify that the ping succeeds, then put the cluster back online.

```
$ ping <vm1_cluster_ip...vmN_cluster_ip>
$ /sbin/o2cb.init start
```

Verify that the cluster is back online, the heartbeat is set to `active`, and, if the cluster is using global heartbeat, that the `UID` of the device being used is the one listed in the output of the `mountd.ocfs2 -d` command above.

```
$ /sbin/o2cb.init status
```

2. For OCFS2, in Oracle Cloud Infrastructure, mount the data disk on the virtual machine instances in the cluster.

For each virtual machine instance in the cluster, do the following:

- a. Check the `/etc/fstab` to verify that the correct device is used to mount the shared block volumes (see the **Export Summary** above).
- b. Mount the cluster file systems:

```
$ mount -d
$ df
```

Verify that the shared block volumes are mounted on the cluster file system, and that the files created in Oracle VM still exist, intact, and are the same on all cluster nodes.

Once these steps are completed, the OCFS2 disks have been successfully exported from Oracle VM to Oracle Cloud Infrastructure and re-attached.

Accessing the Exported Virtual Machine Serial Console

After exporting a virtual machine with the Oracle VM Exporter Appliance, in some cases you must modify the exported virtual machine's GRUB bootloader to access the serial console.

For Oracle Linux 7 or Oracle Linux 8, which include GRUB2, do the following:

1. Update the `/etc/default/grub` file to include the following:

```
GRUB_TIMEOUT=5
GRUB_DISTRIBUTOR="$(sed 's, release .*$,,g' /etc/system-release)"
GRUB_DEFAULT=saved
GRUB_DISABLE_SUBMENU=true
GRUB_TERMINAL_OUTPUT="console"
GRUB_TERMINAL="serial"
GRUB_SERIAL_COMMAND="serial --speed=9600 --unit=0 --word=8 --parity=no
--stop=1"
GRUB_CMDLINE_LINUX="resume=/dev/mapper/ol-swap rd.lvm.lv=ol/root
rd.lvm.lv=ol/swap console=ttyS0,9600n8 console=tty0"
GRUB_DISABLE_RECOVERY="true"
GRUB_ENABLE_BLSCFG=true
```

2. Regenerate the `grub.cfg` file by running the command

```
$ grub2-mkconfig -o /boot/grub2/grub.cfg
```

3. Reboot the exported virtual machine to connect it to the serial console.

For information about virtual machine serial console access in Oracle Linux 6, which shipped with GRUB, see My Oracle Support (MOS) article 1505124.1 at <http://metalink.oracle.com>.

For more information about virtual machine issues, see <https://docs.oracle.com/en/virtualization/oracle-vm/3.4/admin/vmadm-tshoot-vmachines.html>

Resuming a Failed or Aborted Export Operation

The export operation using the Oracle VM Exporter Appliance is a lengthy process and is tracked in the virtual machine Jobs tab like any other operation. You can resume a failed or aborted export operation attempted by the Oracle VM Exporter Appliance.



Note

When resuming an export operation, you should not change these Oracle Cloud Infrastructure parameters:

- Tenancy
- Region
- Instance Name
- Storage-related Compartments

To resume an export operation that has failed or been aborted:

1. Make sure you select the virtual machine that has failed or been aborted.



Note

If the previous export failure was due to a quota limit, a custom image for the virtual machine might exist, depending on when the quota limit was reached. If you delete this custom image, you cannot resume the export operation. However, the custom image is deleted automatically after a successful export operation.

2. Click on the **Export to OCI** icon from the **Virtual Machine Perspective** or right-click the highlighted virtual machine to export, then choose **Export to OCI**.

The **Exporter Appliance** dialog displays.

3. Click **Next**.

The **Failed** or **Aborted** messages display.

- For a **Failed** export operation, a **Retry/Resume** window displays the following information:

```
Previous export attempt of VM <vm-name> failed while
<previous-status-from-returned-data>.
Message: <message-text>
Continuing here will retry from the failed step and resume export operation.
Any changes to Instance configuration will be applied for remainder of the steps.
Changes that pertain to previously completed steps will be ignored.
To discard progress and restart export from beginning, check the checkbox below.

[ ] Discard state and restart export from beginning
```

- Check the **Discard** option to start the process from the beginning and then click **Continue**.

From the **Delete Saved Export?** pop-up window confirm that you want to delete the saved export information by answering **Are you sure you want to discard current progress and restart export from beginning?**

Click **No** to return to the **Retry/Resume** window.

Click **Yes** to delete the export information and advance to the **OCI Information** step to enter new information for the export.

- Do **NOT** check the **Discard** option to start the process from the point of failure and then click **Continue**.



Note

The wizard takes you to the **OCI Information** step where the previous entries from the failed export have been saved and filled in. You still have the option to make some modifications.

- For an **Aborted** export operation, the **Abort in Progress** window or the **Retry/Resume** window opens and displays the following information:

- **Abort in Progress**

```
A previous export operation for virtual machine <vm-name> is being
aborted in the backend.
It can take some time to fully abort. A new export operation cannot be started until
the previous export is fully aborted.
Please try again later.
```

Click **OK** to dismiss this message.

- **Retry/Resume**

```
Message: VM export aborted.
Continuing here will retry from the failed step and resume export operation.
Any changes to Instance configuration will be applied for remainder of the steps.
Changes that pertain to previously completed steps will be ignored.
To discard progress and restart export from beginning, check the checkbox below.

[ ] Discard state and restart export from beginning
```

- Check the **Discard** option to start the process from the beginning and then click **Continue**.

From the **Delete Saved Export?** pop-up window confirm that you want to delete the saved export information by answering **Are you sure you want to discard current progress and restart export from beginning?**

Click **No** to return to the **Retry/Resume** window.

Click **Yes** to delete the export information and advance to the **OCI Information** step to enter new information for the export.

- Do **NOT** check the **Discard** option to start the process from the point where it aborted and then click **Continue**.



Note

The wizard takes you to the **OCI Information** wizard step where the previous entries from the failed export have been saved and filled in throughout the wizard dialog steps. You still have the option to make modifications.

3.5.2.14 Manage Clone Customizers

Cloning a virtual machine or template means making a copy of it, so that you can create multiple virtual machines or templates from the original. You can create a clone customizer to set up the clone parameters, such as networking, and the virtual disk, and ISO resources. A clone customizer is also used when moving a virtual machine or template.

Create a Clone Customizer

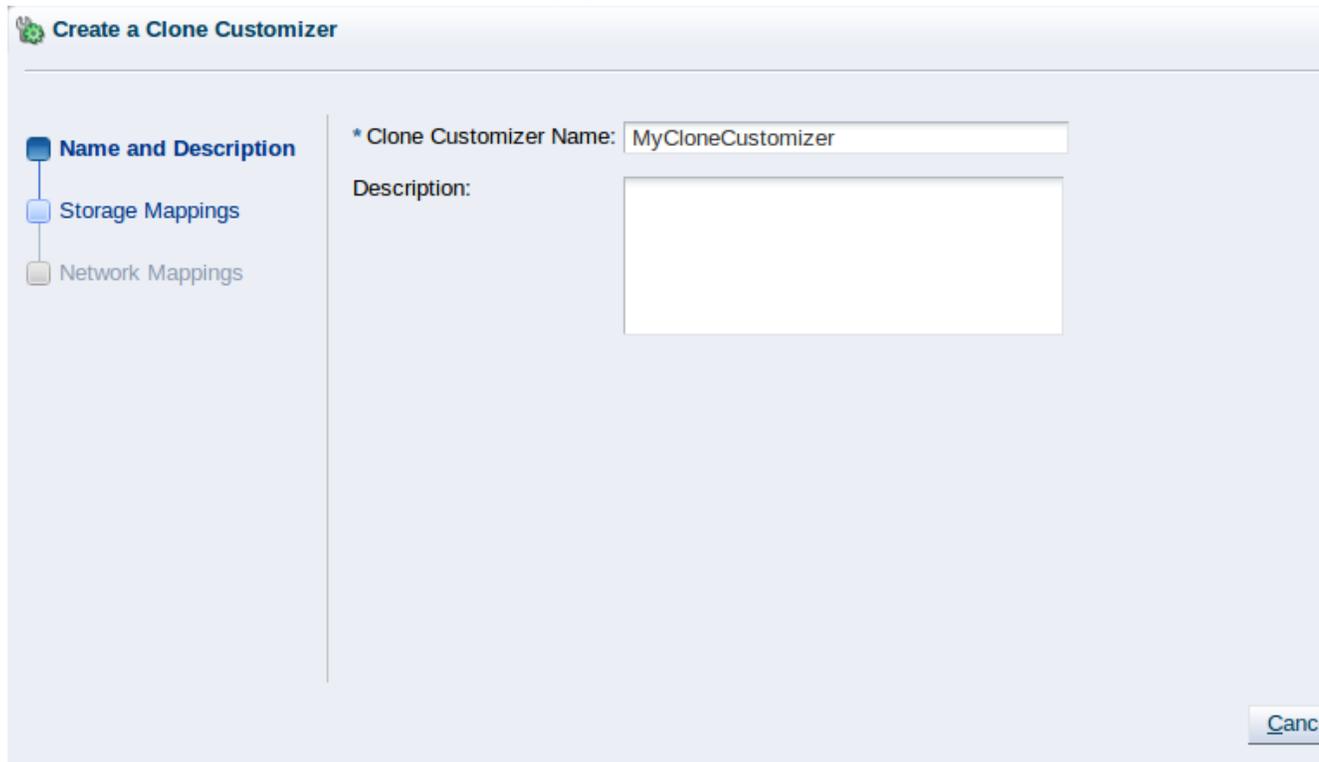
To create a clone customizer:

1. Select the virtual machine or template and display the **Manage Clone Customizers for (Virtual Machine or Template)** dialog box by:
 - **Virtual Machine:** Click the **Servers and VMs** tab. Select the server pool on which the virtual machine resides in the navigation tree. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to clone in the management pane, and click **Manage Clone Customizers...** .
 - **Virtual Machine Template:** Click the **Repositories** tab. In the navigation tree, select the repository in which the template resides, then **VM Templates**. Select the template in the management pane and click **Manage Clone Customizers** .



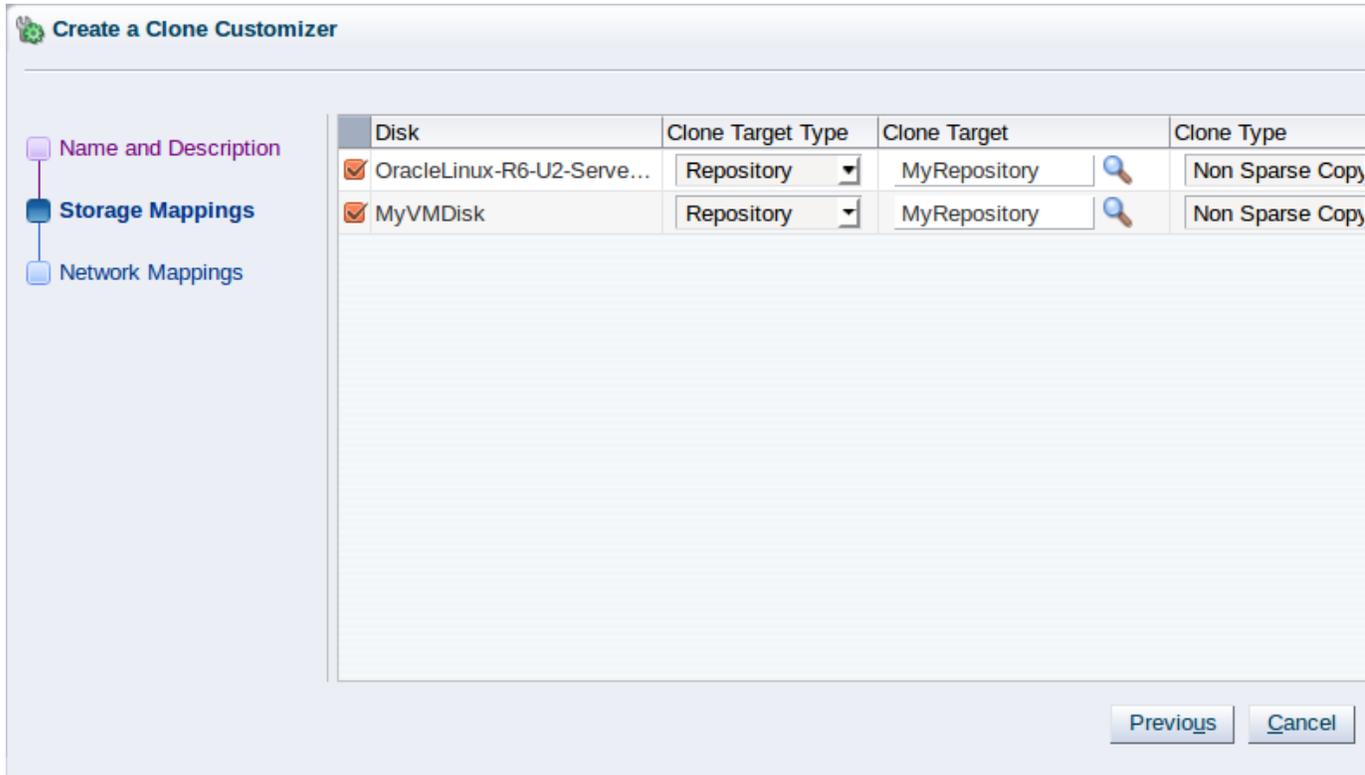
2. Select **Create Clone Customizer...** + .

3. The **Create a Clone Customizer** wizard is displayed.



In the **Name and Description** step of the wizard, enter a **Name** and **Description** for the clone customizer, and click **Next**.

4. The **Storage Mappings** step of the wizard is displayed.



Select the following storage mappings:

- **Disk:** The disks to include in the clone.
- **Clone Target Type:** The type of storage location where the disk is to be created, either a **Repository** or a **Physical Disk**.
- **Clone Target:** The location on the storage type where the disk is to be created.
- **Clone Type:** Whether to use a sparse or non-sparse files for the disk.

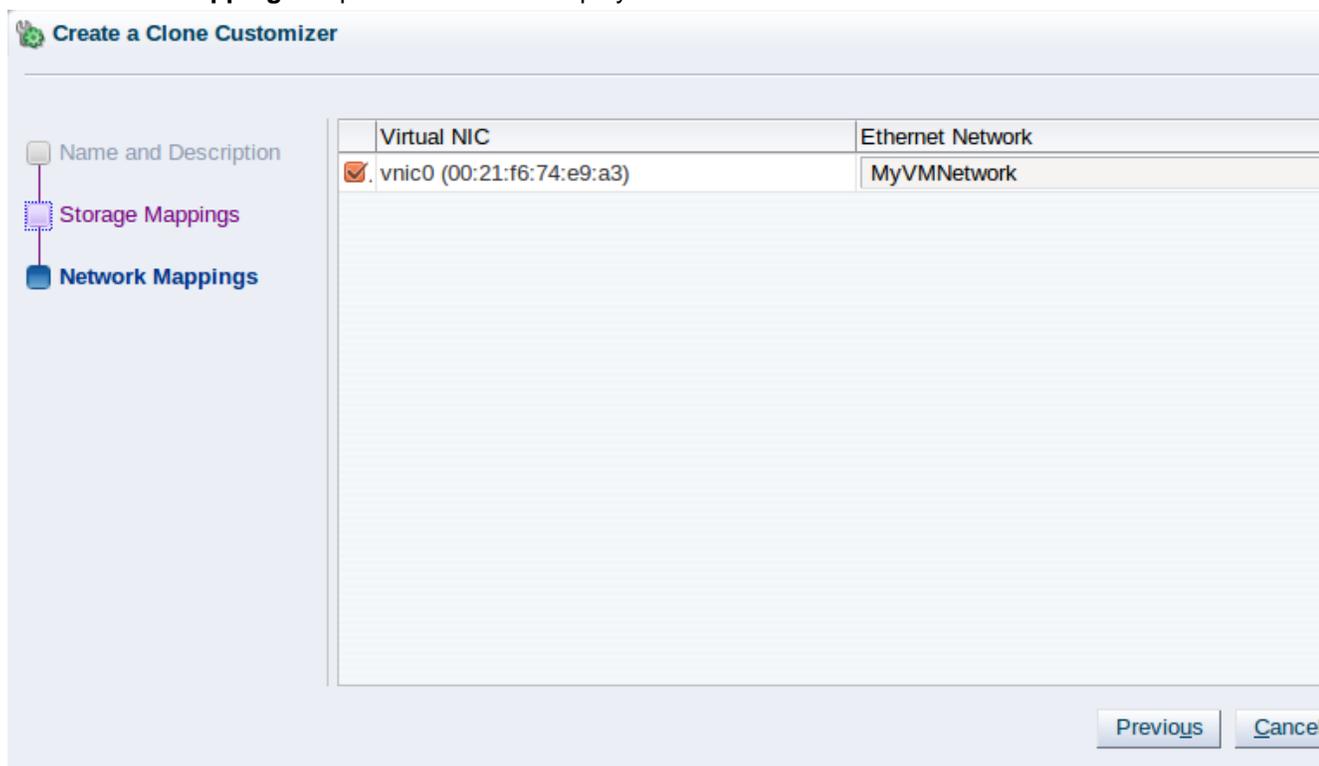


Caution

When sparse virtual disk space allocation is used, the available space in a repository can be over-subscribed. Sparse allocation is useful to increase virtual machine density. However, errors occur if the space allocated to a storage repository becomes exhausted, so the administrator must carefully monitor disk space.

Click **Next**.

5. The **Network Mappings** step of the wizard is displayed.



Select the **Virtual NICs** to include in the clone customizer, and the **Ethernet Network** to which they should belong.



Note

The network configuration is not changed when moving a virtual machine or template. It is only used when cloning a virtual machine or template.

Click **Finish**.

The clone customizer is now available to use to create a virtual machine, or template. See [Section 4.7.1.4, "Clone a Virtual Machine or Template"](#) for information on using the clone customizer to create a virtual machine or template.

Edit a Clone Customizer

To edit a clone customizer:

1. Select the object to which the clone customizer belongs, either a virtual machine, or a virtual machine template. Click **Manage Clone Customizers...** .
2. The **Manage Clone Customizers for (VM or Template)** dialog box is displayed. Select the clone customizer to edit and click **Edit Clone Customizer...** .
3. The **Edit Clone Customizer** dialog box is displayed. Edit the clone customizer.

Click **OK**. The changes to the clone customizer are saved.

Delete a Clone Customizer

To delete a clone customizer:

1. Select the object to which the clone customizer belongs, either a virtual machine, or a virtual machine template. Click **Manage Clone Customizers...** .
2. The **Manage Clone Customizers for (VM or Template)** dialog box is displayed. Select the clone customizer to delete and click **Delete Clone Customizer** .
3. A dialog box is displayed to confirm you want to delete the clone customizer. Confirm you want to delete the clone customizer and click **OK**. The clone customizer is deleted.

3.5.2.15 Send VM Messages

You can select one or more virtual machines, Oracle VM Servers or server pools, to select which running virtual machines are populated in the dialog box used to send messages to virtual machines.

To send a virtual machine a message you must have first installed the Oracle VM Guest Additions in the virtual machine. For information on installing the Oracle VM Guest Additions, and a more detailed description of the virtual machine messaging mechanism and its uses, see the [Oracle VM Administrator's Guide](#).

To send messages to virtual machines:

1. Click the **Servers and VMs** tab.
2. Determine the grouping of virtual machines that you wish to send a message to:
 - i. If you wish to send a message to virtual machines distributed across one or more server pools, click on the **Server Pools** folder in the navigation pane. Select **Server Pools** from the **Perspective** drop-down list. Select one or more server pools in the management pane.
 - ii. If you wish to send a message to virtual machines distributed across one or more servers in a particular server pool, expand the **Server Pools** folder in the navigation pane and select the server pool where the servers reside. Select **Servers** from the **Perspective** drop-down list. Select one or more servers in the management pane.
 - iii. If you wish to send a message to one or more virtual machines on a particular server, expand the **Server Pools** folder in the navigation pane and select the server pool where the servers reside. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane.
3. Click **Send VM Messages...**  in the perspective toolbar.

The **Send Messages to Virtual Machines** dialog box is displayed.

Send Messages to Virtual Machines

Messages Virtual Machines

View   

Log	Hide Message	Key	Message
Yes	No	com.oracle.linux.network.device.0	eth0
Yes	No	com.oracle.linux.network.onboot.0	yes
Yes	No	com.oracle.linux.network.bootpro...	dhcp
Yes	No	com.oracle.linux.root-password	v!rtu4l

Cancel OK

- To create a message, click **Create Message...**  in the perspective toolbar to display the **Create VM Message** dialog box.



+ Create VM Message

* Key:

Log Message

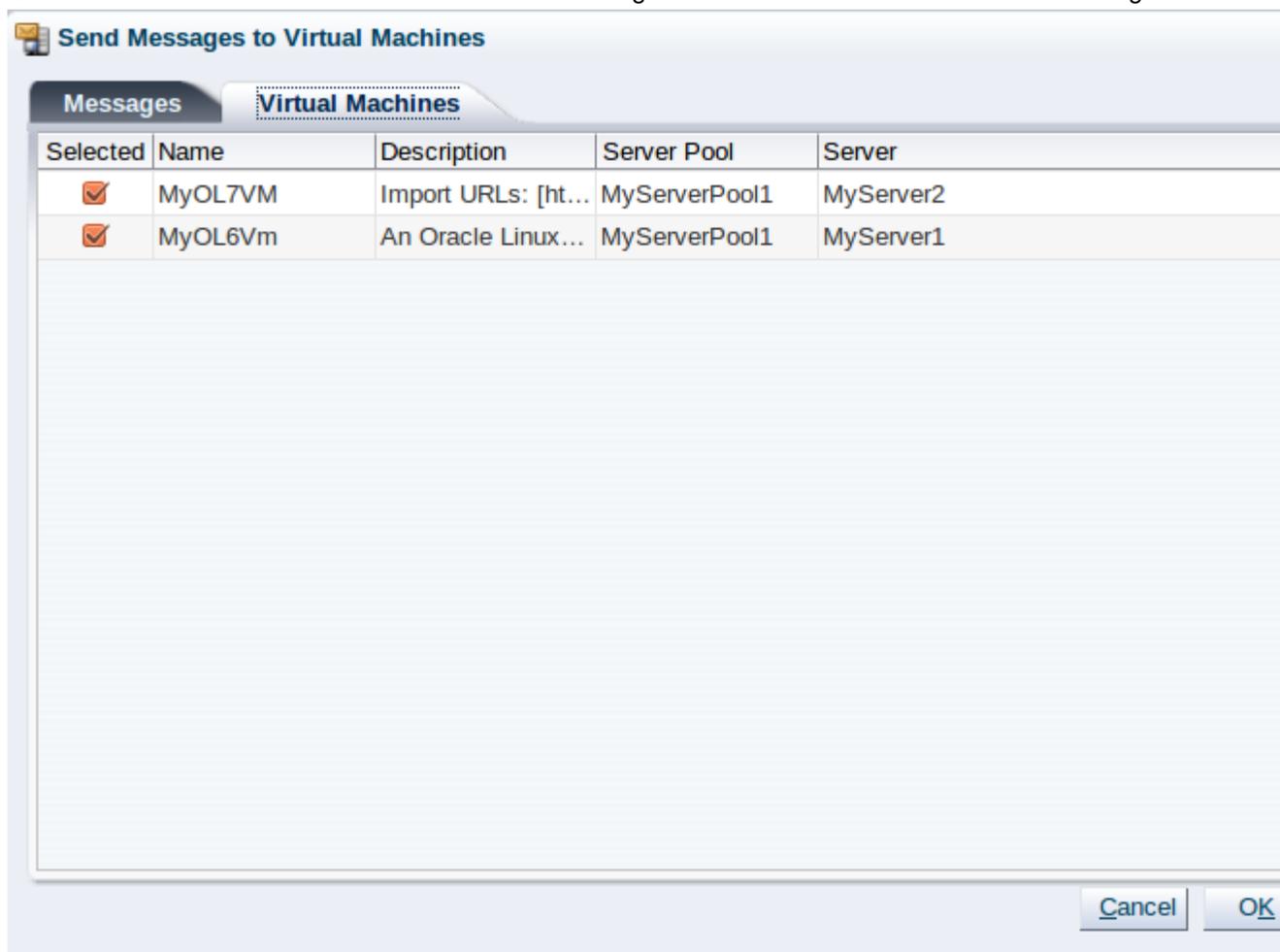
Hide Message

* Message:

Enter the message key value pair in the **Key** and **Message** fields. Check the **Log Message** field to retain a log of the message. Check the **Hide Message** field to hide the message of the key/value pair in the user interface. Click **OK** to save the message and return to the **Send Messages to Virtual Machines** dialog box.

- To edit a message, select the message and click **Edit...**  in the dialog box toolbar. To delete a message, select it and click **Delete**  in the dialog box toolbar.

- Select the **Virtual Machines** tab to select which running virtual machines are to receive the messages.



Click **OK** to send the messages to the virtual machines.

3.5.2.16 View Virtual Machine Configuration File

You can view the content of a virtual machine configuration file. The content is not editable but you can view and copy the text according to your needs.

To view a virtual machine configuration file:

- Click the **Servers and VMs** tab.
- Select the server pool on which the virtual machines reside in the navigation tree.
- Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to which the configuration file belongs. Click **VM Config File Content...** .
- The **VM Config File Content** dialog box is displayed with the content of the virtual machine configuration file. You can view and copy the text according to your needs.
- Click **OK** to close the dialog.

3.5.2.17 Display VM Hierarchy Viewer

You can generate a graphical report on a virtual machine. For more information about object reporting, see [Section 7.1, “Reports”](#).

To generate a graphical report on a virtual machine:

1. Select a server pool in the **Server Pools** folder in the navigation pane.
2. Select the **Virtual Machines** perspective in the management pane.
3. Select a virtual machine in the management pane table.
4. Click  **Display VM Hierarchy Viewer** in the management pane toolbar.

The **VM Hierarchy Viewer** window is displayed. This window contains some extra controls to manipulate the report display. These controls are described in the following table.

Table 3.17 Virtual machine graphical report controls

Control	Purpose
	Reposition the hierarchy viewer component within the viewport.
	Zoom a hierarchy viewer component so that all nodes are visible within the viewport.
	Zoom the hierarchy viewer component.
	Hide or show the control panel.
	Change the layout of the hierarchy viewer component from the layout you defined to one of the layout options.

5. To create an XML report of the graphical report, click **Generate Report**. The report is generated and sent to the browser.

3.5.2.18 View Virtual Machine Events

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 3.18 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** .
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** , or click **Acknowledge All**  to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** , or click **Acknowledge All**  to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** , or click **Acknowledge All**  to clear all user acknowledgeable errors.

3.5.2.19 Generate Report

You can generate an XML report on one or more virtual machines. For more information about object reporting, see [Section 7.1, "Reports"](#).

To generate a report on virtual machines:

1. Select a server pool in the **Server Pools** folder in the navigation pane.
2. Select the **Virtual Machines** perspective in the management pane.
3. Select one or more virtual machines in the management pane table.
4. Click  **Generate Report** in the management pane toolbar.
5. The report is generated and sent to the browser.

3.5.3 CPUs Perspective

The CPUs perspective lists the CPUs configured on a server. The following columns are displayed in the management pane:

- **CPU Number:** The CPU number as reported by the BIOS for each CPU on the server.

- **Level Two Cache Size:** The amount of memory in the level two cache.
- **Model Name:** The model and name of the CPU as reported by the BIOS.
- **Name:** The name of the CPU as an object within Oracle VM Manager.
- **Description:** The description of the CPU object as stored in Oracle VM Manager.

This perspective includes a toolbar that consists of the following options:

Table 3.19 Edit CPUs Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Edit Selected CPU...		Displays the Edit CPU dialog box. Use this option to edit the selected CPU.
Help		Displays context sensitive help.

3.5.3.1 Edit CPUs

To edit CPUs:

1. Click the **Servers and VMs** tab.
2. In the navigation pane, select the Oracle VM Server on which you want to edit the CPUs. If the Oracle VM Server is already part of a server pool, it is listed under **Server Pools**. Otherwise, find and select the Oracle VM Server in the **Unassigned Servers** folder.
3. Select **CPUs** from the **Perspective** drop-down list in the management pane.
4. Select the CPU to edit in the table in the management pane and click **Edit Selected CPU...**  in the toolbar.
5. The **Edit CPU** dialog box is displayed. You can edit the name and the description of the CPU.
6. Click **OK** to save and apply your changes.

3.5.4 Ethernet Ports Perspective

The Ethernet Ports perspective lists the different Ethernet ports or physical NICs configured on a server. The following columns are displayed in the management pane:

- **Port:** The port device name detected on the server.
- **Status:** The interface status (whether the port is up or down).
- **Interface Name:** The name of the interface as detected on the server.
- **MAC Address:** The MAC address for the network port.
- **MTU:** The MTU size set for the port.
- **Addressing:**
 - **Type:** How the interface is configured to obtain an IP address (for example, DHCP).
 - **IP Address:** The current IP address configured on the interface.

- **Netmask:** The netmask for the network that is configured on the interface.
- **Bond Name:** The name of the network bond that this interface is attached to (if any).
- **Network:** The name of the network that this interface belongs to (if any):

This perspective includes a toolbar that consists of the following options:

Table 3.20 Ethernet Ports Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Edit Selected Port...		Displays the Edit Port dialog box. Use this option to edit the configuration of an Ethernet port on a server.
Help		Displays context sensitive help.

3.5.4.1 Edit Port

To edit an Ethernet port:

1. Select the **Servers and VMs** tab.
2. In the navigation pane, select the Oracle VM Server on which the Ethernet port is to be edited. If the Oracle VM Server is already part of a server pool, it is listed under **Server Pools**. Otherwise, find and select the Oracle VM Server in the **Unassigned Servers** folder.
3. In the management pane, set the **Perspective** to **Ethernet Ports** and select the Ethernet port to edit. Click **Edit Selected Port**  in the toolbar. The **Edit Port** dialog box is displayed.
4. You can set or change the IP addressing, the mask, the MTU or the description. The **Addressing** field provides a drop-down selector that allows you to choose either **None**, **Static** or **Dynamic** to specify how IP Addressing should be configured on this interface or port. If you select **Static** here, the IP Address and Mask fields become available to edit, otherwise they remain uneditable. Setting the **Addressing** field to **None** deletes any previous IP addressing configured for the port.



Note

The IP addressing must either be set to Dynamic or Static (and the IP addressing information completed) if you intend to use the network port for an Oracle VM network channel, such as for "Server Management", "Live Migrate", "Cluster Heartbeat" or "Storage".

5. Click **OK** to save and apply your changes.

3.5.5 Bond Ports Perspective

The Bond Ports perspective lists the different network bonds configured for the ports on a server. The following columns are displayed in the management pane:

- **Port:** The bond port device name detected on the server.
- **Status:** The bond interface status (whether the bond port is up or down).
- **Interface Name:** The name of the bond interface as detected on the server.
- **MAC Address:** The MAC address for the network bond port.

- **MTU:** The MTU size set for the bond port.
- **Addressing:**
 - **Type:** How the interface is configured to obtain an IP address (for example, DHCP).
 - **IP Address:** The current IP address configured on the interface.
 - **Netmask:** The netmask for the network that is configured on the interface.
- **Networking:**
 - **Network:** The name of the network that this bond port belongs to (if any).
 - **Bond Name:** The name of the bond in the bond port.

This perspective includes a toolbar that consists of the following options:

Table 3.21 Bond Ports Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create Bond Port...		Displays the Create Bond Port wizard. Use this option to create a new bond port consisting of a number of physical Ethernet ports on a server.
Edit Selected Port...		Displays the Edit Bond Port dialog box. Use this option to change the configuration of the selected bond port on a server.
Delete Selected Port		Displays the Delete Confirmation dialog box. Use this option to delete the selected bond port on a server.
Help		Displays context sensitive help.

3.5.5.1 Create Bond Port

The management port on each Oracle VM Server is specified at installation time and is automatically configured as a [bonded](#) interface. You create additional bonds to add redundancy and if desired, load-balancing to your network environment. Once created, these bonds can be used as building blocks when building [VLAN](#) Interfaces or networks. This section discusses managing bonded interfaces.

To create a bond port:

1. Select the **Servers and VMs** tab.
2. In the navigation pane, select the Oracle VM Server on which the bond port is to be created. If the Oracle VM Server is already part of a server pool, it is listed under **Server Pools**. Otherwise, find and select the Oracle VM Server in the **Unassigned Servers** folder.
3. In the management pane, set the **Perspective** to **Ethernet Ports**. Make sure that the selected Oracle VM Server's ports to be used for the bond port are not part of an existing bond, network or VLAN group. Verify that the ports are available. You cannot add a port to a bond if the port has an IP address.
4. In the management pane, set the **Perspective** to **Bond Ports**. Click **Create Bond Port**  in the toolbar.
5. The **Create Bond Port** dialog box is displayed.

Create Bond Port

Create Bond Port

Server: MyServer3

Interface Name: bond1

Addressing: Static

* IP Address: 10.146.1.102

* Netmask: 255.255.255.0

* MTU: 1500

Description: Bond for Ethernet storage traffic

Bonding: Link Aggregation

Available Ports: eth3 on ca-server1003.us.

Selected Ports: eth1 on ca-server100

Cancel

Enter or select the following:

- **Server:** The name of the Oracle VM Server. You cannot edit this field.
- **Interface Name:** An optional name for the bond in the format `bondN`, for example `bond1`, or `bond2`. If you do not enter a name, the default of `bondN` is used, where `N` is the next available bond number. This cannot be changed after the bond is created.
- **Addressing:** The IP addressing type to use for the bond, either **Dynamic** (DHCP) or **Static**. You can assign an IP address to this bond now, or wait to assign an IP address later, when using the bond to create VLAN Interfaces or networks.
- **IP Address:** The IP address to use for the bond. This is available if using Static addressing.
- **Mask:** The netmask to use for the bond. This is available if using Static addressing.
- **MTU:** The Maximum Transfer Unit size. If your network supports jumbo frames, increase the MTU value to the required size. The MTU is set to 1500 by default, and can be between 1500 and 9000 for a 1GbE NIC, and 1500 and 64000 for a 10GbE NIC. Setting the MTU field sets the maximum transmission rate, so a packet size of 5000 can be sent and received if the MTU is set to 9000 for a 1GbE NIC.



Note

If configuring a port on SPARC system, changing the MTU value may require that the interface is not currently in use. If you attempt to change the MTU

value on an interface that is currently in use, an error message may be returned.

- **Description:** An optional description for the bond.
- **Bonding:** The [bonding](#) mode, either Active Passive, Link Aggregation, or Load Balanced. See [How is Network Bonding Used in Oracle VM?](#) in the *Oracle VM Concepts Guide*, for more information about network bonding modes.
- **Available Ports:** The available Ethernet ports on the Oracle VM Server. Select the ports to use from here and move them to the **Selected Ports** column.
- **Selected Ports:** The ports to use for the bond.

Click **OK** to create the bond.

When you have created the bond port, you can make changes to its configuration. You can update its bonding mode, and add or remove ports as well as changing its description and IP addressing.

3.5.5.2 Edit Bond Port

To edit a bond port:

1. Select the **Servers and VMs** tab.
2. In the navigation pane, select the Oracle VM Server on which the bond port is to be edited. If the Oracle VM Server is already part of a server pool, it is listed under **Server Pools**. Otherwise, find and select the Oracle VM Server in the **Unassigned Servers** folder.
3. In the management pane, set the **Perspective** to **Bond Ports** and select the bond to edit. Click **Edit Selected Port**  in the toolbar. The **Edit Port** dialog box is displayed.
4. You can set or change the bonding mode, the IP addressing, the mask, the MTU, the description, or the ports that are part of the bond. The **Addressing** field provides a drop-down selector that allows you to choose either *None*, *Static* or *Dynamic* to specify how IP Addressing should be configured on this bond. If you select *Static* here, the IP Address and Mask fields become available to edit, otherwise they remain uneditable. Setting the **Addressing** field to *None* deletes any previous IP addressing configured for the bond.



Note

The IP addressing must either be set to Dynamic or Static (and the IP addressing information completed) if you intend to use the network bond for an Oracle VM network channel, such as for "Server Management", "Live Migrate", "Cluster Heartbeat" or "Storage".

5. Click **OK** to save and apply your changes.

3.5.5.3 Delete Bond Port

To delete a bond port:

1. Select the **Servers and VMs** tab.
2. In the navigation pane, select the Oracle VM Server on which the bond port is to be deleted. If the Oracle VM Server is already part of a server pool, it is listed under **Server Pools**. Otherwise, find and select the Oracle VM Server in the **Unassigned Servers** folder.

3. In the management pane, set the **Perspective** to **Bond Ports** and select the bond to delete. Click **Delete Selected Port**  in the toolbar.
4. In the **Delete Confirmation** dialog box, click **OK** to delete the bond port.

3.5.6 Physical Disks Perspective

The Physical Disks perspective displays a list of the physical disks accessible by the Oracle VM Server in the table in the management pane. The following information is available:

- **Name:** The name of the physical disk entry.
- **Event Severity:** The current event severity status for the physical disk.
- **Size (GiB):** The size, in [GiB](#), of the physical disk.
- **Volume Group:** The volume group that the physical disk belongs to.
- **SAN Server:** The SAN server that the physical disk belongs to (if local storage, this is also indicated).
- **Type:** The type of storage that the physical disk is a part of (for example, LUN, iSCSI, Fibre Channel, or Unknown).
- **File System:** The name of the file system that is installed on the disk, if any.
- **Storage Plugin:** The Oracle VM Storage Connect plug-in that is used to access this physical disk.
- **Description:** A configured description for the physical disk.
- **VM(s):** Virtual machines using the physical disk.

An arrow displays next to each physical disk entry in the table. Click the arrow to expand the view for each entry and display the following information:

- **Name:** The user-specified alias for the physical disk. The name can be changed without changing the name of the physical disk on the storage array.
- **User Friendly Name:** The name of the physical disk on the storage array. The name was specified when the disk was created and cannot be changed.
- **Status:** The status of the physical disk (whether or not the disk is online).
- **Shareable:** Whether or not the physical disk can be shared.
- **Thin Provision:** Whether or not thin provisioning is supported by the physical disk.
- **Reserved by Server(s):** Whether or not the physical disk is unavailable for use by Oracle VM Manager.
- **Storage Targets:** The endpoint provided by the storage server through which the server may direct commands to the physical disk. The storage target provides access to the physical disk.
- **Server Pool:** The server pool that the physical disk belongs to.
- **Repository:** The repository that the physical disk belongs to.
- **VM(s):** Virtual machines using the physical disk.
- **ID:** The UUID for the physical disk.
- **Page83 ID:** The unique identifier for the physical disk.

- **Access Groups:** The access groups that the physical disk belongs to.
- **Extra Information:** Information that is passed to and from the Oracle VM Storage Connect plug-in for use internally by the plug-in.
- **Absolute Path:** The absolute path to the location of the disk.

The management functions you can perform on the disk are available as icons in the perspective toolbar. Some management options are only available to SAN server disks that use a non-generic Oracle VM Storage Connect plug-in.

Table 3.22 Physical Disks Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Rescan Physical Disks		Request an update of the all the physical disks available to the Oracle VM Server to determine if any disks have been changed, added, or removed.
Edit Physical Disk...		Change the name, description and extra information of the physical disk, or make it shareable.
Delete Physical Disk		Stop using the selected physical disk in your Oracle VM environment. <div style="display: flex; align-items: center;">  <div> <p>Warning</p> <p>If you effectively delete a LUN from a registered storage array, make sure that you delete it in Oracle VM Manager first, before you physically delete it from the storage server. If you do not respect this order of operations, the system goes into an unknown state, which can only be resolved by rebooting the Oracle VM Servers the deleted LUN is connected to.</p> </div> </div>
Clone Physical Disk		Create a <i>thin clone</i> , <i>sparse copy</i> or <i>non-sparse copy</i> of the physical disk on the selected target.
Delete File System		Delete one or more file systems and contents of the physical disks.
Refresh Physical Disks		Request an update of one or more physical disks to see if changes have been made to the size and configuration.
Display Selected Physical Disk Events...		Display the Events dialog box which contains the job event associated with the physical disk.
Help		Displays context sensitive help.

3.5.6.1 Rescan Physical Disks

You can rescan the physical disks available to an Oracle VM Server to determine if any disks have been changed, added, or removed.

To rescan the physical disks on Oracle VM Servers:

1. Click the **Servers and VMs** tab, and select the server pool in which the Oracle VM Servers reside in the navigation tree. Select **Servers** in the **Perspective** drop-down list in the management pane. Select the Oracle VM Servers in the management pane table.

Alternatively, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list.

2. Click **Rescan Physical Disks**  in the perspective toolbar.
3. A confirmation dialog box is displayed. Click **OK**.

3.5.6.2 Edit Physical Disk

It is possible to edit the configuration for a physical disk either available on a SAN server or as local or shared storage. The steps and options to do so are described below.

To edit Physical Disk configuration:

1. On the **Storage** tab, expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to edit in the table presented in the management pane.

To edit the physical disk configuration for a physical disk used by a particular server, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to edit in the table presented in the management pane.

2. Click on the  **Edit Physical Disk** icon in the toolbar.
3. A dialog opens to allow you to reconfigure the Physical Disk. The dialog has the following options:
 - **ID:** A non-editable field containing the physical disk's UUID as it is stored within Oracle VM Manager.
 - **Name:** A field to change the name of the physical disk within Oracle VM Manager.
 - **Current Size(GiB):** A non-editable field containing the physical disk's current size, in [GiB](#).
 - **New Size(GiB):** A field to change the size, in GiB, of the physical disk. The size of the physical disk can only be increased in size.
 - **Description:** A text field allowing a description of the physical disk.
 - **Shareable:** A check box that determines whether or not the disk can be shared.
 - **Thin Provision:** A non-editable field describing whether or not thin provisioning is supported by the disk.
4. When you have finished editing the physical disk, click **OK** to save the changes, or **Cancel** to exit out of the dialog without saving any changes.

3.5.6.3 Delete Physical Disk

It is possible to delete an existing physical disk if it is no longer used in your Oracle VM environment and the Oracle VM Storage Connect plug-in that you are using supports this operation. Two types of physical disks are used in an Oracle VM environment:

- Local physical disk - A physical disk installed locally on a specific Oracle VM Server.
- SAN Server physical disk - A physical disk that is made available to the SAN Server during the discovery process.

Each physical disk type can be deleted using the Oracle VM Manager Web Interface.

To delete a registered physical disk that is no longer used:

1. There are two options available that you can use to delete a physical disk from your Oracle VM environment:
 - a. To delete a local physical disk:

Expand the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, and select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you want to delete in the table presented in the management pane.
 - b. To delete a SAN Server physical disk:

Use the instructions in step a or alternatively, expand the **Storage** tab, expand the **SAN Servers** folder in the navigation tree, and select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to delete in the table presented in the management pane.
2. Click on the  **Delete Physical Disk** icon in the toolbar.
3. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the physical disk.

3.5.6.4 Clone Physical Disk

It is possible to clone a physical disk. The steps and options to do so are described below.

To clone a Physical Disk:

1. On the **Storage** tab, expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to clone in the table presented in the management pane.

To clone a physical disk used by a particular server, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to clone in the table presented in the management pane.
2. Click on the  **Clone Physical Disk** icon in the toolbar.
3. A dialog opens to allow you to clone the Physical Disk. The dialog has the following options:
 - **Name:** A field to set the name of the physical disk clone that you are going to create within Oracle VM Manager.
 - **Clone Target Type:** A drop-down menu allowing you to select the type of storage to be used for the physical disk clone:
 - **Physical Disk:** Copies the data from one physical disk to another.
 - **Repository:** Copies the data from the physical disk into a virtual disk image in an existing repository.
 - **Clone Target:** A searchable field to allow you to select the target location where the clone is to be stored.
 - **Clone Type:** A drop-down menu allowing you to select the type of clone to create:

- **Sparse Copy:** Copies only the written data from the physical disk to the target clone.
 - **Non-sparse Copy:** Performs a block copy of the physical disk to the target clone.
4. When you have finished setting the clone parameters for the physical disk, click OK to begin the clone job, or Cancel to exit out of the dialog without saving any changes.

3.5.6.5 Delete File System

It is possible to delete the file system on local and shared storage devices, and on a physical disk attached to an Oracle VM Server.

To delete a file system on local or shared storage:

1. Select the **Storage** tab.
2. Click on either the **Local File Systems** or **Shared File Systems** folder in the navigation tree.
3. Select the file system to delete in the table in the management pane.
4. Click the  **Delete File System** icon in the toolbar. If the icon is greyed out it means that the file system is used by a repository and it cannot be deleted. You must first delete the repository. See [Section 4.3.1.3, "Delete Repository"](#).
5. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the file system.

To delete a file system on a physical disk attached to an Oracle VM Server:

1. Select the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Physical Disks** in the **Perspective** drop-down list.
4. Select the physical disk in the table in the management pane.
5. Click on the  **Delete File System** icon in the toolbar. If the icon is greyed out, there is no file system on the disk so it cannot be deleted.
6. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the file system.

3.5.6.6 Refresh Physical Disk

When changes are made to the physical disks on a SAN server or Oracle VM Server, it is useful to refresh the configuration of your physical disks to make Oracle VM Manager aware of the changes.

To refresh physical disks:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk or disks that you wish to refresh in the table presented in the management pane.

To refresh physical disks used by a particular server, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to refresh in the table presented in the management pane.

2. Click on the  **Refresh Physical Disk** option in the toolbar.

- The selected physical disks are refreshed and their configurations are updated within Oracle VM Manager.



Note

If you encounter an error, when refreshing a physical disk with a repository located on it, similar to the following:

```
OVMAPI_7281E Cannot perform operation on file system...
```

You may need to ensure that the repository is under the ownership of the Oracle VM Manager instance that you are using. See [Section 4.3.1.2, “Edit Repository”](#) for more information.

3.5.6.7 View Physical Disk Events

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...** perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 3.23 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...**  .
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

3.5.7 Storage Initiators Perspective

The Storage Initiators perspective lists the different storage initiators available on a server. It also allows you to add storage initiators to different access groups. The following columns are displayed in the management pane:

- **Name:** The name of the storage initiator on the selected server.
- **Description:** The configured description for the storage initiator.

This perspective includes a toolbar that consists of the following options:

Table 3.24 Storage Initiators Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
View Access Groups for Selected Initiator		Displays the View Access Groups for Initiator dialog box. Use this option to add storage initiators on a particular server to any existing access groups that you have configured.
Help		Displays context sensitive help.

3.5.7.1 View Access Groups for Selected Initiator

In order to access SAN server storage, an access group must be created, and a storage initiator configured on the Oracle VM Server. Storage initiators are added to an Oracle VM Server during discovery, based on your storage configuration. You configure access groups to bind storage initiators to physical disks. For information on creating access groups, see [Section 6.6.4, “Access Groups Perspective”](#). You can also view and configure existing storage initiators for a particular Oracle VM Server.

To view access groups for storage initiators on an Oracle VM Server:

1. Click the **Servers and VMs** tab, and select the Oracle VM Server in the navigation tree.
2. Select **Storage Initiators** in the **Perspective** drop-down list in the management pane. The storage initiators configured on the Oracle VM Server are listed in the management pane table.
3. Select a storage initiator in the table, and click **View access groups for selected initiator** .
4. The **View Access Groups for Initiator** dialog box is displayed. Select the **SAN Server** and **Access Groups** from the drop-down lists and click **Add**. Click **OK**.

See [Section 6.6.4, “Access Groups Perspective”](#) for more information on managing SAN server access groups.

3.5.8 Control Domains Perspective

The Control Domains perspective displays information about the control domain (dom0), running on the Oracle VM Server, in the table in the management pane. The following information is available:

- **Name:** The name of the domain
- **Processors:** The number of processors available for use by the control domain.
- **Memory (MB):** The amount of memory (in megabytes) used by the control domain.
- **Host OS Name:** The host operating system name running within the control domain.
- **Host OS Type:** The type of operating system running in the control domain (for example, Linux or Solaris).
- **OVM Version:** The version number reported by the Oracle VM software running in the control domain.

An arrow displays next to each control domain entry in the table. Click the arrow to expand the view for each entry and display the following information:

- **Host OS Major Version:** The major version number for the operating system version.
- **Host OS Minor Version:** The minor version number for the operating system version.
- **Agent Version:** The version number of the Oracle VM Agent software running in the control domain.
- **Kernel Release:** The kernel version release numbering for the operating system running in the control domain.

This perspective includes a toolbar that consists of the following options:

Table 3.25 Control Domains Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Help		Displays context sensitive help.

3.5.9 Repository Exports Perspective

An Oracle VM Server can be configured to enable third party applications to perform a back up of the contents of a storage repository. To enable this, an Oracle VM Server is configured to provide an NFS share that a third party back up tool can use to access the contents of the repository. Only local or shared OCFS2-based storage repositories can be exported as an NFS share.



Note

You cannot create a repository export for an NFS storage repository. When creating a repository export, you can only select an OCFS2 storage repository. An NFS storage repository is also an NFS share and can be exported without using the repository export functionality.

When you have created a repository export, use the **Repository Path** (displayed in the management pane table) and the Oracle VM Server hostname or IP address to connect to the NFS mount point from the third party back up software.

This perspective lists the currently available repository exports. The following columns are presented in the table within the management pane:

- **Client IP/Host Name:** The IP address or hostname of the computer which has been granted access to the repository
- **Options:** Additional NFS mount parameters

- **Repository:** The repository being exported

This perspective includes a toolbar that consists of the following options:

Table 3.26 Repository Exports Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create Repository Export...		Displays the Create a Repository Export wizard. Use this option to create repository exports to backup your repositories.
Edit Repository Export...		Displays the Edit Repository Export wizard. Use this option to edit the NFS parameters for a repository export.
Delete Repository Export...		Displays the Delete Confirmation dialog box. Use this option to delete the selected repository export.
Help		Displays context sensitive help.

3.5.9.1 Create Repository Export

To create a repository export:

1. Click the **Servers and VMs** tab.
2. In the navigation pane, select the Oracle VM Server on which you want to create the repository export location.
3. Select **Repository Exports** from the **Perspective** drop-down list in the management pane.
4. Click **Create Repository Export..**  in the toolbar.
5. The **Create Repository Export** dialog box is displayed. Enter or select the following:
 - **Client IP/Host Name:** The IP address or hostname of the computer for which to grant access to the repository contents. This is likely to be the machine on which the third party back up and restore software is running.
 - **Repository:** An OCFS2 storage repository presented to the Oracle VM Server. This is the repository you want to back up.



Note

You cannot create a repository export for an NFS storage repository. When creating a repository export, you can only select an OCFS2 storage repository. An NFS storage repository is also an NFS share and can be exported without using the repository export functionality.

- **Options:** The parameters to include in the NFS mount configuration, for example:

```
rw, async, no_root_squash
```

Click **OK**.

3.5.9.2 Edit Repository Export

To edit a repository export:

1. Click the **Servers and VMs** tab.

2. In the navigation pane, select the Oracle VM Server on which you want to edit the repository export parameters.
3. Select **Repository Exports** from the **Perspective** drop-down list in the management pane.
4. To edit a repository export, select the entry in the table in the management pane and click **Edit Repository Export..**  in the toolbar.
5. The **Edit Repository Export** dialog box is displayed. Enter or select the following:
 - **Client IP/Host Name:** The IP address or hostname of the computer for which to grant access to the repository contents. This is likely to be the machine on which the third party back up and restore software is running. (Not editable)
 - **Repository:** An OCFS2 storage repository presented to the Oracle VM Server. This is the repository you want to back up. (Not editable)
 - **Options:** The parameters to include in the NFS mount configuration, for example:

```
rw, async, no_root_squash
```

Click **OK**.

3.5.9.3 Delete Repository Export

To delete a repository export:

1. Click the **Servers and VMs** tab.
2. In the navigation pane, select the Oracle VM Server for which you want to delete the repository export.
3. Select **Repository Exports** from the **Perspective** drop-down list in the management pane.
4. To delete a repository export, select the entry in the table in the management pane and click **Delete Repository Export**  in the toolbar.
5. A confirmation dialog is displayed. Click **OK** to delete the repository export.

3.5.10 Events Perspective

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set

for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 3.27 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.

4. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 🗑️ .
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

3.6 Unassigned Servers Folder

The **Unassigned Servers** navigation folder in the navigation tree contains the Oracle VM Servers that are not a member of a server pool within Oracle VM Manager. The structure of the navigation provided in the navigation tree is discussed in more detail in [Section 3.2, “Summary”](#).

Clicking on the **Unassigned Servers** folder in the navigation tree allows you to access different perspectives in the management pane. Each perspective provides its own view of all of the unassigned Oracle VM Servers within Oracle VM Manager. Most of the perspectives also include separate toolbars that enable you to perform various configuration or management tasks specific to the view currently displayed in the management pane. The **Unassigned Servers** folder offers the following perspectives in the management pane:

- [Servers Perspective](#)
- [Events Perspective](#)

Within the **Unassigned Servers** navigation folder, individual Oracle VM Server navigation items are displayed if there are Oracle VM Servers in your environment that have not been assigned to a server pool. Each Oracle VM Server item has the same associated perspectives and toolbars available as an Oracle VM Server item listed in a server pool. For information on the perspectives and toolbars associated with an Oracle VM Server navigation item, see [Section 3.5, “Server Item”](#).

3.6.1 Servers Perspective

The Servers perspective lists the different servers that belong to either a server pool or the Unassigned Servers folder, depending on the item selected in the navigation pane. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the server.
- **Status:** The running status of the server.
- **Tag(s):** Any tags that have been applied to the server.
- **Maintenance Mode:** Whether or not the server is configured to be in maintenance mode.
- **IP Address:** The IP address that is used by Oracle VM Manager to access the server on the management network channel.
- **Memory (GiB):** The available memory, in [GiB](#), on the server.
- **Processors:** The number of processors that the server contains.
- **Speed (GHz):** The speed that the processors for the server are configured to run at.
- **Product:** The physical host brand and type reported by the server bios.
- **Owned:** Whether or not the server is owned by the current Oracle VM Manager instance.
- **Update Required:** Whether or not a server update is available for the server from its server update repository.

This perspective includes a toolbar that consists of the following options:

Table 3.28 Servers Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create Virtual Machine...		Displays the Create Virtual Machine wizard. Use this option to create a virtual machine in the selected server pool.
Edit...		Displays the Edit Server dialog box. Use this option to edit the name and description for an Oracle VM Server. This is also used to put the Oracle VM Server into maintenance mode, take ownership of it, and to configure remote management of the Oracle VM Server using IPMI (Intelligent Platform Management Interface). Note that placing an Oracle VM Server in maintenance mode is indicated in the navigation pane with this icon: 
Delete		Displays the Delete Confirmation dialog box. Use this option to delete the selected Oracle VM Server.
Start		Starts a stopped Oracle VM Server.
Stop		Stops a running Oracle VM Server.
Restart		Restarts a running Oracle VM Server.
Kill		Powers off an Oracle VM Server. This is the equivalent of physically pushing the Off button on the hardware.

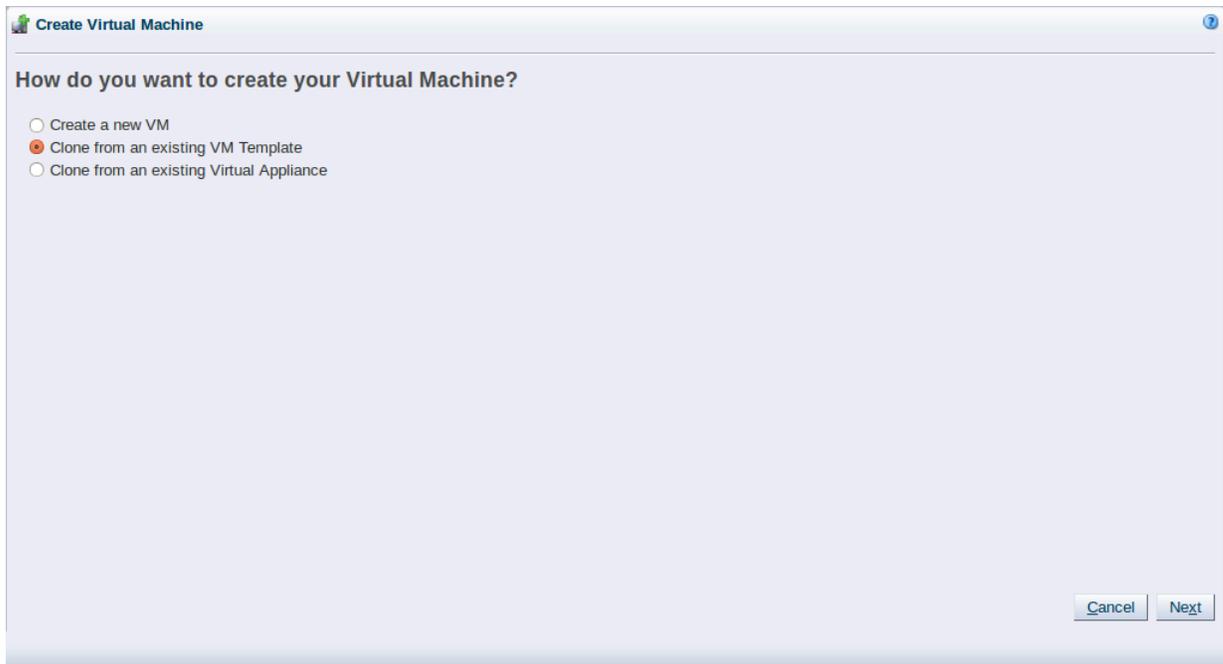
Toolbar Icon Option	Icon	Description
Rediscover Server		Rediscover the Oracle VM Server. Use this to refresh information about the Oracle VM Server.
Rescan Physical Disks		Rescans the local storage on an Oracle VM Server. Use this option to rescan the storage presented to an Oracle VM Server when the storage configuration is changed, for example, a new storage array is added.
Update Server		Updates or upgrades the Oracle VM Server if an update is available in the server update repository.
Send VM Messages...		Send one or more virtual machines a message. Use this option to send messages to virtual machines that have the Oracle VM Guest Additions installed. This option is not available in the Unassigned Servers folder. Virtual machines must be running on a server to receive messages.
Generate Report		Generate an XML report on one or more Oracle VM Servers.
Help		Displays context sensitive help.

3.6.1.1 Create Virtual Machine

This section explains how to create a virtual machine using a template, and creating a virtual machine from an ISO file, or from physical or [virtual disks](#).

To create a virtual machine using 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.

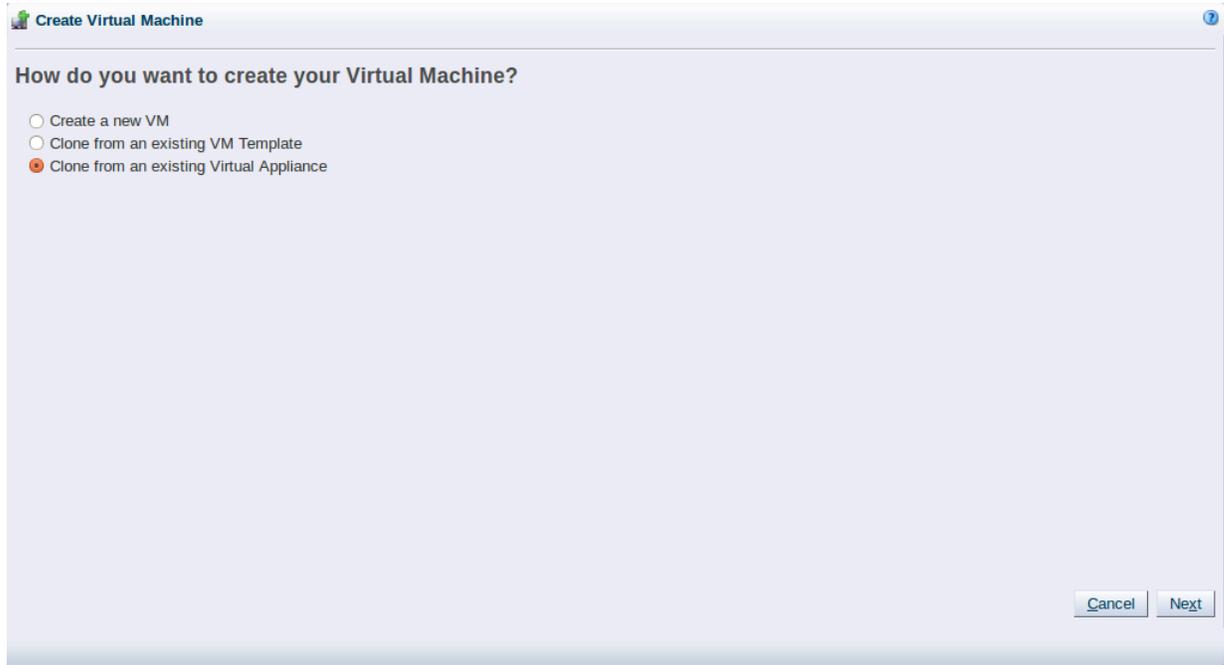
Enter or select the following details:

- **Clone Count:** The number of virtual machines to create from the template.
- **Name Index:** The start index number to use for the clone name suffix. The default is 0. This is used in conjunction with the **VM Name** field to create the name for each clone.
- **Repository:** The repository in which to create the virtual machine configuration files.
- **VM Template:** The template to use to create the virtual machines.
- **VM Name:** An optional name for the virtual machines. The maximum name length is 256 characters and may contain any character. The name need not be unique. If no value is given, the default is the name of the virtual machine template being cloned. Each clone is suffixed with a dot (.) and the clone index number, starting with the value for the **Name Index** field. For example, if the **VM Name** field is set to `MyVM`, and the **Name Index** field is set to `1`, the resulting clones would be named `MyVM.1`, `MyVM.2` and so on.
- **Server Pool:** The server pool in which to deploy the virtual machines.
- **Description:** An optional description of the virtual machines.

5. Click **Finish**. The virtual machines are created and deployed to the server pool.

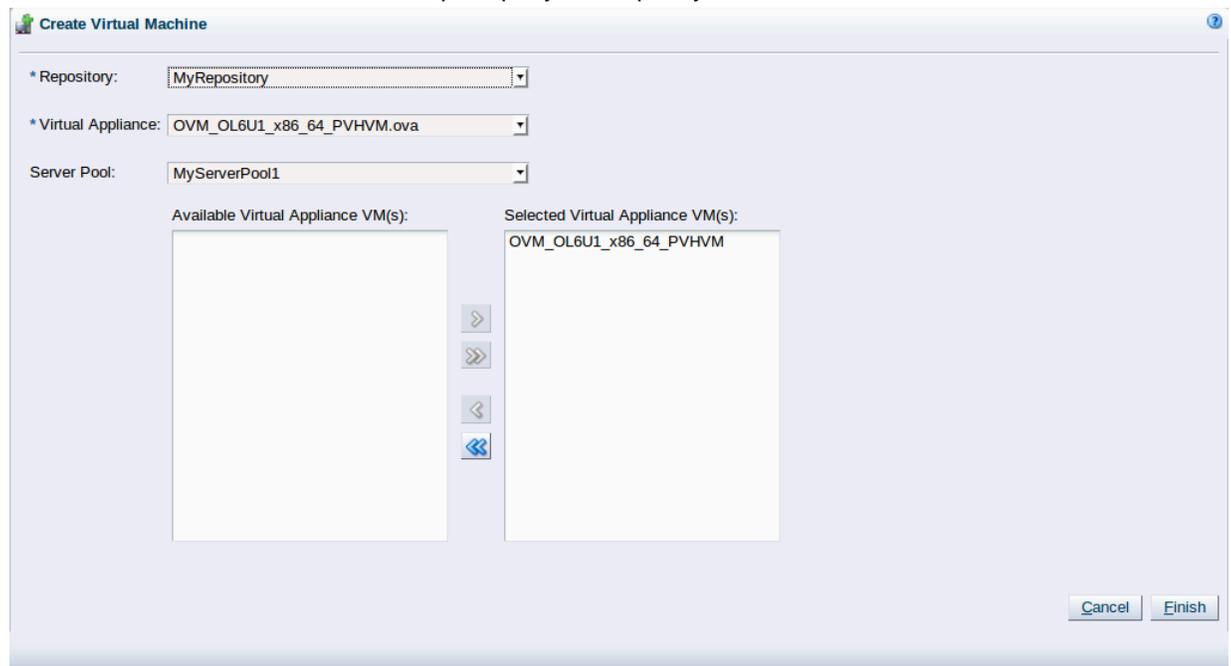
To create a virtual machine using a virtual appliance:

1. Click the **Servers and VMs** tab.
2. Click **Create Virtual Machine**  in the toolbar.
3. The **Create Virtual Machine** wizard is displayed.



Click 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.



Enter or select the following details:

- **Repository:** The repository in which to create the virtual machine configuration files.
- **Virtual Appliance:** The virtual appliance from which you want to create the virtual machines.
- **Server Pool:** The server pool in which to deploy the virtual machines.

If you select **None**, the virtual machines are deployed into the **Unassigned Virtual Machines** folder.

- **Available Virtual Appliance VM(s):** The virtual machines that are available to create from the virtual appliance.
- **Selected Virtual Appliance VM(s):** The virtual machines to create from the virtual appliance.

You can select multiple virtual machines if the virtual appliance contains more than one. Oracle VM Manager creates a separate virtual machine for each one that you select.

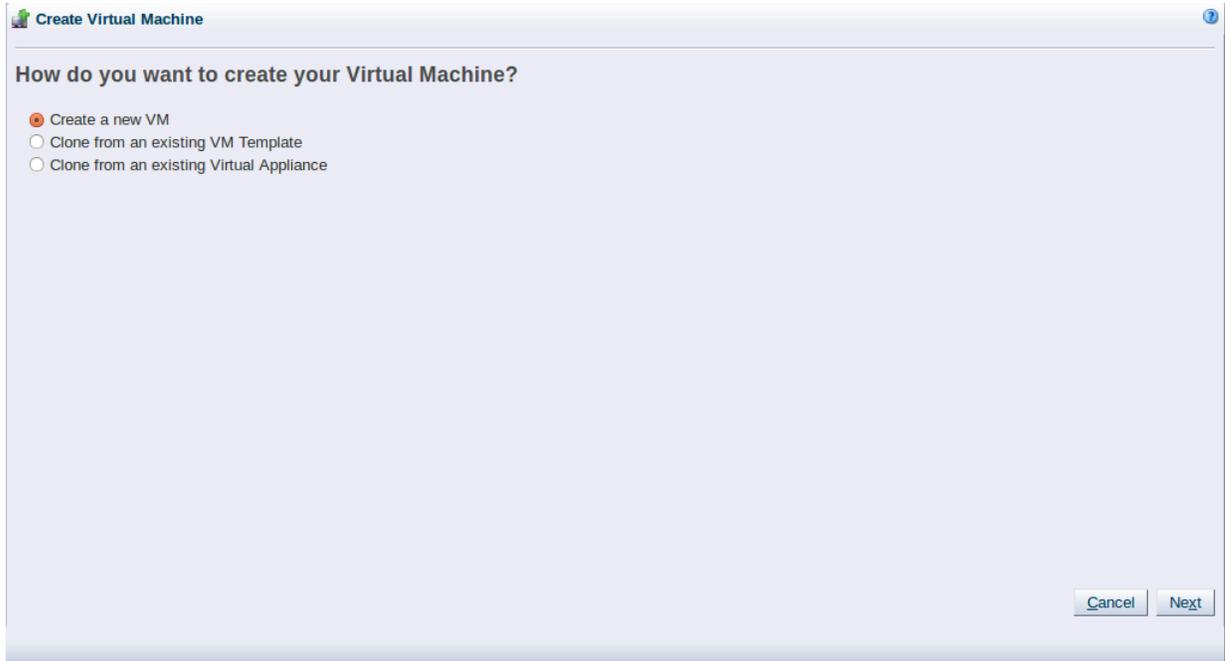
5. Click **Finish**.

Oracle VM Manager creates the selected virtual machines from the virtual appliance and deploys them to the server pool you specified.

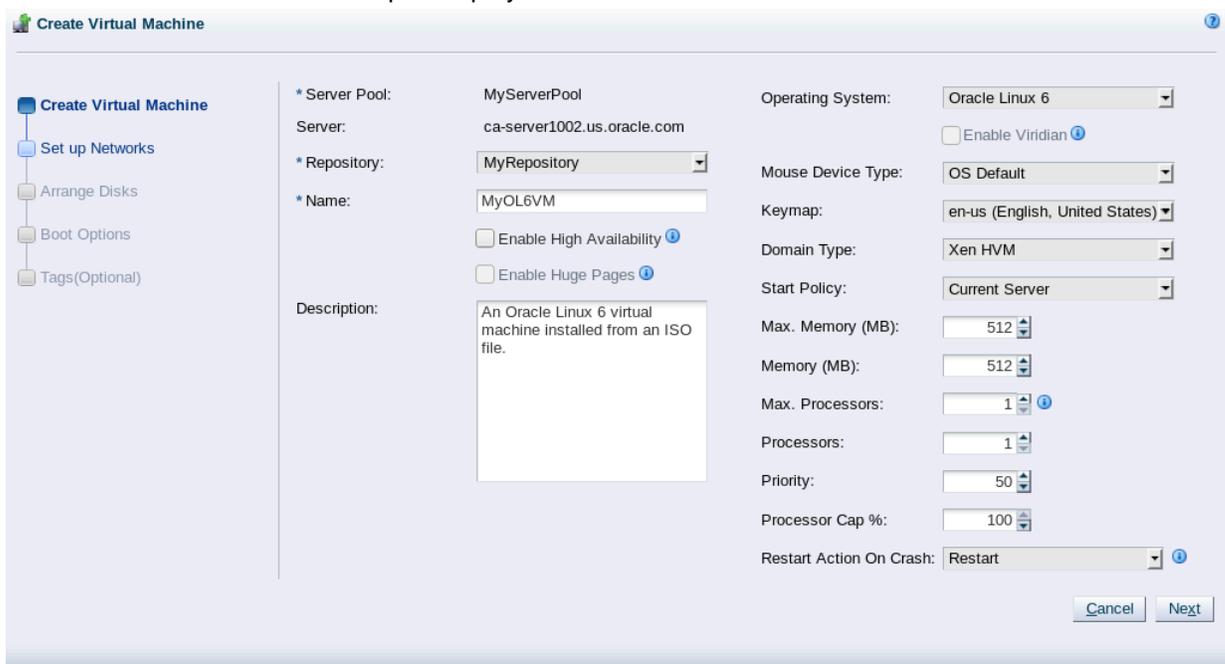
You can then migrate each virtual machine to a compatible server or server pool.

To create a virtual machine using all other media:

1. Click the **Servers and VMs** tab.
2. Click **Create Virtual Machine**  in the toolbar.
The **Create Virtual Machine** wizard is displayed.
3. Click the **Create a new VM** option and then click **Next**.



4. The **Create Virtual Machine** step is displayed in the wizard.



Enter or select the following details:

- **Server Pool:** The server pool on which to create the virtual machine.
- **Server:** The server that the virtual machine should be created on. The default option is [Any](#), but the drop-down selection lists the servers that exist in the server pool that you have selected. Selecting a

particular server forces the virtual machine to be created on that server. This has implications for the Start Policy discussed later.

- **Repository:** The repository in which to create the virtual machine configuration file.
- **Name:** A name for the virtual machine. The maximum name length is 256 characters and may contain any character. The name need not be unique.
- **Enable High Availability:** Whether to enable High Availability (HA). See [How does High Availability \(HA\) Work?](#) in the *Oracle VM Concepts Guide* for more information on HA.
- **Enable Huge Pages:** Whether to enable [HugePages](#).
 - The HugePages feature is deprecated for virtual machines with a domain type of PVM in Oracle VM Release 3.4.1. You should not enable HugePages when creating or editing virtual machines. This feature will be removed in a future release of Oracle VM.

If you have HugePages enabled for any PVM guests, Oracle recommends that you change the domain type for virtual machines from Paravirtualized (PVM) to Hardware virtualized, with paravirtualized drivers (PVHVM). If you cannot change the domain type for a virtual machine, you should disable the HugePages setting and then restart the virtual machine.

- Huge Page support is enabled by default for virtual machines with a domain type of HVM or PVHVM. You cannot set this parameter for those virtual machines.
- This option does not take effect on virtual machines deployed on SPARC-based server pools. Virtual machines running on SPARC-based servers can access the page sizes that the server platform supports, regardless of this setting.

See [How is the HugePages Feature Enabled for Virtual Machines?](#), in the *Oracle VM Concepts Guide*, for more information on Huge Page support.

- **Description:** An optional description of the virtual machine.
- **Operating System:** The operating system of the virtual machine. This setting enables or disables certain virtual machine settings that the guest operating system may require.
- **Enable Viridian:** Whether to enable Viridian.
 - Viridian support enables the exposure of Windows virtualization compatible entitlements to Microsoft Windows guest operating systems. Enabling viridian support is strongly recommended to ensure improved performance for Microsoft Windows guest operating systems.
 - Enabling viridian support is permitted for all Microsoft Windows guest operating system types. However, it is only effective from Microsoft Windows Vista and Microsoft Windows Server 2008 onwards.
 - Viridian support is enabled by default when creating virtual machines running Microsoft Windows guest operating systems.
- **Mouse Device Type:** The mouse type to use for the virtual machine. This option is not available for virtual machines in SPARC-based server pools.
- **Keymap:** The keyboard mapping to use for the virtual machine. This option is not available for virtual machines in SPARC-based server pools.
- **Domain Type:** The domain type of the virtual machine.

- **Xen HVM:** Hardware virtualization, or fully virtualized. When you select this option you can supply an ISO file in a repository (in the **Arrange Disks** step of the wizard) from which to install an operating system on the virtual machine. See [Section 4.5.1.1, “Import ISO”](#) for information on importing an ISO file into a repository. Alternatively, you may consider setting up an environment to perform a network installation for the virtual machine.
- **Xen HVM PV Drivers:** Identical to **Xen HVM**, but with additional paravirtualized drivers for improved performance of the virtual machine. See [What are Virtualization Modes or Domain Types?](#) in the [Oracle VM Concepts Guide](#) for more information about using paravirtualized drivers. This domain type is typically used to run Microsoft Windows guest operating systems with an acceptable performance level. Installation of the guest operating system is usually performed either using an ISO file in a repository or via a network installation.
- **Xen PVM:** Paravirtualized. Enables you to select a location for the mounted ISO file from which to create the virtual machine. Before you create the virtual machine using the paravirtualized method, mount the ISO file on an NFS share, or HTTP or FTP server. You supply the location of the mounted ISO file in the **Network Boot Path** field in the **Boot Options** step of the wizard. For information on creating a mounted ISO file, see [Provisioning ISO Files for PVM Guest Installations](#) in the [Oracle VM Administrator's Guide](#). Do not select this option if the virtual machine Operating System is set to either Oracle Linux 7 or RedHat Enterprise Linux 7. These operating systems do not support the Xen PVM domain type.

**Important**

As of Oracle VM Release 3.4.6, support for PVM guests is removed. For more information, see [Disabling Paravirtualized Guests on Oracle VM Server](#) in the [Oracle VM Administrator's Guide](#).

- **OVM/SPARC:** Specifies that the virtual machine is deployed on a server pool running on Oracle VM Server for SPARC.
- **Unknown:** This option is informational in the event that Oracle VM Manager is unable to determine the domain type for an existing virtual machine. It is not possible to actually set a virtual machine's domain type to this value. Attempting to do so generates a rule violation when you try to save the virtual machine settings and an error message is returned.
- **Start Policy:** The policy that should be used to start the virtual machine. Select one of:
 - **Best Server:** This is the legacy algorithm that optimizes virtual machine placement on Oracle VM Servers that are in use before moving to unused servers in the pool.
 - **Balance Server:** This algorithm distributes virtual machines across all the available Oracle VM Servers in the server pool, starting with the least utilized Oracle VM Server first. CPU and memory

utilization statistics are used to balance the virtual machine distribution across the server pool, with CPU utilization taking precedence over memory utilization.

- **Current Server:** The virtual machine is started on the Oracle VM Server to which it is assigned. If you selected a particular server to create the virtual machine on, then it is started on this server.
- **Use Pool Policy:** The virtual machine is started using the start policy defined for the entire server pool. See [Section 3.1.2, "Create Server Pool"](#) for more information on setting the start policy for a server pool.
- **Max. Memory (MB):** The maximum memory size the virtual machine can be allocated. This value must be between 32 and 512000. The default is 512.

For x86-based virtual machines, this value is incremented by 32 each time you click the up arrow, and, conversely, decreased by 32 if you click the down arrow. For SPARC-based virtual machines, the up arrow adds 512, and the down arrow subtracts 512. If you have enabled Huge Pages, the value must be a multiple of 2 MB.

**Note**

For HVM and PVHVM guests, the maximum memory size value must equal the memory size value. If these values are different, the following job failure message is generated for HVM/PVHVM guests: "The memory limit cannot be different than the current memory size on an HVM/PVHVM Virtual Machine."

- **Memory (MB):** The memory size the virtual machine is allocated. When creating a virtual machine, this is the memory allocation used when starting the virtual machine. This value must be between 32 and 512000. The default is 512.

For x86-based virtual machines, this value is incremented by 32 each time you click the up arrow, and, conversely, decreased by 32 if you click the down arrow. For SPARC-based virtual machines, the up arrow adds 512, and the down arrow subtracts 512. If you have enabled Huge Pages, the value must be a multiple of 2 MB.

You can change the memory allocated to a running virtual machine without the need to restart the virtual machine if the domain type is PVM or PVHVM and where the guest is running a Linux OS on an x86-based platform or an Oracle Solaris OS on a SPARC-based platform.

**Note**

For x86-based PVHVM guests running on Oracle Solaris OS, you cannot change the memory if the virtual machine is running.

See the *Oracle VM Paravirtual Drivers for Microsoft Windows* documentation for information about the availability of hot memory modification on PVHVM guests that are running a Microsoft Windows

OS. You must use a Windows PV Driver that supports hot memory modification or you must stop the guest before you modify the memory.

- **Max. Processors:** The maximum number of processors the virtual machine can be allocated. The number of processors is expressed in number of physical CPU cores. The maximum number of processors depends on the domain type, as follows:

- PVM: 256.

**Important**

As of Oracle VM Release 3.4.6, support for PVM guests is removed. For more information, see [Disabling Paravirtualized Guests on Oracle VM Server](#) in the *Oracle VM Administrator's Guide*.

- HVM: 128; or 32 for Microsoft Windows guests.

**Note**

As of Release 3.4.6, the HVM limit is 64 for Microsoft Windows guests.

- PVHVM: 128; or 32 if using Oracle VM Paravirtual Drivers for Microsoft Windows.

**Note**

As of Release 3.4.6, the PVHVM limit is 64 if using Oracle VM Paravirtual Drivers for Microsoft Windows.

- OVM/SPARC: Equivalent to the number of available CPUs on the server.
- **Processors:** The number of processors the virtual machine is allocated. The number of processors is expressed in number of physical CPU cores, up to the value of **Max. Processors**.
- **Priority:** The CPU priority of the virtual machine. The higher the priority value, the more physical CPU cycles are given to the virtual machine. This option is not available for virtual machines in SPARC-based server pools. This should be a number between 1 and 100. The default priority is set at 1.
- **Processor Cap %:** Increase or decrease the percentage to which the virtual CPUs can receive scheduled time. This parameter defines the maximum percentage to which the virtual CPUs can receive scheduled time. Use this parameter to keep low priority virtual machines from consuming too

many CPU cycles on a Virtual Machine Server. This option is not available for virtual machines in SPARC-based server pools.

- **Restart Action on Crash:** The action to perform if a virtual machine crashes. This option is only available for virtual machines that are running on the Xen hypervisor and that have been configured to run on a particular Oracle VM Server. Options include the following:
 - **Restart:** Restarts the virtual machine operating system.
 - **Stop:** Stops the virtual machine. If **Enable High Availability** is selected, this option is not available.
 - **Restart After Dump:** Restarts the virtual machine operating system after first creating a core dump file for the virtual machine.
 - **Stop After Dump:** Stops the virtual machine after first creating a core dump file for the virtual machine. If **Enable High Availability** is selected, this option is not available.

Core dump files are saved to `/var/xen/dump` on the Oracle VM Server where the virtual machine is hosted. Each core dump file is named uniquely so that files are not overwritten. This can use up disk space rapidly. You must make sure there is either enough disk space available at this path on the Oracle VM Server where the virtual machine will run; or you should mount additional storage at this path to avoid using up disk space required to host dom0.

This option cannot be modified for a running virtual machine. You must stop the virtual machine before you are able to change this option, if you select to edit the virtual machine later.

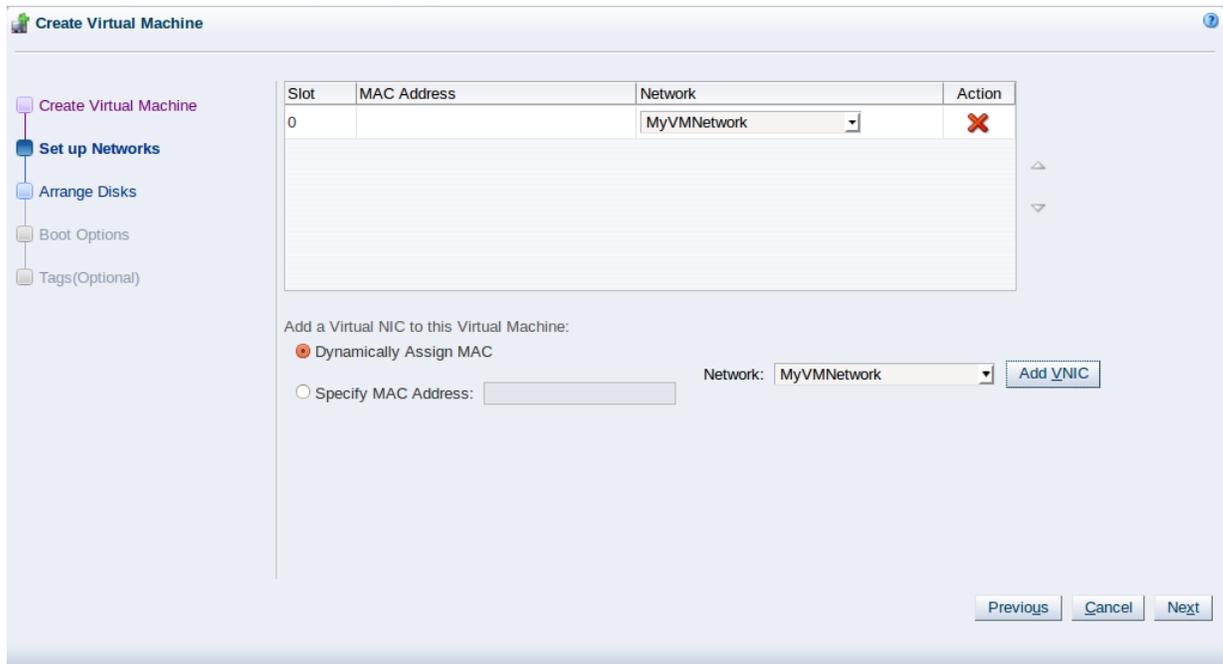
The **Priority** and **Processor Cap%** parameters are passed to the Xen hypervisor for use by the credit scheduler, which automatically load balances guest VCPUs across all available physical CPUs, using an algorithm that combines these two parameters. Therefore, these parameters are a key factor for the performance of the virtual machine on x86 hardware.

**Note**

For information on performance optimization goals and techniques for Oracle VM Server for x86, see *Optimizing Oracle VM Server for x86 Performance*, on Oracle Technology Network at: <http://www.oracle.com/technetwork/server-storage/vm/ovm-performance-2995164.pdf>.

On SPARC, each virtual machine uses dedicated physical CPU threads, and CPUs are not shared between virtual machines, being exclusively assigned to a single virtual machine.

Click **Next**.

5. The **Set up Networks** step is displayed in the wizard.

This step of the wizard allows you to add VNICs to the virtual machine.

- a. To specify the MAC address for a VNIC, select **Specify MAC Address** and enter the MAC address. Otherwise, leave the default **Dynamically Assign MAC**.
- b. Select a network with the virtual machine role from the **Network** drop-down list.

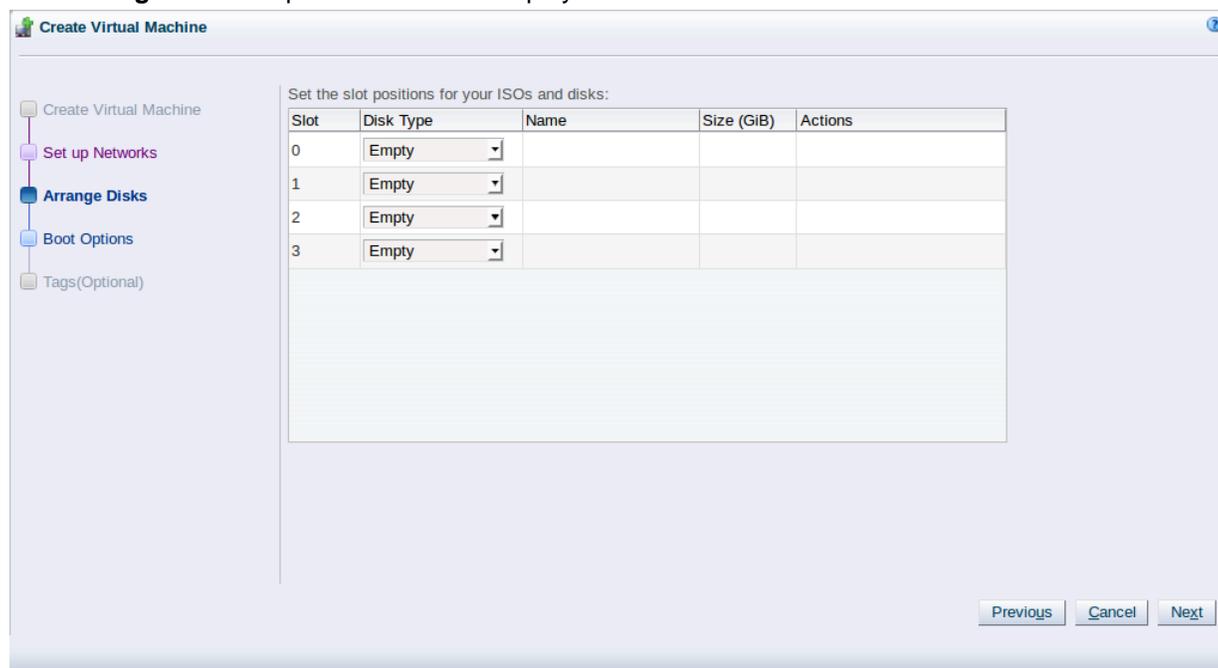
If no networks are available, you must first create a network with the virtual machine role as a dedicated network for virtual machine traffic. See [Section 5.1.1, "Create New Network"](#) for information on creating a network.

- c. Click **Add VNIC**.
 - The VNIC order specified determines the order in which the VNICs are presented to the virtual machine. You can control the ordering of the VNICs using the up and down arrows on the right of the table.
 - If you are editing the networking of an existing stopped virtual machine, you can change the network to which the VNIC belongs using the **Network** drop-down list in the table. It is important that the VNIC belongs to a network already associated with the Oracle VM Servers on which it can run, or you cannot start the virtual machine. See [Section 5.1.1, "Create New Network"](#) and [Section 5.1.2, "Edit Existing Network"](#) for more information on associating Oracle VM Servers with networks.
 - If you are editing an existing running virtual machine, you can add VNICs to the virtual machine, but you cannot remove VNICs that are already in use. You also cannot reorder VNICs on a running virtual machine. If you choose to add a VNIC to a running machine you must ensure that the VNIC belongs to a virtual machine network already associated with the Oracle VM Servers on which it can run, by selecting the appropriate network from the **Network** drop-down list.

- A virtual machine can have up to eight (8) VNICs for HVM guests and up to 31 for PVM guests. A PVM guest requires network connectivity to perform the operating system install and must have at least one VNIC.

d. Click **Next**.

6. The **Arrange Disks** step of the wizard is displayed.



Select the desired storage configuration of your virtual machine, such as virtual disks, physical disks, and ISO files. On a separate slot, add one or more of the following disk types:

- **Empty:** An empty slot.
- **Virtual Disk:** This allows you to add or create a virtual disk. Virtual disks may be shared by virtual machines, or only available to a single virtual machine.
- **Physical Disk:** The physical disks are the disks in a storage array. Physical disks may be shared by virtual machines.
- **CD/DVD:** This adds an ISO file in a storage repository and can be used to create HVM and PVHVM virtual machines. When creating a virtual machine from an ISO file, you must use a single file. Installations that span multiple ISO files are not supported. ISO files cannot be used to create PVM virtual machines. You cannot add an empty CDROM on a SPARC-based server.



Note

Adding or removing a CD/DVD device can only be done when a virtual machine is powered off. Once the VM is running again, the CD/DVD device is

always available for use as needed, much like a physical CD/DVD device on a physical server.

After the virtual machine is powered on, the only actions that are supported while the virtual machine is running are:

- Selecting an .iso for a CD/DVD slot in an "Empty" state.
- Hot-swapping the .iso currently in use.
- Ejecting the .iso from the CD/DVD slot, leaving the device in an "Empty" state.

Add or create any virtual disks to use as the virtual machine's hard disk, select any physical disks to add, and select any ISO files to use to create the virtual machine. Add the disks in the order they should appear in the virtual machine. The disk with the boot partition or installation media should be the first disk listed. An HVM guest can have up to four disks, including empty CD/DVD drives. A PVM guest can have up to 104 disks. A PVHVM guest can have up to 107 disks. An OVM/SPARC guest can have up to 1024 disks. Only one slot can contain an empty CD/DVD.



Tip

When editing a running virtual machine, you can change the CD/DVD using this dialog box and the CD/DVD is mounted in the operating system.

To create or add a virtual disk:

- a. To create a virtual disk, select **Virtual Disk** from the **Disk Type** drop-down list and click **Create a Virtual Disk +**.
- b. The **Create Virtual Disk** dialog box is displayed. Enter or select the following to create a virtual disk:
 - **Repository:** The repository in which the virtual disk is to be created.
 - **Virtual Disk Name:** The name of the virtual disk to be created and made available to the virtual machine. See [How are Virtual Disks Managed?](#) in the *Oracle VM Concepts Guide* for more information about using virtual disks.
 - **Size (GiB):** The disk size of the virtual disk, in [GiB](#).
 - **Description:** A description of the virtual disk.
 - **Shareable:** Whether the virtual disk should be shareable (read/write) with other virtual machines.
 - **Allocation Type:** Whether to use a **Sparse Allocation** or **Non-sparse Allocation**. Sparse Allocation creates a sparse disk, so the size of the disk is initially small and increases as it is used. Sparse allocation is faster than using Non-Sparse Allocation when creating a virtual

machine. Non-Sparse Allocation creates the entire disk when the virtual machine is created, and so is slower than creating a sparse disk.

Click **OK**.

- c. To search for an existing virtual disk to add to the virtual machine, click **Select a Virtual Machine Disk** . The **Select a Virtual Machine Disk** dialog box is displayed. The dialog box lists the available virtual disks in a table that indicates the following information:

- **Selected:** Whether or not the disk has been selected. This is indicated using radio button.
- **Name:** The name of the virtual disk as stored in Oracle VM Manager.
- **Size (GiB):** The disk size of the virtual disk, in [GiB](#).
- **Repository:** The repository in which the virtual disk is located.
- **Shareable:** Whether the virtual disk is configured to be shareable (read/write) with other virtual machines.
- **VM(s):** A comma separated list of the names of any virtual machines that may already be using this virtual disk.

Select the virtual disk to use and Click **OK**.



Note

If your virtual machine needs more than one disk, you can create the disk(s) afterwards in the repository, and add them to the virtual machine. See [Section 4.9.1.1, “Create Virtual Disk”](#) and [Section 3.5.2.1, “Edit Virtual Machine”](#) for more information on creating a virtual disk and editing a virtual machine. There are some limitations on mixing virtual disks of differing device types on a virtual machine. See [How are Virtual Disks Managed?](#) in the [Oracle VM Concepts Guide](#) for more information about how device

types are allocated to virtual disks and what you may need to do to solve any issues surrounding this problem.

To add a physical disk:

- a. To add a physical disk to the virtual machine, select **Physical Disk** from the **Disk Type** drop-down list. Click **Select a Virtual Machine Disk** . The **Select a Physical Disk** dialog box is displayed. The dialog box lists the available physical disks in a table that provides the following information:
 - **Selected:** Whether or not the disk has been selected. This is indicated using radio button.
 - **Name:** The name of the physical disk as stored in Oracle VM Manager.
 - **Size (GiB):** The disk size of the physical disk, in [GiB](#).
 - **SAN Server:** The SAN Server where the physical disk is located.
 - **Volume Group:** The volume group that the physical disk belongs to.
 - **Shareable:** Whether the physical disk is configured to be shareable (read/write) with other virtual machines.
 - **VM(s):** A comma separated list of the names of any virtual machines that may already be using this physical disk.

Select a physical disk from the list of available disks. If you want to leave the slot empty, select **Leave Slot Empty**. Click **OK**.

To add an ISO file:

- a. To add an ISO file to the virtual machine, 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 a Iso file from the list of available files. If you want to leave the slot empty, select **Leave Slot Empty**. Click **OK**.

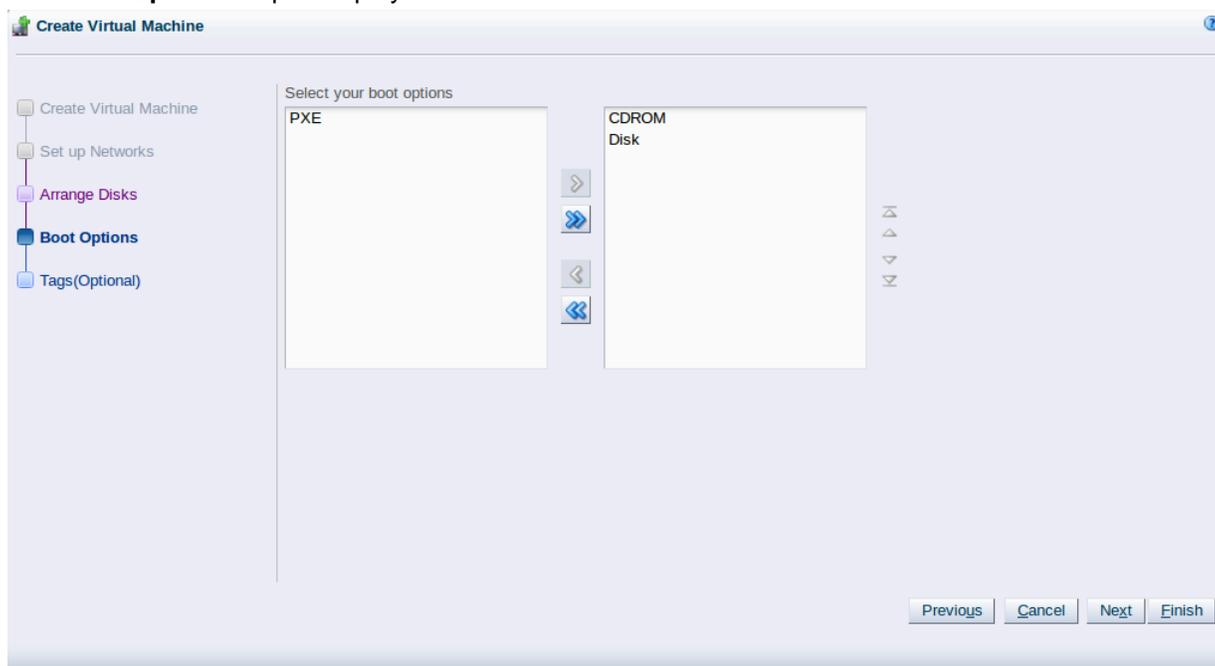


Note

When adding an ISO file to an existing virtual machine, the ISO file is available to the operating system, but may not be mounted. To access the ISO file, you may need to mount it, for example:

```
# mkdir /cdrom
# mount -o loop /dev/xvdb /cdrom
```

When you have set up the virtual machine's disks, click **Next**.

7. The **Boot Options** step is displayed in the wizard.

Select the boot media order for your virtual machine.

If you are creating a hardware virtualized machine virtual machine (HVM), you can choose the **PXE** boot option. If so, remember to put PXE first in the **Select your boot options** field, and change the boot order again after installation and before rebooting the virtual machine. To use PXE, you must configure a PXE/ftp environment to offer the necessary boot media and instructions to the virtual machine.

If you are creating a paravirtualized virtual machine (PVM), you also have the **PXE** option available. In this case, the **PXE** option refers to a network style boot. If the **PXE** option appears in the right-hand-side column, you must enter the location of the mounted ISO file from which to perform the operating system installation in the **Network Boot Path** field that is shown when editing or creating a PVM, for example

```
http://example.com/EL6-x86
```

For information on creating a mounted ISO file, see [Provisioning ISO Files for PVM Guest Installations](#) in the *Oracle VM Administrator's Guide*.

You cannot use the **Network Boot Path** field to boot a virtual machine using PXE. This field can only be used to specify the path to a mounted ISO file to use when installing a PVM guest.

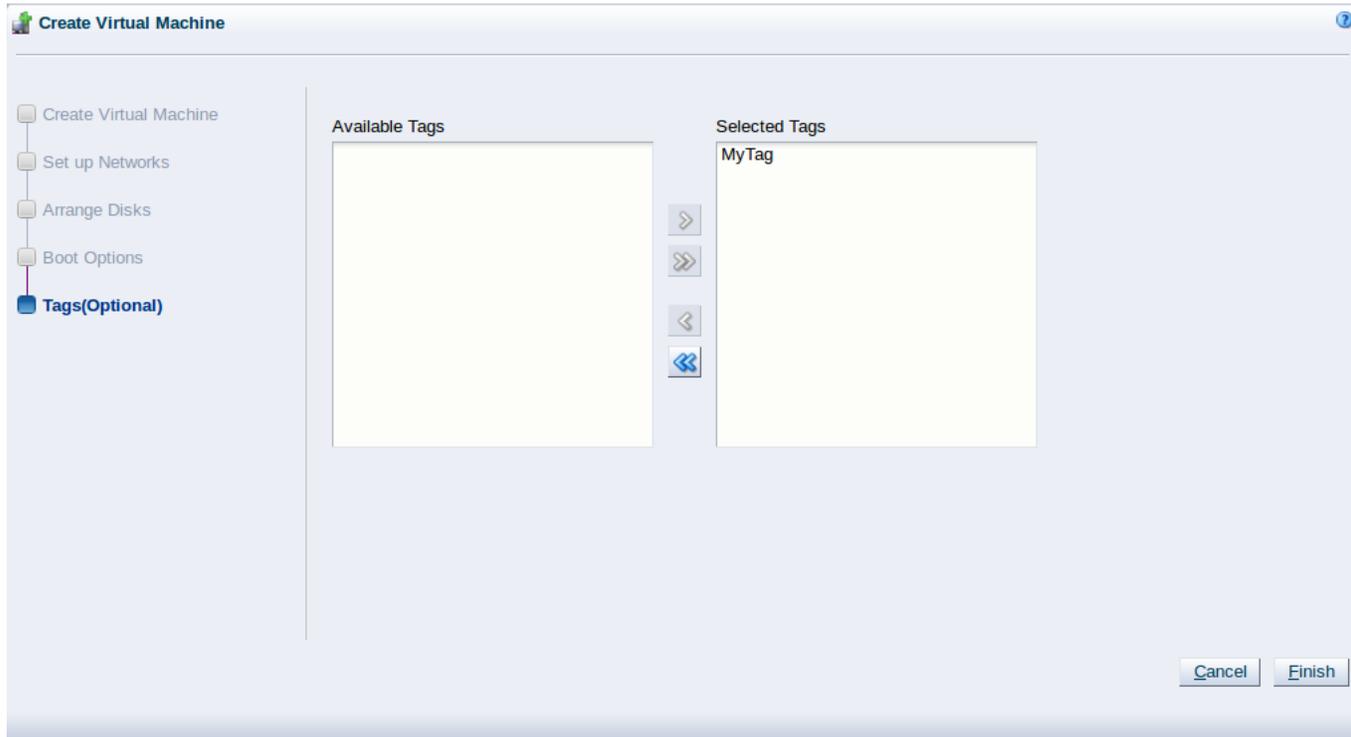
If you have defined tags and want to add any to this virtual machine, click **Next**. Otherwise, click **Finish** to create and deploy the virtual machine to the server pool.

8. The **Tags** step is optional and displays in the wizard if you clicked **Next** in the previous step.



Note

The virtual machine has already been created and deployed to the server pool at this point. This step is entirely optional. Cancelling the operation within this dialog does not prevent the virtual machine from being created.



If you have previously created tags, they appear in the **Available Tags** column. Select the tags you want to apply to the virtual machine and move them to the **Selected Tags** column. See [Section 1.17, “Tags and Tag Filters”](#) for more information on creating and managing tags. Click **Finish**.

If you created a PVM, there are some steps you should take after the operating system installation is completed:

1. Stop the virtual machine. See [Section 3.5.2.4, “Stop Virtual Machines”](#) for information on stopping a virtual machine.
2. Edit the virtual machine and remove **PXE** from the **Boot Order** column in the **Boot Options** step of the **Edit Virtual Machine** wizard. See [Section 3.5.2.1, “Edit Virtual Machine”](#) for information on editing a virtual machine.
3. Start the virtual machine and complete the installation if necessary. See [Section 3.5.2.3, “Start Virtual Machines”](#) for information on starting a virtual machine.

To edit the virtual machine configuration information, see [Section 3.5.2.1, “Edit Virtual Machine”](#).

3.6.1.2 Edit Server

You can edit the configuration information for an Oracle VM Server to change the name, description, any server pool roles, and to take it off-line to perform system maintenance. You can always edit the name

and description of an Oracle VM Server, even if it is not owned by the Oracle VM Manager instance. You cannot edit any other information if the Oracle VM Server, is not owned by the Oracle VM Manager instance. If you want to edit these other options, you should first take ownership of the server using the **Take Ownership of Server** field as described in the procedure below.

To edit the configuration information of an Oracle VM Server:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation pane. Click **Edit Server**  in the toolbar.
3. The **Edit Server** dialog box is displayed. In the **Configuration** tab, edit the information about the Oracle VM Server:
 - **Name:** The name of the Oracle VM Server.
 - **Description:** A description of the Oracle VM Server.
 - **NTP Server(s):** Allows you to specify the NTP server settings for each individual Oracle VM Server. You can add multiple NTP servers using a comma-separated list.



Note

If you need to batch edit the NTP servers for a large number of Oracle VM Servers in your environment, you should use the Oracle VM Manager Command Line Interface, [edit Server](#), or the Oracle VM Web Services API to do this programmatically.

- **Server in Maintenance Mode:** Select whether to place the Oracle VM Server in maintenance mode.

An Oracle VM Server can be placed into *maintenance mode* to perform hardware or software maintenance. When an Oracle VM Server is placed in maintenance mode, it is not possible to start any new virtual machines on the server. Furthermore, any virtual machines running on the Oracle VM Server are automatically migrated to other Oracle VM Servers in the server pool, if they are available. If any of these automatic processes fail, check the Oracle VM Server event log ([Section 3.5.10, “Events Perspective”](#)) for reasons why the failure occurred.



Note

- When a virtual machine is migrated to an alternate Oracle VM Server, no checks are performed to detect whether the target Oracle VM Server is configured correctly or capable of running the virtual machine correctly. It is up to you to ensure that the Oracle VM Servers within a server pool have consistent configurations.
- It is possible that some virtual machines fail to migrate if no target Oracle VM Server is found. In this case, maintenance mode may be set, but some virtual machines may continue to run on the Oracle VM Server.
- If a virtual machine relies on local storage, then no target Oracle VM Server is identified as the migration target. These virtual machines should be manually migrated using the Storage Live Migration feature. For more information, see [Section 3.5.2.11, “Migrate or Move Virtual Machines”](#)

You must determine the appropriate course of action for these virtual machines and perform the required actions manually using the tools provided within Oracle VM Manager.

When an Oracle VM Server is placed into maintenance mode its icon:  is updated in the navigation pane. When you have finished performing maintenance on the Oracle VM Server and you are ready for it to rejoin the server pool, ensure that the **Maintenance Mode** check box is unchecked.

- **Take Ownership of Server:** Select to take ownership of the Oracle VM Server. Server rediscovery is performed as part of this process, so that Oracle VM Manager can correctly determine whether or not the server is in an unowned state and the action can be completed successfully.



Note

Configuration of NTP for each Oracle VM Server takes place when a server changes ownership. If you release ownership of a server, its NTP configuration is updated to point locally to itself. When Oracle VM Manager takes ownership of a server, the server's NTP configuration is usually automatically updated to point to the Oracle VM Manager instance. This may only be evident after the server has been refreshed. You can find out more about the configuration of NTP in [Configure the NTP Service on the Oracle VM Manager Host](#) in the *Oracle VM Installation and Upgrade Guide*.



Tip

You cannot edit the ownership of an Oracle VM Server if it is included in a server pool or if a repository is presented to it.

- **Inbound Migration Locked:** Select whether to allow additional virtual machines to run on the Oracle VM Server. Selecting this option prevents new or migrated virtual machines to run on the Oracle VM Server. See [How Can I Protect Virtual Machines?](#) for more information on inbound migration lock.



Note

If you have HA configured for a server, this option does not protect a server from inbound migrations when failover occurs.

- **Oracle VM Agent password:** The password to connect to the Oracle VM Agent. The value for this field is required if you select to take ownership of the Oracle VM Server.
 - **Utility Server:** Select to designate the Oracle VM Server to perform utility functions such as importing, cloning and storage refresh.
 - **VM Server:** The virtual machine role is required to run virtual machines.
4. In the **IPMI** tab, select the **Enable Server IPMI** check box to enable the Intelligent Platform Management Interface (IPMI). IPMI allows you to remotely power on or power off an Oracle VM Server. If IPMI is either not available or not enabled on the Oracle VM Server, Oracle VM Manager may still be able to remotely power on an Oracle VM Server using a *Wake on LAN* message without having to physically press the power button, and it may be able to send a system power off message to shut it down. Select the **Change IPMI Password** check box if your IPMI setup requires a password to change the configuration. The **Change IPMI Password** check box is automatically selected when you enable IPMI.

To configure IPMI enter the following information in the fields:

- **IP Address:** The IP address of the IPMI.
- **Access Username:** The optional user name for the IPMI.

- **Password:** The optional password for the IPMI. Note that this field is always blank, regardless of whether the password has been set or not.
5. To edit the tags associated with the server, click the **Tags** tab. Using the controls provided, you can add or remove tags that can be used to identify the server and to group it with other objects within Oracle VM Manager. See [Section 1.17, “Tags and Tag Filters”](#) for more information on creating and managing tags.

Click **OK**. The Oracle VM Server is updated.

Batch Editing Oracle VM Servers

You can edit the information for more than one Oracle VM Server at a time by using the [multi-select functionality](#) provided within the Oracle VM Manager interface to select multiple items before clicking on the **Edit Server**  icon in the toolbar.

When editing a group of Oracle VM Servers in batch mode the options available to you are limited to actions that can be applied to all selected items. The following options are available:

- **Server in Maintenance Mode:** Checking this check box sets all selected items into Maintenance Mode.
- **Take Ownership of Server:** Checking this check box allows Oracle VM Manager to take ownership of all of the selected items.
- **Oracle VM Agent password:** The password to connect to the Oracle VM Agent. The value for this field is required if you select to take ownership of the selected items.
- **Utility Server:** Checking this check box changes the role of all selected items to Utility Servers.
- **VM Server:** Checking this check box changes the role of all selected items to Virtual Machine Servers.



Note

If the values set for the options provided vary across the selected servers, the dialog displays the values for the first server in the selection. Clicking OK updates all of the selected servers to have the same status.

3.6.1.3 Delete Server

When you delete an Oracle VM Server, it is removed from the Oracle VM Manager repository and becomes unmanaged. The Oracle VM Server is not stopped, nor is anything physically done to the Oracle VM Server.

Before you can delete an Oracle VM Server, you must stop any running virtual machines, or place the Oracle VM Server into maintenance mode to automatically migrate the running virtual machines.

To delete Oracle VM Servers from Oracle VM Manager:

1. Stop or migrate any running virtual machines. To stop the virtual machines see [Section 3.5.2.4, “Stop Virtual Machines”](#). To automatically migrate the virtual machines to other Oracle VM Servers in the server pool, place the Oracle VM Server into maintenance mode, see [Section 3.4.2.2, “Edit Server”](#).
2. Click the **Servers and VMs** tab.
3. Select the **Unassigned Servers** folder in the navigation tree. Select **Servers** from the **Perspective** drop-down list.

4. Select one or more Oracle VM Servers in the management pane. Click **Delete**  in the perspective toolbar.
5. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the Oracle VM Servers.

The Oracle VM Servers are deleted from Oracle VM Manager.

3.6.1.4 Start Server

When you start an Oracle VM Server, it is started using the Intelligent Platform Management Interface (IPMI), or Wake-on-LAN (WOL). If neither IPMI nor WOL have been configured, the job to start the Oracle VM Server cannot be completed and may need to be aborted. The Oracle VM Server must then be powered on manually. See [Section 3.4.2.2, “Edit Server”](#) for information on configuring IPMI. See [Section 8.1.5, “Abort Jobs”](#) for information on aborting a hanging job.

To start Oracle VM Servers:

1. Click the **Servers and VMs** tab.
2. Select the server pool in which the Oracle VM Server resides in the navigation tree.
3. Select **Servers** from the **Perspective** drop-down list. Select one or more Oracle VM Servers in the management pane, and click **Start Server**  in the perspective toolbar.

The Oracle VM Servers are started.

3.6.1.5 Stop Server

When you stop an Oracle VM Server, it is stopped using the Intelligent Platform Management Interface (IPMI), or a system power off command. Before you can stop an Oracle VM Server, you must stop any running virtual machines, or place the Oracle VM Server into maintenance mode to automatically migrate the running virtual machines.



Warning

Make sure that the IPMI is properly configured on the Oracle VM Server, otherwise it cannot be started again remotely. See [Section 3.4.2.2, “Edit Server”](#) for IPMI configuration. Alternatively, make sure that you activate the Wake-on-LAN (WOL) feature in the Oracle VM Server BIOS and that you have tested that it is properly working. If an Oracle VM Server cannot start through IPMI or WOL, it must be power-cycled manually.

To stop Oracle VM Servers:

1. Stop or migrate any running virtual machines. To stop the virtual machines see [Section 3.5.2.4, “Stop Virtual Machines”](#). To automatically migrate the virtual machines to other Oracle VM Servers in the server pool, place the Oracle VM Servers into maintenance mode, see [Section 3.4.2.2, “Edit Server”](#).
2. Click the **Servers and VMs** tab.
3. Select the server pool in which the Oracle VM Server resides in the navigation tree.
4. Select **Servers** from the **Perspective** drop-down list. Select one or more Oracle VM Servers in the management pane, and click **Stop Server**  in the perspective toolbar.

The Oracle VM Servers are powered off.

3.6.1.6 Restart Server

When you restart an Oracle VM Server, an operating system restart command is sent and the Oracle VM Server is restarted. Before you can restart an Oracle VM Server, you must stop any running virtual machines, or place the Oracle VM Server into maintenance mode to automatically migrate the running virtual machines.

When the Oracle VM Server is restarted and rejoins the server pool, any pending HA operations in the server pool are initiated. When Oracle VM Manager is notified that the Oracle VM Server is online and available, any pending state changes are reconciled before any policy actions are resumed.

There is more information on the implications of restarting servers covered in [Rebooting and Changing Power State of Oracle VM Servers](#) in the *Oracle VM Concepts Guide*.

To restart Oracle VM Servers:

1. Stop or migrate any running virtual machines. To stop the virtual machines see [Section 3.5.2.4, “Stop Virtual Machines”](#). To automatically migrate the virtual machines to other Oracle VM Servers in the server pool, place the Oracle VM Servers into maintenance mode, see [Section 3.4.2.2, “Edit Server”](#).
2. Click the **Servers and VMs** tab.
3. Select the server pool in which the Oracle VM Server resides in the navigation tree.
4. Select **Servers** from the **Perspective** drop-down list. Select one or more Oracle VM Servers in the management pane, and click **Restart**  in the perspective toolbar.

The Oracle VM Servers are restarted.

3.6.1.7 Kill Server

To kill an Oracle VM Server is equivalent to performing a power off of an Oracle VM Server, similar to unplugging the power cable from the physical machine. This is not the recommended method of shutting down an Oracle VM Server, but may be used if the shut down command fails to shut down the Oracle VM Server.

To kill Oracle VM Servers:

1. Click the **Servers and VMs** tab.
2. Select the server pool in which the Oracle VM Server resides in the navigation tree.
3. Select **Servers** from the **Perspective** drop-down list. Select one or more Oracle VM Servers in the management pane, and click **Kill**  in the perspective toolbar. Click **OK** in the Confirmation dialog.

The Oracle VM Servers are powered off.

3.6.1.8 Rediscover Server

If there are either changes to the physical state of an Oracle VM Server or its attached storage, you should discover it again to update the configuration information in Oracle VM Manager.

To rediscover Oracle VM Servers:

1. Click the **Servers and VMs** tab.
2. Select the server pool in which the Oracle VM Servers reside in the navigation tree.

3. Select **Servers** from the **Perspective** drop-down list. Select one or more Oracle VM Servers in the management pane, and click **Rediscover Server**  in the perspective toolbar.

The configuration and storage information about the Oracle VM Servers is updated in Oracle VM Manager.

3.6.1.9 Rescan Physical Disks

You can rescan the physical disks available to an Oracle VM Server to determine if any disks have been changed, added, or removed.

To rescan the physical disks on Oracle VM Servers:

1. Click the **Servers and VMs** tab, and select the server pool in which the Oracle VM Servers reside in the navigation tree. Select **Servers** in the **Perspective** drop-down list in the management pane. Select the Oracle VM Servers in the management pane table.

Alternatively, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list.

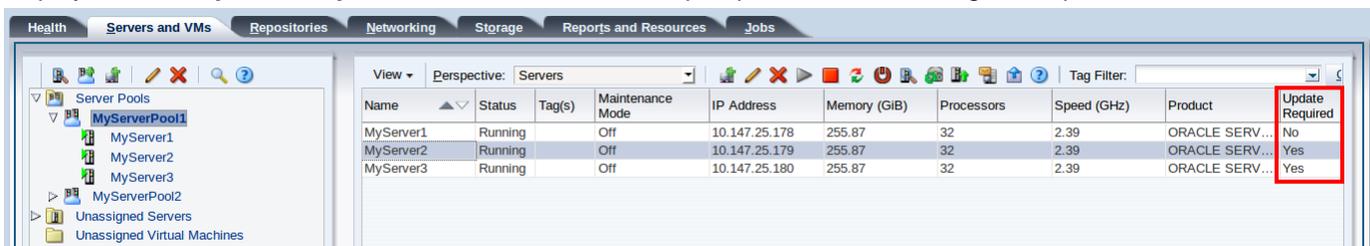
2. Click **Rescan Physical Disks**  in the perspective toolbar.
3. A confirmation dialog box is displayed. Click **OK**.

3.6.1.10 Update Server

Software updates and upgrades to Oracle VM Servers can be performed using the global server update repository configured in the **Server Updates** subtab of the **Reports and Resources** tab. See [Section 7.3, “Server Update Groups”](#) for information on configuring a global server update repository. A repository can be overridden for a server pool if required. See [Section 3.4.6, “Server Update Repositories Perspective”](#) for information on overriding a global update repository for a server pool.

To see which version of the Oracle VM Server software is installed before and after an upgrade, click the **Servers and VMs** tab, select the Oracle VM Server in the navigation tree, and then select **Control Domains** in the **Perspective** drop-down list. See [Section 3.5.8, “Control Domains Perspective”](#) for information on control domains.

When an Oracle VM Server update is available, an [event](#) is posted to the Oracle VM Server and **Yes** is displayed in the **Update Required** column in the **Servers** perspective in the management pane.



Name	Status	Tag(s)	Maintenance Mode	IP Address	Memory (GiB)	Processors	Speed (GHz)	Product	Update Required
MyServer1	Running		Off	10.147.25.178	255.87	32	2.39	ORACLE SERV...	No
MyServer2	Running		Off	10.147.25.179	255.87	32	2.39	ORACLE SERV...	Yes
MyServer3	Running		Off	10.147.25.180	255.87	32	2.39	ORACLE SERV...	Yes

Before upgrading Oracle VM Servers using the Oracle VM Manager Web Interface you should refer to the [Oracle VM Installation and Upgrade Guide](#). The Oracle VM Manager Web Interface can only be used to perform upgrades for servers that are running Oracle VM Server 3.3.x and up.

To update an Oracle VM Server, the virtual machines on the Oracle VM Server must first be stopped or migrated to another Oracle VM Server. You can manually stop or migrate the virtual machines, or, if you prefer, have the upgrade server job perform the virtual machine migrate automatically.

To update Oracle VM Servers:

1. Click the **Servers and VMs** tab, and select the server pool in which the Oracle VM Servers reside in the navigation tree.
2. Select **Servers** in the **Perspective** drop-down list in the management pane.
3. Select the Oracle VM Servers in the management pane table and click **Update Server**  from the perspective toolbar.

A confirmation dialog is displayed. Click **OK**. Each Oracle VM Server is placed into maintenance mode, and the update performed. Any virtual machines on the Oracle VM Servers are automatically migrated to another Oracle VM Server when it is put into maintenance mode. When the update is complete the Oracle VM Server is restarted and remains in maintenance mode.

4. To have the Oracle VM Servers rejoin the server pool as a fully functioning member, edit each the Oracle VM Server and take it out of maintenance mode.

For information on manually migrating virtual machines, see [Section 3.5.2.11, “Migrate or Move Virtual Machines”](#). For information on taking an Oracle VM Server out of maintenance mode, see [Section 3.4.2.2, “Edit Server”](#).

Note that you can upgrade multiple Oracle VM Servers in a server pool by using the multi-select functionality described in [Section 1.15, “Multi-Select Functionality”](#).

3.6.1.11 Generate Report

You can generate an XML report on one or more Oracle VM Servers. For more information about object reporting, see [Section 7.1, “Reports”](#).

To generate a report on Oracle VM Servers:

1. Select a server pool in the **Server Pools** folder in the navigation pane.
2. Select the **Servers** perspective in the management pane.
3. Select one or more Oracle VM Servers in the management pane table.
4. Click  **Generate Report** in the management pane toolbar.
5. The report is generated and sent to the browser.

3.6.2 Events Perspective

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error *event* associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or *virtual machine* appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the

navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 3.29 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 🗑️.
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers, SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

3.7 Unassigned Virtual Machines Folder

The **Unassigned Virtual Machines** navigation folder in the navigation tree contains the virtual machines that do not belong to a server pool within Oracle VM Manager. The structure of the navigation provided in the navigation tree is discussed in more detail in [Section 3.2, “Summary”](#).

Clicking on the **Unassigned Virtual Machines** folder in the navigation tree allows you to access different perspectives in the management pane. Each perspective provides its own view of all of the unassigned virtual machines within Oracle VM Manager. Most of the perspectives also include separate perspective toolbars that enable you to perform various configuration or management tasks specific to the view currently displayed within the management pane. The **Unassigned Virtual Machines** folder offers the following perspectives within the management pane:

- [Virtual Machines Perspective](#)

3.7.1 Virtual Machines Perspective

The **Virtual Machines** perspective lists the different virtual machines that belong to either a server pool or a server or the **Unassigned Virtual Machines** folder, depending on the item selected in the navigation pane. Note that this perspective is not available for server items listed off the **Unassigned Servers** folder, since virtual machines cannot be assigned to servers that do not belong to a server pool. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the virtual machine.
- **Status:** The running status of the virtual machine.
- **Tag(s):** Any tags that have been applied to the virtual machine.
- **Event Severity:** What event severity level is currently indicated for the virtual machine.
- **Server:** The actual Oracle VM Server that the virtual machine is currently residing on.
- **Max. Memory (MB):** The maximum available memory (in megabytes) that the virtual machine is able to consume.
- **Memory (MB):** The amount of memory (in megabytes) that the virtual machine is currently consuming.
- **Max. Processors:** The number of processors that the virtual machine is allowed to make use of.
- **Processors:** The number of processors that the virtual machine is currently using.
- **Keymap:** The character keymap that has been configured for the virtual machine.
- **Operating System:** The operating system that the virtual machine is running.

Clicking on the arrow to the left of a virtual machine in the table displays a set of subtabs that show more detailed information about the virtual machine. These tabs are **Configuration**, **Networks**, and **Disks**. Click on a tab to display the information:

Configuration

- **Name:** The name that has been configured for the virtual machine.
- **Status:** The running status of the virtual machine.
- **Operating System:** The operating system type.
- **Keymap:** The character keymap that has been configured for the virtual machine.
- **Max. Processors:** The maximum number of CPUs that can be allocated.
- **Processors:** The number of CPUs that are allocated.
- **Processor Cap:** The percentage value configured for the processor cap.
- **Max. Memory (MB):** The maximum memory that can be allocated.
- **Memory (MB):** The memory that is allocated.
- **Priority:** The CPU priority allocated for the virtual machine.
- **Mouse Type:** The mouse type configured for the virtual machine.
- **Domain Type:** The hypervisor and virtual machine type configured for the virtual machine.

- **Start policy:** The start policy configured for the virtual machine.
- **High Availability:** Whether or not the High Availability flag is set for the virtual machine.
- **Repository for Configuration File:** The repository where the configuration file for the virtual machine is stored.
- **Huge Pages:** Whether or not the Huge Pages flag is set for the virtual machine.
- **Boot Order:** The configured boot order for disks attached to the virtual machine
- **Network Boot Path:** The network boot path configured for the virtual machine.
- **Restart Action On Crash:** The configured restart action in the instance that the virtual machine crashes.
- **Restart Action On Power Off:** The configured restart action in the instance that the virtual machine receives the power-off signal.
- **Restart Action On Restart:** The configured restart action in the instance that the virtual machine receives the restart signal.
- **ID:** The ID allocated by Oracle VM Manager for the virtual machine.
- **Origin:** The URL that was used to import the virtual machine or template, if it was imported.
- **Description:** The description of the virtual machine.
- **Config File Absolute Path:** The absolute path to the virtual machine configuration file.
- **Config File Mounted Path:** The mount point where the virtual machine configuration file is located on an Oracle VM Server.

Networks

- **VNIC:** The name of a VNIC configured for the virtual machine.
- **Ethernet Network:** The name of the ethernet network that the VNIC is attached to.
- **IP Addresses:** IP addresses configured for the VNIC. Note that the virtual machine must be running Oracle VM Guest Additions for this information to be populated. If no IP address is configured for this VNIC, the IP address is displayed as 0.0.0.0.

Disks

- **Slot:** The slot number for the disk.
- **Disk Type:** The type of disk that is attached.
- **Name:** The name of the disk within Oracle VM Manager.
- **Size (GiB):** The size of the disk.
- **Repository:** The repository where the disk is located.
- **Absolute Path:** The absolute path to the location of the disk.
- **Mounted Path:** The mount point where the disk is located on an Oracle VM Server.
- **Location:** The location of the disk as reported by Oracle VM Manager.

If this perspective is viewed from the **Unassigned Virtual Machines** folder, some of the toolbar icons that are usually available for this perspective are not included in the toolbar. The table below lists all of the toolbar icons that are available for this perspective and indicates the items that are not available when the perspective is viewed from the **Unassigned Virtual Machines** folder.

Table 3.30 Virtual Machines Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Import Virtual Machine...		Displays the Import Virtual Machine dialog box. Use this option to import a virtual machine into Oracle VM Manager. This option is only available for Unassigned Virtual Machines.
Edit...		Displays the Edit Virtual Machine wizard. Use this option to edit a virtual machine.
Delete		Displays the Delete Confirmation dialog box. Use this option to delete the selected virtual machines.
Start		Starts up a stopped virtual machine. Not available for Unassigned Virtual Machines.
Stop		Shuts down a virtual machine. Not available for Unassigned Virtual Machines.
Launch Console		Launches the virtual machine VNC console in an x86-based server pool, which enables access to the virtual machine. Use this option to connect to a virtual machine's console and access the virtual machine directly. Not available for virtual machines in the Unassigned Virtual Machines folder, or virtual machines in a server pool, but not assigned to an Oracle VM Server.
Launch Serial Console		Launches the virtual machine serial console, which enables access to the virtual machine. Use this option to connect to a virtual machine's serial console and access the virtual machine directly. This service is commonly used for virtual machines running in a SPARC-based server pool, but is also available for virtual machines running on x86-based server pools. Not available for Unassigned Virtual Machines.
Restart		Restarts a running virtual machine. Not available for Unassigned Virtual Machines.
Kill		Shuts down a running virtual machine. Not available for Unassigned Virtual Machines.
Suspend		Suspends (pauses) a running virtual machine. Not available for Unassigned Virtual Machines.
Resume		Resumes (unpauses) a suspended virtual machine. Not available for Unassigned Virtual Machines.

Toolbar Icon Option	Icon	Description
Migrate or Move...		Migrates a virtual machine to another Oracle VM Server, or moves the configuration and virtual disks for a virtual machine to an alternate repository.
Clone Virtual Machine...		Displays the Clone Virtual Machine dialog box. Use this option to clone a virtual machine to create another virtual machine.
Export to Virtual Appliance...		Displays the Export to Virtual Appliance dialog box. Use this option to export a virtual machine as a virtual appliance.
Export to OCI...		Displays the Export Virtual Machine(s) to OCI dialog box. Use this option to export a virtual machine to Oracle Cloud Infrastructure.
Manage Clone Customizers...		Displays the Manage Clone Customizer dialog box. The clone customizer lets you set up clone parameters, such as networking, disks and ISO resources. Use this option to create, edit or delete a clone customizer.
Send VM Messages...		Send one or more virtual machines a message. Use this option to send messages to virtual machines that have the Oracle VM Guest Additions installed. Not available for Unassigned Virtual Machines.
Display VM Config File Content...		Displays the VM Config File Content dialog box. Displays a read-only view of the configuration file for the selected virtual machine. Use this option to view the content of the virtual machine configuration file.
Display VM Hierarchy Viewer		Displays a graphical report on a virtual machine.
Display Selected VM Events...		Displays the Events dialog box. Displays events for the selected virtual machine. Use this option to view or acknowledge error events for the virtual machine.
Generate Report		Generate an XML report on one or more virtual machines.
Help		Displays context sensitive help.

3.7.1.1 Import Virtual Machine

You can import a [virtual machine](#) into [Oracle VM Manager](#) and have it deployed to a [server pool](#), or placed in the **Unassigned Virtual Machines** folder if you do not want to deploy it. The virtual machine must be located on an FTP or web server, either as separate files, or compressed into a single archive file (for example, a .tgz or .zip file). As an archive of a virtual machine is also known as a [virtual machine template](#), you can also use this process to import older style Oracle VM virtual machine templates. This process does not work for the newer OVF/OVA style templates.

When you import a virtual machine into a server pool, you have the option of saving it to any storage repository that is presented to at least one [Oracle VM Server](#) in the server pool. When you import a virtual machine to the **Unassigned Virtual Machines** folder, you can save it into any storage repository.

To import a virtual machine:

1. Place the files that make up a virtual machine, or an archive of those files, in a location accessible by Oracle VM Manager using any of these protocols: HTTP, HTTPS or FTP.
2. Click the **Servers and VMs** tab.

3. If you want to import and deploy the virtual machine to a server pool, select **Server Pools** in the navigation tree, then select the server pool in the management pane table.

If you do not want to deploy the virtual machine, select the **Unassigned Virtual Machines** folder.

4. Select **Import Virtual Machine...**  in the toolbar in the management pane.

5. The **Import Virtual Machine** dialog box is displayed. Select or edit the following:

- **Destination Repository:** The storage repository in which to save the virtual machine.
- **VM URLs:** The URLs for the virtual machine. The URL schemes supported are HTTP, HTTPS, and FTP. For example:

```
http://example.com/mytemplate.tgz
```

To import a virtual machine using FTP, use the standard FTP syntax, for example:

```
ftp://user:password@server/path/filename.tgz
```

Each virtual machine component should be listed on a new line. Each URL must be a reference to a complete file. If your virtual machine files are split into multiple compressed files, concatenate those files and enter the URL for the concatenated file, for example to concatenate a number of compressed files to one compressed file, enter:

```
$ cat vm.tgz.1of3 vm.tgz.2of3 vm.tgz.3of3 > vm.tgz
```

Then enter the URL to the single compressed virtual machine file, in this case, vm.tgz.

To import a virtual machine that is not compressed as a single file, each component must be a complete file (if not, concatenate them to one file), for example to enter a [virtual disk](#) image and a virtual machine configuration file that together make up a complete virtual machine, you could enter:

```
http://myexample.com/System-sda.img
http://myexample.com/vm.cfg
```

- **Proxy:** The IP address or hostname of an optional proxy server to use when importing the virtual machine.

Click **OK** to import the virtual machine. The virtual machine is deployed to the server pool in the stopped state. Alternatively, the virtual machine is imported to the **Unassigned Virtual Machines** folder.

See [Section 3.5.2.3, “Start Virtual Machines”](#) for information on starting a virtual machine, and [Section 3.5.2.1, “Edit Virtual Machine”](#) for information on editing a virtual machine.

3.7.1.2 Edit Virtual Machine

Editing a virtual machine to changes the virtual machine configuration. If the virtual machine is running, you cannot edit specific settings such as the mouse device type, domain type, maximum amount of memory, maximum number of processors, restart action on crash, or huge pages support. To edit these settings, the virtual machine must be stopped so that the hypervisor can reload the virtual machine configuration when the virtual machine starts.

To edit a virtual machine:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.

3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine in the management pane, and click **Edit...**  in the management pane toolbar
4. The **Edit Virtual Machine** dialog box is displayed. Select each tab to edit the virtual machine configuration. See [Section 3.1.3, "Create Virtual Machine"](#) for the details of each tab. Click **OK** to save the changes.

**Note**

It is not possible to dynamically change resources such as the number or processors or allocated memory for an Oracle Solaris virtual machine without first enabling the `drd` service on the virtual machine itself. To allow for these changes, connect to the virtual machine and make sure that the `drd` service is enabled:

```
# svcadm enable -s drd
# svcs drd
```

These commands should notify you that the service is online. When you have performed these actions, you are able to use Oracle VM Manager to dynamically change the allocation of resources.

**Note**

It is not possible to change the number of virtual network interfaces or virtual disks for a virtual machine while the virtual machine is in a suspended state. Attempting to add or remove such a device results in an exception and an error is returned.

**Note**

It is not possible to remove a virtual CD-ROM from a running virtual machine. Doing so results in an exception and an error is returned. To remove virtual CD-ROMs from running virtual machines, you must first stop the virtual machine and then remove the virtual CD-ROM.

3.7.1.3 Delete Virtual Machines

When you delete a virtual machine, all the files and data associated with this virtual machine are removed from Oracle VM Manager. Before deleting a virtual machine, make sure you do not need it any longer. You can only delete a virtual machine when the virtual machine status is **Stopped** or **Error**.

To delete virtual machines:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machines reside in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select one or more virtual machines in the management pane, and click **Delete**  in the management pane toolbar.
4. The **Delete Confirmation** dialog box is displayed. Select any virtual disks associated with the virtual machines to delete. The virtual machine's physical disks are listed if the storage on which they reside uses a non-generic Oracle VM Storage Connect plug-in. Before any physical disks are deleted, they are removed from any access groups. Click **OK** to delete the virtual machines and the selected virtual and physical disks.

3.7.1.4 Migrate or Move Virtual Machines

The **Migrate or Move**  option allows you to migrate and move virtual machines by opening the **Migrate or Move Virtual Machine** wizard that allows you to select and perform the appropriate actions depending on your requirements and the state of the virtual machine.

It is important to understand that [migrating](#) a virtual machine changes the Oracle VM Server or server pool where the virtual machine runs, while [moving](#) a virtual machine changes the repository where the virtual machine configuration or virtual disks are located.

A stopped virtual machine can be migrated to any Oracle VM Server, server pool, or to the **Unassigned Virtual Machines** folder. A running virtual machine can be migrated to any Oracle VM Server within the same server pool.

The steps below assume the virtual machine is deployed to an Oracle VM Server. If the virtual machine is located in the **Unassigned Virtual Machines** folder, select it in that folder to perform the migration.

To migrate or move a virtual machine:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to migrate in the management pane, and click **Migrate or Move** .

The **Migrate or Move Virtual Machine** dialog box is displayed.

4. Choose the appropriate option from the **Migrate or Move Virtual Machine** dialog box. Different options are available, depending on if the virtual machine is running or stopped.

If the virtual machine is **running**, you can select from the following options:

- [Migrate a running VM to a different Server within the same Server Pool](#)

This option changes the server where the virtual machine runs. The destination server must be within the same server pool as the source server. Likewise, the destination server must be able to access the virtual machine configuration and storage. You should choose this option to migrate virtual machines between servers within a server pool that use a shared repository.

Select this option and then click **Next** to proceed as follows:

1. Select the destination server to which you want to migrate the virtual machine from the [Specified Server](#) drop-down list.



Note

Some options are disabled because they apply only if you are migrating a virtual machine that is *stopped*.

2. Click **Finish** to complete the migration.

- [Migrate a running VM, and migrate its local storage, to a different Server within the same Server Pool](#)

This option changes the server where the virtual machine runs and moves its local storage. You can choose this option to migrate virtual machines between servers within the same server pool when:

- At least one virtual disk resides in a repository that is local to the source server.
- The destination repository is local to the destination server.

**Note**

If the virtual machine configuration file resides in a repository that is local to the source server only, the configuration file is copied to the destination repository. If the configuration file resides in a shared repository, it is not copied.

Select this option and then click **Next** to proceed as follows:

1. Select the destination server to which you want to migrate the virtual machine from the [Server to Migrate to](#) drop-down list.
2. Select the destination repository to which you want to move the virtual machine configuration and storage from the [Target Repository](#) drop-down list.

**Note**

You can select only repositories that are hosted on an OCFS2 file system.

3. Click **Finish** to complete the migration and move the virtual machine configuration and storage.

- [Move this VM to a different Repository](#)

This option changes the location of the virtual machine.

**Note**

Beginning in Oracle VM Manager 3.4.6, this option is available when the **Migrate or Move Virtual Machine** dialog box is displayed for a **running** virtual machine. This option makes it possible to move a [vm.cfg](#) file from one repository to another while the virtual machine is in running state by creating an empty clone customizer.

**Important**

When moving a **running** virtual machine, be sure to create an empty clone customer with no storage mappings attached. If a clone customizer is created with an attached virtual disk that is actively being used by the virtual machine, an error message is returned.

Select this option and then click **Next** to proceed as follows:

1. Click [Create](#) to create a new empty clone customizer with no storage mappings attached.
2. Select the destination repository to which you want to move the virtual machine configuration from the [Target Repository](#) drop-down list.
3. Click **Finish** to move the virtual machine.

If the virtual machine is **stopped**, you can select from the following options:

- [Migrate a VM to a different Server, Server Pool, or Unassigned State](#)

This option lets you change the virtual machine destination to either the **Unassigned Virtual Machines** folder or unassigned in the current server pool. This option also lets you change the server or server pool where the virtual machine runs as well as the location of the virtual machine configuration and storage.

Select this option and then click **Next** to proceed as follows:

1. Select one of the following destinations for the virtual machine:

- **Unassigned Virtual Machines Folder:** Removes the virtual machine from the server pool and moves it to the **Unassigned Virtual Machines** folder.
- **Unassigned in Current Server Pool:** Removes the virtual machine from the Oracle VM Server. The virtual machine stays in the same server pool; it is removed from the Oracle VM Server only.
- **Specified Server:** Moves the virtual machine to the selected Oracle VM Server. Stopped virtual machines can be migrated to Oracle VM Servers in other server pools that share the same repository, so Oracle VM Servers from other server pools might be listed here.
- **Server Pool:** Moves the virtual machine to the selected server pool. Stopped virtual machines can be migrated to other server pools. The virtual machine is not deployed to a particular Oracle VM Server within the destination pool; you must start the virtual machine in the destination server pool to deploy it to an Oracle VM Server.

2. Click **Finish** to complete the migration.

- [Move this VM to a different Repository](#)

This option changes the location where the virtual machine, and its configuration and local storage, reside. You should choose this option to move the virtual machine between servers in different server pools.

- Select this option and then click **Next** to proceed as follows:

1. Select a clone customer from the [Clone Customizer](#) drop-down list or click [Create](#) to create a new clone customizer.

Clone customizers can be used to determine storage mappings for the virtual machine so that you can define where the virtual disks for a virtual machine should be located.

If you create a new clone customizer, the **Create Clone Customizer** wizard is displayed. You can read more on the options provided by this wizard in [Create a Clone Customizer](#).

2. Select the destination repository to which you want to move the virtual machine configuration and storage from the [Target Repository](#) drop-down list.

3. Click **Finish** to move the virtual machine.

To migrate multiple virtual machines:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machines reside in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machines to migrate in the management pane and drag and drop them to the Oracle VM Server, server pool or the **Unassigned Virtual Machines** folder in the navigation tree to which you want to migrate the virtual machines. See [Section 1.13, “Drag and Drop”](#) for information on using the drag and drop feature.
4. The virtual machines are migrated.

3.7.1.5 Clone a Virtual Machine or Template

Cloning a virtual machine or a template means making a copy of it, so that you can create multiple virtual machines or templates from the original.

A clone can also be performed using two other file copy methods: [sparse copy](#), and [non-sparse copy](#). These two cloning methods can be used when cloning from and to different repositories, and when the storage used for the storage repository uses a generic Oracle VM Storage Connect plug-in. These cloning methods are slower than thin cloning, but more versatile.



Note

The virtual machine cloning procedure below uses the same dialog box to clone a virtual machine and a template.

To create a clone of a virtual machine or template:

1. Select the virtual machine or template to clone and display the **Clone** dialog box. You display this dialog box from different locations, depending on whether you are cloning a virtual machine or a template.
 - **Virtual Machine:** Click the **Servers and VMs** tab. Select the server pool on which the virtual machine resides in the navigation tree. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to clone in the management pane, and click **Clone Virtual Machine** .
 - **Virtual Machine Template:** Click the **Repositories** tab. In the navigation tree, select the repository in which the template resides, then **VM Templates**. Select the template in the management pane and click **Clone Template** .
2. The **Clone (Virtual Machine or Template)** dialog box is displayed.

Select or enter the following:

- **Clone to a:** Select the clone type, either **Virtual Machine** or **Template**, to specify the objects to create from the clone.
- **Clone Count:** The number of clones to create.
- **Name Index:** The start index number to use for the clone name suffix. The default is 0. This is used in conjunction with the **Clone Name** field to create the name for each clone.
- **Clone Name:** An optional name for the virtual machines or templates. The maximum name length is 256 characters and may contain any character. The name need not be unique. If no value is given, the default is the name of the virtual machine or template being cloned. Each clone is suffixed with a dot (.) and the clone index number, starting with the value for the **Name Index** field. For example, if the **Clone Name** field is set to *MyVM*, and the **Name Index** field is set to 1, the resulting clones would be named *MyVM.1*, *MyVM.2* and so on.
- **Target Server Pool:** The server pool on which the clone is to be deployed.



Note

The list of server pools that are available in the drop-down is limited to valid server pools that are capable of handling the cloning process correctly. This

helps you to prevent cloning to a server pool that may fail to process the request. If this list is empty, you should refer to the table presented under the **Why don't I see other server pools to clone to?** element in this dialog.

- **Description:** A description for the virtual machines or templates.
- **Advanced Clone:** Whether to use a clone customizer to set preferences for the clone operation.
- **Clone Customizer:** The clone customizer to create the clones. This is used to set virtual disk mappings to enable you to copy disks to other storage locations. It also allows you to create network mappings so you can use new VNICs and other networks for the clone. Click **Create...** to create a new clone customizer. See [Section 3.5.2.14, "Manage Clone Customizers"](#) for information on creating a clone customizer. This field is enabled if **Advanced Clone** is checked.
- **Target Repository:** The repository to store the cloned virtual machine configuration file. This does not affect any clone disk mappings you set using a clone customizer; this option is only for the virtual machine configuration file. This field is enabled if **Advanced Clone** is checked.
- **Why don't I see other server pools to clone to?** A collapsed window element, providing a table of server pools that do not meet the requirements to accept a clone request. Expanding any of the entries in this table displays the reason that the server pool does not qualify.



Tip

If you clone a virtual machine or template without using a clone customizer, the storage repository is locked for the duration of the cloning job; this may be some time in some circumstances. To quickly create clones and not lock the storage repository, use a clone customizer.

Click **OK**.

The virtual machines are created and deployed to the server pool. The templates are created in the storage repository.

It is important to understand that older templates may use a different device type to attach virtual disks. This may affect your ability to attach new virtual disks, such as a virtual CDROM device. There are some limitations on mixing virtual disks of differing device types on a virtual machine. See [How are Virtual Disks Managed?](#) in the *Oracle VM Concepts Guide* for more information about how device types are allocated to virtual disks and what you may need to do to solve any issues surrounding this problem.

3.7.1.6 Export a Virtual Machine

Exporting a virtual machine lets you reuse [virtual machines](#) with other instances of Oracle VM, or with other virtualization environments that support the Open Virtualization Format (OVA).

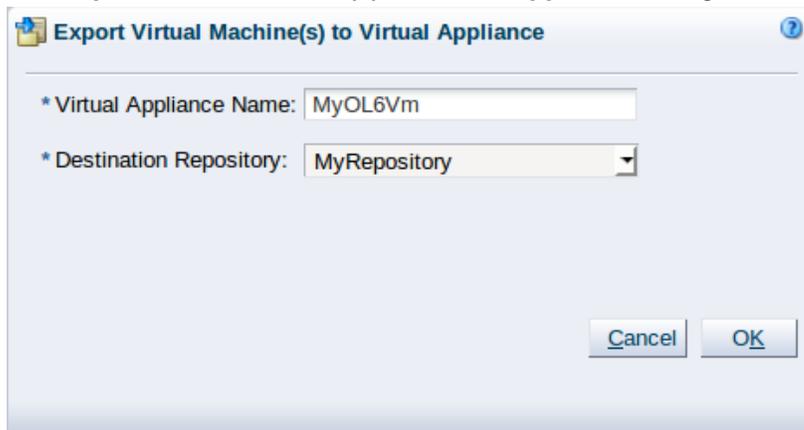
Export to Virtual Appliance

Exporting a [virtual appliance](#) lets you reuse [virtual machines](#) with other instances of Oracle VM, or with other virtualization environments that support the Open Virtualization Format (OVA).

You can export one or more virtual machines to a virtual appliance. Exporting a virtual machine to a virtual appliance creates an OVA file in the storage repository. The OVA file contains the virtual disk file(s) in VMDK format, an OVF file that holds the virtual machine(s) configuration, and other files such as a manifest and certificate.

To export to a virtual appliance:

1. Click the **Servers and VMs** tab. Select the server pool on which the virtual machine resides in the navigation tree. Select **Virtual Machines** from the **Perspective** drop-down list.
2. Make sure each virtual machine to export is in the **Stopped** state.
See [Section 3.5.2.4, “Stop Virtual Machines”](#) for more information on stopping virtual machines.
3. Select the virtual machine(s) to export in the management pane, and click **Export to Virtual Appliance** .
4. The **Export Virtual Machine(s) to Virtual Appliance** dialog box is displayed.



Specify a name for the virtual appliance in the **Virtual Appliance Name** field and select the storage repository to which you want to save the virtual appliance from the **Destination Repository** menu and then click **OK**.

The virtual appliance is located under the [Assemblies](#) directory on the Oracle VM Server instance where the storage repository is presented to, as follows: `/OVS/Repositories/repository_id/Assemblies/virtual-appliance_id/package.ova`. See the [Chapter 4, Repositories Tab](#) for information about obtaining the repository and virtual appliance ID.

Export to Oracle Cloud Infrastructure Using Oracle VM Exporter Appliance

Exporting an Oracle VM virtual machine using the [Oracle VM Exporter Appliance](#) transfers the virtual machine to [Oracle Cloud Infrastructure](#). Exporting a virtual machine does not remove the virtual machine from Oracle VM. You can export a virtual machine to other places in Oracle Cloud Infrastructure.



Note

Before using the Oracle VM Exporter Appliance, you must first download and configure the Oracle VM Exporter Appliance Open Virtual Appliance (OVA) and make sure the Oracle VM Exporter Appliance virtual machine is running. For more information, see [Installing and Configuring the Oracle VM Exporter Appliance](#)

You can start, one after another, up to four virtual machine exports to run simultaneously (they will not start simultaneously) with a single Oracle VM Exporter Appliance. If you start a fifth export operation for one Oracle VM Exporter Appliance, the export is queued until one of the running exports completes. If you need to run more than four exports at the same time, you can add another Oracle VM Exporter Appliance

to the virtual machines. You can only export a stopped virtual machine. A virtual machine being exported by the Oracle VM Exporter Appliance cannot be started.



Note

Before Windows VMs can be exported to OCI, they have to be shutdown without fast restart. To shutdown without fast restart:

- Use the `shutdown /s` command, or
- Click the Windows **Start** Button (or Windows symbol button or the Start Menu), then click **Power** and then press the **Shift** key while clicking on **Shutdown** option.

Export a Virtual Machine to Oracle Cloud Infrastructure

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. You can also select the virtual machine directly if the virtual machine is on the screen.



Note

Windows virtual machines need to have virtio-win drivers installed before exporting to Oracle Cloud Infrastructure. For more information see <https://docs.oracle.com/en/operating-systems/oracle-linux/kvm-user/>.

4. Stop the virtual machine.

See [Section 3.5.2.4, “Stop Virtual Machines”](#) for more information on stopping virtual machines.

5. With the stopped virtual machine highlighted, click the **Export to OCI** icon (📁) in the **Virtual Machine Perspective** task icon bar or right-click on the stopped virtual machine and select **Export to OCI**.

The **Export VM to OCI** wizard displays information about the Oracle VM Exporter Appliance virtual machine.

6. Select or enter the following Exporter Appliance information:

- From the **Appliance** drop-down list, select the name of the Oracle VM Exporter Appliance.

**Note**

If you named the Oracle VM Exporter Appliance **Exporter Appliance**, that name is already filled in. If you have changed the name, you have to select it from a list of virtual machines. One of the choices is **Please Select**, which is an option to enter the **Hostname or IP** information.

- From the **Appliance's IP Address** drop-down list, select the IP address of the Oracle VM Exporter Appliance.

**Note**

The IP address for the **eth0** interface is pre-selected, if it exists. There might be more than one IP address assigned to the Oracle VM Exporter Appliance. Make sure you select the correct one.

If you selected **Please Select** for the Appliance name, the Appliance's IP Address defaults to **Please Select or Enter Below**.

- If you selected **Please Select or Enter Below** from the **Appliance's IP Address** drop-down list, enter the hostname or IP address for the Oracle VM Exporter Appliance.
- Enter a port number if you have changed the default port number that the Oracle VM Exporter Appliance uses to receive packets.

**Note**

Be aware that if you change the default port number of 8443 can complicate Oracle VM Exporter Appliance communications.

7. Click **Next**.

The **OCI Information** options display.

8. If the Oracle VM Exporter Appliance has been set up correctly, the **API Public Key** and **Fingerprint** fields display the public key and fingerprint of the Oracle VM Exporter Appliance selected for the export. This public key must be uploaded to Oracle Cloud Infrastructure or the export authentication fails.

The other fields may contain values from previous export operations. These fields contain Oracle Cloud Infrastructure user ID (**User OCID**), Oracle Cloud Infrastructure region (**Region**), and Oracle Cloud Infrastructure tenancy ID (**Tenancy OCID**). These values are all obtained from an Oracle Cloud Infrastructure tenancy account. For more information on these fields, see [Installing and Configuring the Oracle VM Exporter Appliance](#).

Enter the following Oracle Cloud Infrastructure information:

- Enter the **User OCID**.
- Enter the **Region** where you want to upload the exported virtual machine.
- Enter the **Tenancy OCID**.

9. Click **Next**.

Before the **Instance Info** options display, the Oracle VM Exporter Appliance validates the information provided with Oracle Cloud Infrastructure account.



Note

If you get an error here, validate all Oracle Cloud Infrastructure information.

10. Enter information about Oracle Cloud Infrastructure instance.

- **(Optional)** Enter a new **Instance Name**.



Note

By default, the instance name is the same as the virtual machine name, but you can enter a customized name between 1 and 255 characters long.

- Select the **Compartment** from the drop-down list.
- Select the **Availability Domain** from the drop-down list.
- Enter the **Instance Shape**.

11. Click **Next**. The **VM Disk** options display.

12. Enter additional information about the virtual machine disks exported with the virtual machine to Oracle Cloud Infrastructure.

- Select the **Bucket Compartment** from the drop-down list.
- Select the **Bucket Name** from the drop-down list.
- Select the **Custom Image Compartment** from the drop-down list.

**Note**

The rest of the **VM Disk** items are determined by local information.

- Select the **Boot Disk** from the drop-down list.
- **(Optional)** Change the **Boot Volume Size (GiB)** from the default size. The range for a Linux VM is from 50 GiB to 32 TiB. The range for the Windows VM is from 256 GiB to 32 TiB.

**Note**

If the boot volume size entered is less than the actual virtual machine system image (boot disk) size, the export fails in the instance creation phase.

- **(Optional)** Check the **Additional Disks to Upload** box next to each disk in the list you want to upload.

**Note**

You can select up to 32 disks to upload. ISO images attached to the virtual machine are not uploaded.

The Oracle VM Exporter Appliance lets you select and upload the same shared disk when exporting two or more virtual machines that share the disks. You need to select the shared disk for upload *only once* when exporting one of the virtual machines that shares the disk. If you select the same shared disk for each virtual machine, you create multiple copies of the same shared disk.

13. Click **Next**.

The **VNICs** options display.

14. Select or enter the following information about the virtual NICs (vNICs) created and used by Oracle Cloud Infrastructure for the Virtual Cloud Network (VCN) when the export operation has completed.



Note

The **Slot** and **Current Network** information is supplied by Oracle VM and cannot be changed.

- **VCN Compartment**
- **VCN**
- **Subnet Compartment**
- **Subnet**
- **Assign Public IP**

15. Click **Next**.

The **Summary** of your choices display.

16. Once you have entered all the required information, the Oracle VM Exporter Appliance displays a summary of the key information supplied during the wizard navigation. If all information in the summary is correct, click **Finish** to begin the export operation.

Tracking the Export Operation

The export is a multi-stage operation tracked by an Oracle VM job listed in the running and completed task section of the Oracle VM Manager. You can track the progress of the export to make sure it completes successfully.

- Once the export process has ended, you can check the **Job Summary** details in the Oracle VM Manager virtual machine perspective.



Note

You can also log into the Oracle VM Exporter Appliance and tail the `vmexporter` log using the following command: `$ tail -f /var/log/vmexporter/vmexporter.log`

- Even after the export job completes successfully, be sure to check the **Export Summary** tab in **Job Details** to make sure the **Successfully exported OVM VM to OCI** result appears and to see if any other related steps are needed. For example, additional steps are needed to connect a data Block Volume to the exported virtual machine.
- If you need to connect a data block volume, the directions are listed in the job summary. The steps are different for exported Windows and Linux virtual machines.

Windows virtual machine example:

```
Successfully exported OVM VM to OCI
OVM VM ID           : <ovm-vm-id>
OCI Instance ID    : <oci-instance-id>
OCI Instance Name  : <oci-instance-name>
OCI Compartment ID : <oci-compartment-id>
OCI OS Type        : Windows - Server 2019 Standard
```

Additional Disk Data:

One or more data disks have been uploaded to OCI Object Storage as a disk image. To get your data on the disk block volume, this disk image has to be transferred to OCI Instance and written to disk block volume. Please ensure you have sufficient space to transfer the disk image.

```
Object Storage Bucket      : <object-storage-bucket-name>
Object Name                 : <object-name>
Object Size                 : 2.0GB
Pre-Authenticated Request URL : <url>
Block Volume ID            : <block-volume-id>
Block Volume Attachment ID  : <block-volume-attachment-id>
Block Volume Attachment Access: READ/WRITE
```

1. Run these commands in the OCI Instance as an administrator in Windows Powershell to connect to the attached block volume.

```
Set-Service -Name msiscsi -StartupType Automatic
Start-Service msiscsi
iscsicli.exe QAddTargetPortal <ip>
iscsicli.exe QLoginTarget <iqn>
iscsicli.exe PersistentLoginTarget <iqn> * * * * *
```

2. Download the disk image: <disk-image-location> to the OCI Instance.
3. Go to Disk Management and mark Disk 2 "Online."
4. Write the downloaded disk image to Disk 2 using a Windows Disk Image Writer program such as NetBSD Rawrite32.
5. Delete the downloaded disk image from OCI Instance.
6. Delete the disk image '<disk-image-name>' from OCI Object Storage.

```
Object Storage Bucket      : <object-storage-bucket>
Object Name                 : <object-name>
Object Size                 : 1.0GB
Pre-Authenticated Request URL : <url>
Block Volume ID            : <block-volume-id>
Block Volume Attachment ID  : <block-volume-attachment-id>
Block Volume Attachment Access: READ/WRITE
```

1. Run these commands in the OCI Instance as an administrator in Windows Powershell to connect to the attached block volume.

```
Set-Service -Name msiscsi -StartupType Automatic
Start-Service msiscsi
iscsicli.exe QAddTargetPortal <ip>
iscsicli.exe QLoginTarget <iqn>
iscsicli.exe PersistentLoginTarget <iqn> * * * * *
```

2. Download the disk image: <disk-image-location> to the OCI Instance.
3. Go to Disk Management and mark Disk 3 "Online."
4. Write the downloaded disk image to Disk 3 using a Windows Disk Image Writer program such as NetBSD Rawrite32.
5. Delete the downloaded disk image from OCI Instance.
6. Delete the disk image '<disk-image-name>' from OCI Object Storage.

Linux virtual machine example:

Successfully exported OVM VM to OCI

```
OVM VM ID      : <ovm-vm-id>
OCI Instance ID : <oci-instance-id>
OCI Instance Name : <oci-instance-name>
```

```
OCI Compartment ID : <oci-compartment-id>
OCI OS Type       : Linux

Additional Disk Data:

One or more data disks have been uploaded to OCI Object Storage as a disk image. To get
your data on the disk block volume, please install 'iscsi-initiator-utils' and
'wget' yum packages on your Instance, if not already installed, and do the following:

Object Storage Bucket      : <object-storage-bucket>
Object Name                : <object-name>
Object Size                : 2.0GB
Pre-Authenticated Request URL : <url>
Block Volume ID           : <block-volume-id>
Block Volume Attachment ID : <block-volume-attachment-id>
Block Volume Attachment Access: READ/WRITE

1. Run these commands to connect to the attached block volume:
    sudo iscsiadm -m node -o new -T <iqn> -p <ip:port>
    sudo iscsiadm -m node -o update -T <iqn> -n node.startup -v automatic
    sudo iscsiadm -m node -T <iqn> -p <ip:port> -l
2. Run the following command:
    sudo wget <url> -O /dev/sdb
3. If disk mount in /etc/fstab is with UUID, the disk can be mounted at its mount point.
   If UUID is not used, please update /etc/fstab to use UUID or use /dev/sdb.
4. Reboot the instance and check data in disk block volume. Reboot can be deferred until all
   data disks have been processed.
5. Delete the disk image '<disk-image-name>' from OCI Object
   Storage.

Object Storage Bucket      : <object-storage-bucket>
Object Name                : <object-name>
Object Size                : 1.0GB
Pre-Authenticated Request URL : <url>
Block Volume ID           : <block-volume-id>
Block Volume Attachment ID : <block-volume-attachment-id>
Block Volume Attachment Access: READ/WRITE

1. Run these commands to connect to the attached block volume:
    sudo iscsiadm -m node -o new -T <iqn> -p <ip:port>
    sudo iscsiadm -m node -o update -T <iqn> -n node.startup -v automatic
    sudo iscsiadm -m node -T <iqn> -p <ip:port> -l60 -l
2. Run the following command:
    sudo wget <yrl> -O /dev/sdc
3. If disk mount in /etc/fstab is with UUID, the disk can be mounted at its mount point.
   If UUID is not used, please update /etc/fstab to use UUID or use /dev/sdc.
4. Reboot the instance and check data in disk block volume. Reboot can be deferred until
   all data disks have been processed.
5. Delete the disk image '<disk-image-name>' from OCI
   Object Storage.
```

You are prompted once for each data disk that the Oracle VM Exporter Appliance has exported.

- If you have exported a virtual machine with multiple VNICs, there are additional steps needed because of the way that Oracle Cloud Infrastructure handles new virtual machines with multiple VNICs. For more information on this issue and solutions, see <https://docs.cloud.oracle.com/en-us/iaas/Content/Network/Tasks/managingVNICs.htm>

Connecting a Shared Block Volume to Exported Virtual Machines

You can use the Oracle VM **Export to OCI** function to export two or more virtual machines that share disks (for example, an OCFS2 cluster) to Oracle Cloud Infrastructure. However, after successful creation of the virtual machine instances in Oracle Cloud Infrastructure, additional steps must be followed to connect the

shared Oracle Cloud Infrastructure block volumes and, in the case of an OCFS2 cluster, restart the cluster services.

If you export two or more Oracle VM virtual machines sharing one or more disks (such as an OCFS2 cluster), you should avoid creating duplicate copies of the shared disk in Oracle Cloud Infrastructure. Although you only have to upload the shared disks *once* with an exported virtual machine, you must attach the shared disks, which are now block volumes in Oracle Cloud Infrastructure, to the other virtual machines after the export succeeds.



Important

The Oracle VM Exporter Appliance does not prevent you from selecting and uploading the same shared disk when exporting two or more virtual machines that share the disks. You need to select the shared disk only once when exporting one of the virtual machines to Oracle Cloud Infrastructure or duplicate, unnecessary copies are created.

As an example of this process, consider a set of three Oracle VM virtual machines (VM1, VM2, and VM3) sharing two disks (Shared Disk1 and Shared Disk2).

You export this group as three virtual machines, but upload the shared disks only *once* with one of the virtual machines. To avoid duplicated effort and results, these virtual machines and shared disks are exported to Oracle Cloud Infrastructure as two types of export: one virtual machine with the upload of the shared disks, and two virtual machines without any uploaded disks.

So, VM1 has Shared Disk1 and Shared Disk2 attached, but the exported VM2 and VM3 do not.

Because the goal is to establish the original configuration from Oracle VM in Oracle Cloud Infrastructure, the shared disks from Oracle VM, which are now block volumes in Oracle Cloud Infrastructure, must be re-attached to the exported virtual machine instances in Oracle Cloud Infrastructure.

In this case, Shared Disk1 and Shared Disk2 are to be attached to the exported virtual machine instances VM2 and VM3 in Oracle Cloud Infrastructure.



Note

Only VM1's **Export Summary** of the **Export to OCI** job has the details to attach Oracle Cloud Infrastructure block volumes to an instance. VM2 and VM3 do not have this information because the shared disks were not exported with VM2 and VM3, only with VM1. However, the same steps listed for VM1 must be repeated for VM2 and VM3.

Once all exports have completed successfully, the following are the high-level steps for connecting an Oracle Cloud Infrastructure shared block volume to an exported virtual machine instance. Some steps have to be repeated for each disk or virtual machine instance:

1. In Oracle Cloud Infrastructure, attach the same set of shared block volumes to the virtual machine instances that share them in Oracle Cloud Infrastructure.
2. For VM1, follow the instructions in the **Export Summary** (under the **Jobs** tab) in Oracle VM for a successful export with uploaded shared disks.
3. For VM2 and VM3, follow the instructions in the **Export Summary** (under the **Jobs** tab) in Oracle VM for a successful export of virtual machines without uploaded shared disks.

If you have OCFS2 disks attached to the virtual machines you have exported, there are two additional steps to take:

1. In Oracle Cloud Infrastructure, re-establish the cluster and make modifications to the `cluster.conf` file for each virtual machine instance that is part of the cluster. This step is necessary because the IP address and hostname are changed when the virtual machine is exported.
2. In Oracle Cloud Infrastructure, mount the data disk on the virtual machine instances in the cluster.

Detailed Example

There are three general steps to follow when connecting exported disks to virtual machine instances on Oracle Cloud Infrastructure.

1. In Oracle Cloud Infrastructure, attach the same set of shared block volumes to the virtual machine instances that share them in Oracle Cloud Infrastructure. Information about the block volumes to attach can be found in one of the following ways:

- In the **Export Summary** of VM1's export **Job** in Oracle VM
- In the **Attached Block Volumes** of VM1's Oracle Cloud Infrastructure instance.

Repeat the following steps for *each* of the shared volumes (Shared Disk1 and Shared Disk2) that need to be attached to a virtual machine instance (VM2 and VM3):

- a. Click on **Compute**.
- b. Click on **Instances**.
- c. Click on the hyperlink for the virtual machine **Instance**.
- d. Click on the **Attached Block Volumes** in the **Resources** column.
- e. Click on the **Attach Block Volume** blue button.
- f. Enter the applicable information on the **Attach Block Volume** page:
 - i. **Attachment Type:** iSCSI (this is the default).
 - ii. Make sure **Select Volume** is selected (this is the default)
 - iii. Make sure the Block Volume from Step 1 above is correct in the drop-down.



Note

For the drop-down list **Block Volume in `Compartment_Name`**, make sure you select the *same* uploaded shared block volume (Shared Disk1 and Shared Disk2) that was attached to the virtual machine sharing the disks (VM1) before the export.

- iv. **Access:** Select `Read/Write - Shareable`

2. If you have not already done so, follow the instructions in the **Additional Disk Data** section under the **Export Summary** tab in **Job Details** of a successful export **Job** of VM1 in Oracle VM. These instructions are included in the **Tracking the Export Operation** section above.



Note

For more information on finding jobs and job details, see [Job Details...](#)

3. On VM2 and VM3, which have block volumes that were not uploaded with the virtual machine instance, you must manually attach the shared disks uploaded from Oracle VM.

For Linux-based virtual machine instances, do the following:

- a. Run the commands listed under *Step 1: Run these commands to connect to the attached block volume* under the [Additional Disk Data](#) in the **Export Summary** for VM1 in Oracle VM. Shared disks are those with a **Block Volume Attachment Access** set to [Read/Write - Shareable](#).
- b. Reboot

For Windows-based virtual machine instances, do the following:

- a. Run the commands listed under *Step 1: Run these commands in the OCI Instance as an administrator in Windows Powershell to connect to the attached block volume* under the [Additional Disk Data](#) in the **Export Summary** for VM1 in Oracle VM. Shared disks are those with a **Block Volume Attachment Access** set to [Read/Write - Shareable](#).
- b. Go to **Disk Management** and mark the disk [Online](#)

Detailed Example for OCFS2

There are two more OCFS2-specific steps to follow when connecting exported disks to virtual machine instances on Oracle Cloud Infrastructure. These steps only apply to OCFS2.

1. For OCFS2, in Oracle Cloud Infrastructure, re-establish the cluster and make modifications to the [cluster.conf](#) file for each virtual machine instance that is part of the cluster. This is necessary because the IP address and hostname are changed when the virtual machine is exported.

To recreate or re-establish the cluster configuration, do the following:

- a. Set the hostname if it is not already set:

```
$ nmcli general hostname <Fully Qualified Domain Name>
$ systemctl restart systemd-hostnamed
$ vi /etc/hosts <add new hostname and IP address on primary VNIC>
```

- b. Verify that the OCFS2 cluster is set to [offline](#):

```
$ o2cb cluster-status
```

- c. Verify that the volumes, labels, and UUIDs are listed.

```
$ mountd.ocfs2 -d
```

- d. Perform the next *two* commands on *only one* virtual machine instance.

Using the editor, modify the [cluster.conf](#) file to change each node's IP address and hostname to reflect the new IP address (the IP address used for the cluster connection) and hostname of the exported virtual machine instance.

```
$ vi /etc/ocfs2/cluster.conf
```

Copy the updated [/etc/ocfs2/cluster.conf](#) file to all other nodes or virtual machine instances that were originally part of the cluster.

```
$ scp /etc/ocfs2/cluster.conf root@<vm_clusterIP>:/etc/ocfs2/
```

- e. Perform the next *three* commands on *all* virtual machines in the cluster.

Ping each node or virtual machine cluster IP address from each virtual machine in the cluster. Verify that the ping succeeds, then put the cluster back online.

```
$ ping <vm1_cluster_ip...vmN_cluster_ip>
$ /sbin/o2cb.init start
```

Verify that the cluster is back online, the heartbeat is set to *active*, and, if the cluster is using global heartbeat, that the *UID* of the device being used is the one listed in the output of the `mountd.ocfs2 -d` command above.

```
$ /sbin/o2cb.init status
```

2. For OCFS2, in Oracle Cloud Infrastructure, mount the data disk on the virtual machine instances in the cluster.

For each virtual machine instance in the cluster, do the following:

- a. Check the `/etc/fstab` to verify that the correct device is used to mount the shared block volumes (see the **Export Summary** above).
- b. Mount the cluster file systems:

```
$ mount -d
$ df
```

Verify that the shared block volumes are mounted on the cluster file system, and that the files created in Oracle VM still exist, intact, and are the same on all cluster nodes.

Once these steps are completed, the OCFS2 disks have been successfully exported from Oracle VM to Oracle Cloud Infrastructure and re-attached.

Accessing the Exported Virtual Machine Serial Console

After exporting a virtual machine with the Oracle VM Exporter Appliance, in some cases you must modify the exported virtual machine's GRUB bootloader to access the serial console.

For Oracle Linux 7 or Oracle Linux 8, which include GRUB2, do the following:

1. Update the `/etc/default/grub` file to include the following:

```
GRUB_TIMEOUT=5
GRUB_DISTRIBUTOR="$(sed 's, release .*$, ,g' /etc/system-release)"
GRUB_DEFAULT=saved
GRUB_DISABLE_SUBMENU=true
GRUB_TERMINAL_OUTPUT="console"
GRUB_TERMINAL="serial"
GRUB_SERIAL_COMMAND="serial --speed=9600 --unit=0 --word=8 --parity=no
--stop=1"
GRUB_CMDLINE_LINUX="resume=/dev/mapper/ol-swap rd.lvm.lv=ol/root
rd.lvm.lv=ol/swap console=ttyS0,9600n8 console=tty0"
GRUB_DISABLE_RECOVERY="true"
GRUB_ENABLE_BLSCFG=true
```

2. Regenerate the `grub.cfg` file by running the command

```
$ grub2-mkconfig -o /boot/grub2/grub.cfg
```

3. Reboot the exported virtual machine to connect it to the serial console.

For information about virtual machine serial console access in Oracle Linux 6, which shipped with GRUB, see My Oracle Support (MOS) article 1505124.1 at <http://metalink.oracle.com>.

For more information about virtual machine issues, see <https://docs.oracle.com/en/virtualization/oracle-vm/3.4/admin/vmadm-tshoot-vmachines.html>

Resuming a Failed or Aborted Export Operation

The export operation using the Oracle VM Exporter Appliance is a lengthy process and is tracked in the virtual machine Jobs tab like any other operation. You can resume a failed or aborted export operation attempted by the Oracle VM Exporter Appliance.



Note

When resuming an export operation, you should not change these Oracle Cloud Infrastructure parameters:

- Tenancy
- Region
- Instance Name
- Storage-related Compartments

To resume an export operation that has failed or been aborted:

1. Make sure you select the virtual machine that has failed or been aborted.



Note

If the previous export failure was due to a quota limit, a custom image for the virtual machine might exist, depending on when the quota limit was reached. If you delete this custom image, you cannot resume the export operation. However, the custom image is deleted automatically after a successful export operation.

2. Click on the **Export to OCI** icon from the **Virtual Machine Perspective** or right-click the highlighted virtual machine to export, then choose **Export to OCI**.

The **Exporter Appliance** dialog displays.

3. Click **Next**.

The **Failed** or **Aborted** messages display.

- For a **Failed** export operation, a **Retry/Resume** window displays the following information:

```
Previous export attempt of VM <vm-name> failed while
<previous-status-from-returned-data>.
Message: <message-text>
Continuing here will retry from the failed step and resume export operation.
Any changes to Instance configuration will be applied for remainder of the steps.
Changes that pertain to previously completed steps will be ignored.
To discard progress and restart export from beginning, check the checkbox below.

[ ] Discard state and restart export from beginning
```

- Check the **Discard** option to start the process from the beginning and then click **Continue**.

From the **Delete Saved Export?** pop-up window confirm that you want to delete the saved export information by answering **Are you sure you want to discard current progress and restart export from beginning?**

Click **No** to return to the **Retry/Resume** window.

Click **Yes** to delete the export information and advance to the **OCI Information** step to enter new information for the export.

- Do **NOT** check the **Discard** option to start the process from the point of failure and then click **Continue**.



Note

The wizard takes you to the **OCI Information** step where the previous entries from the failed export have been saved and filled in. You still have the option to make some modifications.

- For an **Aborted** export operation, the **Abort in Progress** window or the **Retry/Resume** window opens and displays the following information:

- **Abort in Progress**

```
A previous export operation for virtual machine <vm-name> is being
aborted in the backend.
It can take some time to fully abort. A new export operation cannot be started until
the previous export is fully aborted.
Please try again later.
```

Click **OK** to dismiss this message.

- **Retry/Resume**

```
Message: VM export aborted.
Continuing here will retry from the failed step and resume export operation.
Any changes to Instance configuration will be applied for remainder of the steps.
Changes that pertain to previously completed steps will be ignored.
To discard progress and restart export from beginning, check the checkbox below.

[ ] Discard state and restart export from beginning
```

- Check the **Discard** option to start the process from the beginning and then click **Continue**.

From the **Delete Saved Export?** pop-up window confirm that you want to delete the saved export information by answering **Are you sure you want to discard current progress and restart export from beginning?**

Click **No** to return to the **Retry/Resume** window.

Click **Yes** to delete the export information and advance to the **OCI Information** step to enter new information for the export.

- Do **NOT** check the **Discard** option to start the process from the point where it aborted and then click **Continue**.



Note

The wizard takes you to the **OCI Information** wizard step where the previous entries from the failed export have been saved and filled in throughout the wizard dialog steps. You still have the option to make modifications.

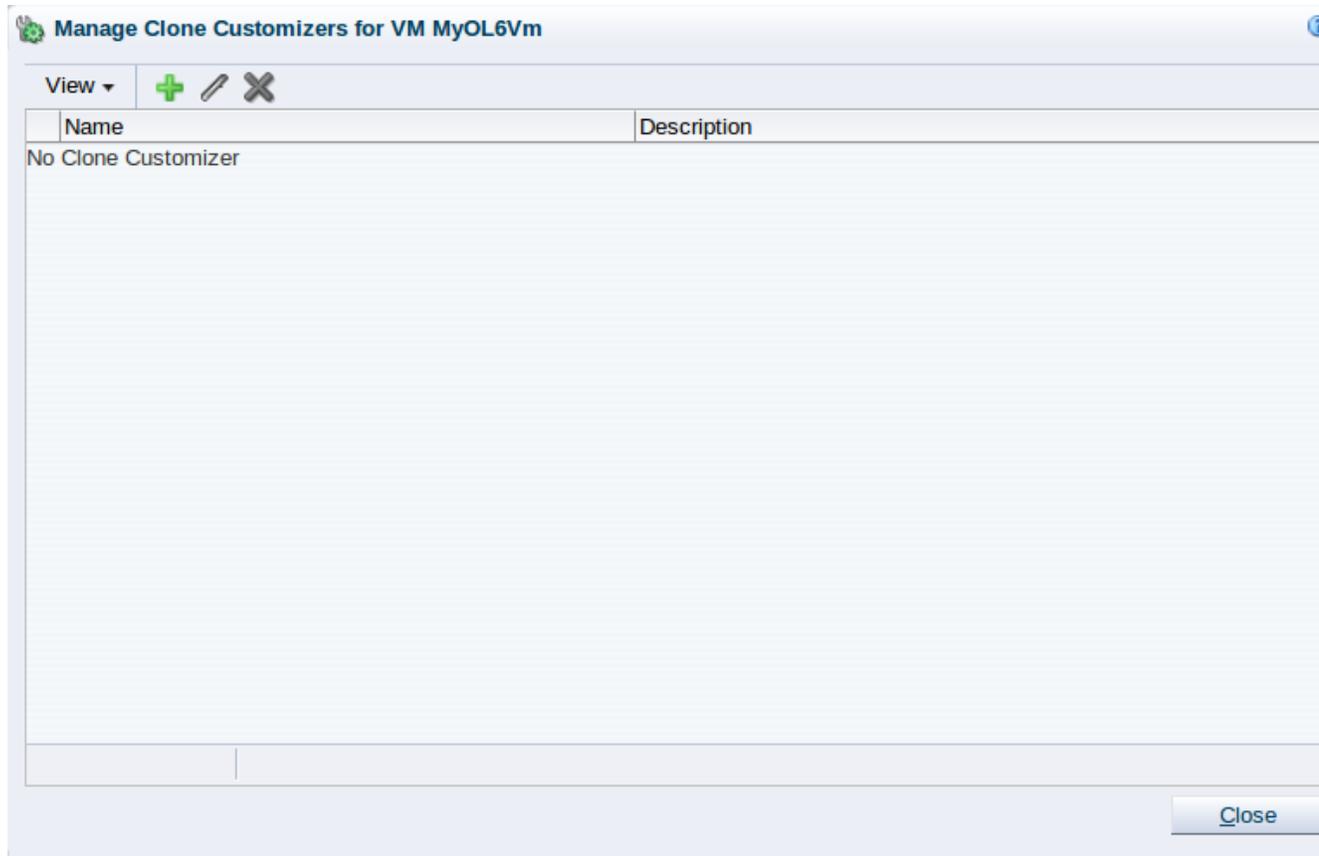
3.7.1.7 Manage Clone Customizers

Cloning a virtual machine or template means making a copy of it, so that you can create multiple virtual machines or templates from the original. You can create a clone customizer to set up the clone parameters, such as networking, and the virtual disk, and ISO resources. A clone customizer is also used when moving a virtual machine or template.

Create a Clone Customizer

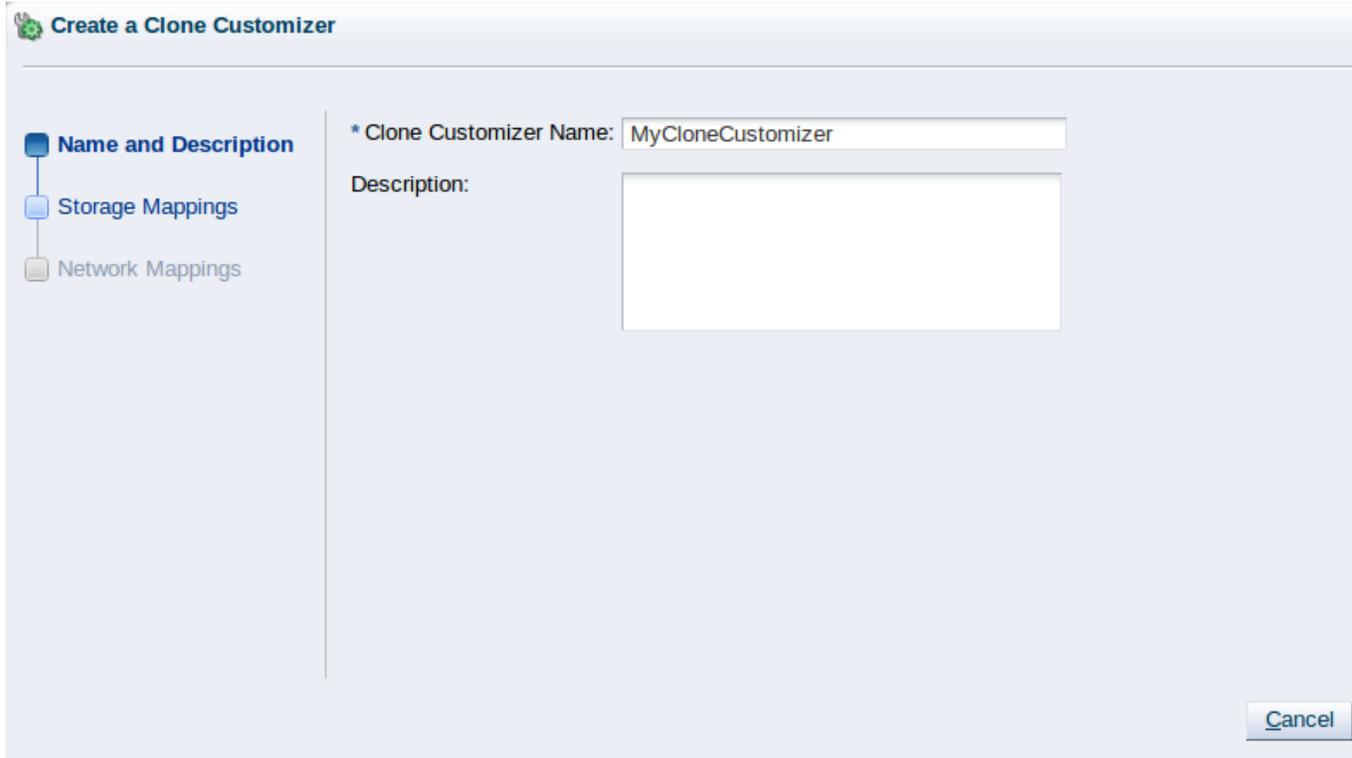
To create a clone customizer:

1. Select the virtual machine or template and display the **Manage Clone Customizers for (Virtual Machine or Template)** dialog box by:
 - **Virtual Machine:** Click the **Servers and VMs** tab. Select the server pool on which the virtual machine resides in the navigation tree. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to clone in the management pane, and click **Manage Clone Customizers...** .
 - **Virtual Machine Template:** Click the **Repositories** tab. In the navigation tree, select the repository in which the template resides, then **VM Templates**. Select the template in the management pane and click **Manage Clone Customizers** .



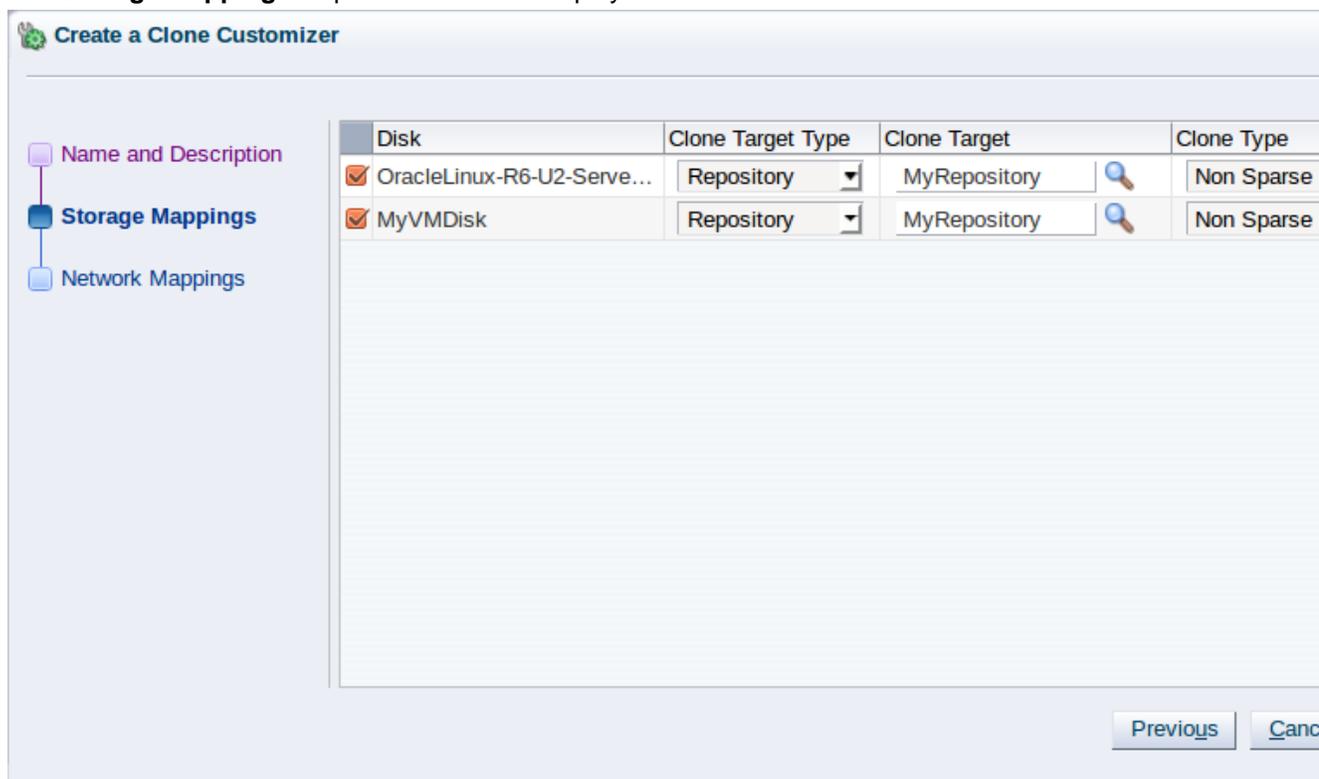
2. Select **Create Clone Customizer...** + .

3. The **Create a Clone Customizer** wizard is displayed.



In the **Name and Description** step of the wizard, enter a **Name** and **Description** for the clone customizer, and click **Next**.

4. The **Storage Mappings** step of the wizard is displayed.



Select the following storage mappings:

- **Disk:** The disks to include in the clone.
- **Clone Target Type:** The type of storage location where the disk is to be created, either a **Repository** or a **Physical Disk**.
- **Clone Target:** The location on the storage type where the disk is to be created.
- **Clone Type:** Whether to use a sparse or non-sparse files for the disk.

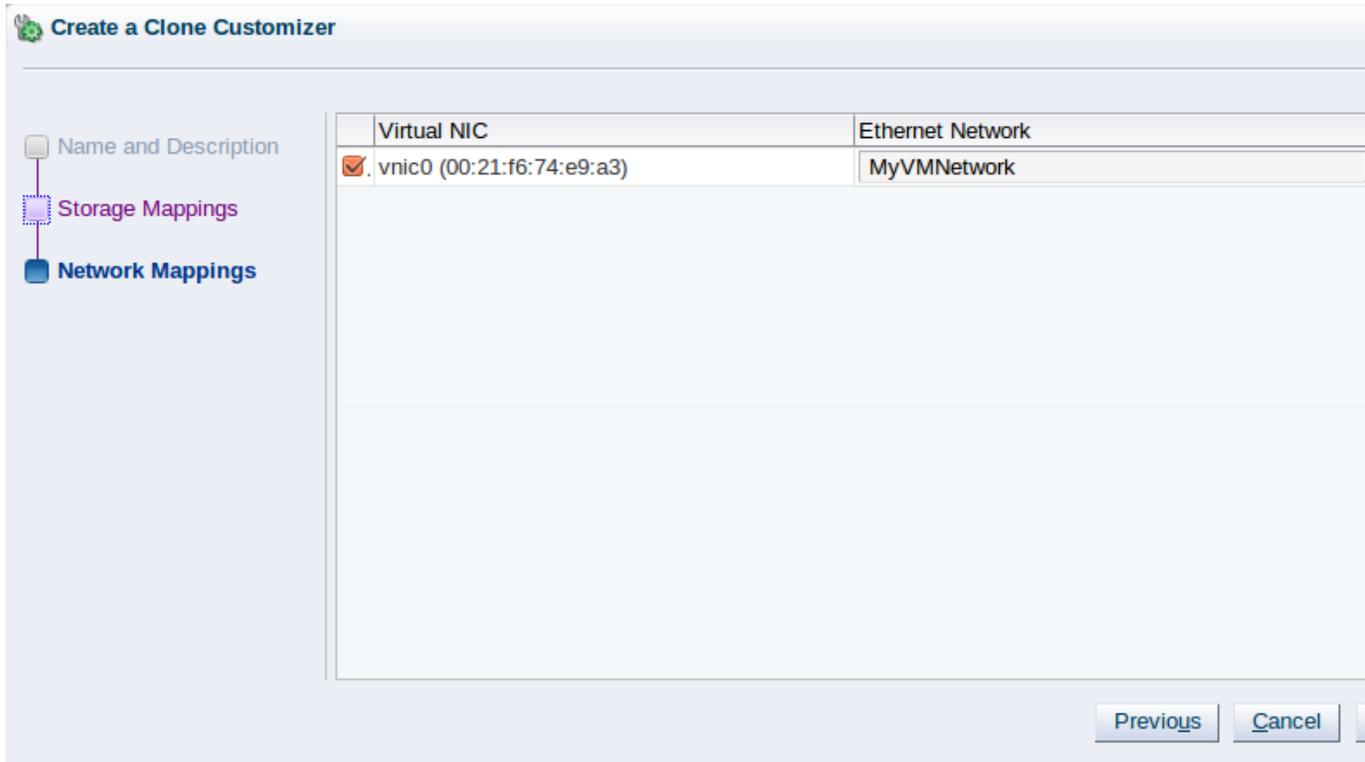


Caution

When sparse virtual disk space allocation is used, the available space in a repository can be over-subscribed. Sparse allocation is useful to increase virtual machine density. However, errors occur if the space allocated to a storage repository becomes exhausted, so the administrator must carefully monitor disk space.

Click **Next**.

5. The **Network Mappings** step of the wizard is displayed.



Select the **Virtual NICs** to include in the clone customizer, and the **Ethernet Network** to which they should belong.



Note

The network configuration is not changed when moving a virtual machine or template. It is only used when cloning a virtual machine or template.

Click **Finish**.

The clone customizer is now available to use to create a virtual machine, or template. See [Section 4.7.1.4, “Clone a Virtual Machine or Template”](#) for information on using the clone customizer to create a virtual machine or template.

Edit a Clone Customizer

To edit a clone customizer:

1. Select the object to which the clone customizer belongs, either a virtual machine, or a virtual machine template. Click **Manage Clone Customizers...** .
2. The **Manage Clone Customizers for (VM or Template)** dialog box is displayed. Select the clone customizer to edit and click **Edit Clone Customizer...** .
3. The **Edit Clone Customizer** dialog box is displayed. Edit the clone customizer.

Click **OK**. The changes to the clone customizer are saved.

Delete a Clone Customizer

To delete a clone customizer:

1. Select the object to which the clone customizer belongs, either a virtual machine, or a virtual machine template. Click **Manage Clone Customizers...** .
2. The **Manage Clone Customizers for (VM or Template)** dialog box is displayed. Select the clone customizer to delete and click **Delete Clone Customizer** .
3. A dialog box is displayed to confirm you want to delete the clone customizer. Confirm you want to delete the clone customizer and click **OK**. The clone customizer is deleted.

3.7.1.8 View Virtual Machine Configuration File

You can view the content of a virtual machine configuration file. The content is not editable but you can view and copy the text according to your needs.

To view a virtual machine configuration file:

1. Click the **Servers and VMs** tab.
2. Select the server pool on which the virtual machines reside in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to which the configuration file belongs. Click **VM Config File Content...** .
4. The **VM Config File Content** dialog box is displayed with the content of the virtual machine configuration file. You can view and copy the text according to your needs.
5. Click **OK** to close the dialog.

3.7.1.9 Display VM Hierarchy Viewer

You can generate a graphical report on a virtual machine. For more information about object reporting, see [Section 7.1, “Reports”](#).

To generate a graphical report on a virtual machine:

1. Select a server pool in the **Server Pools** folder in the navigation pane.
2. Select the **Virtual Machines** perspective in the management pane.
3. Select a virtual machine in the management pane table.
4. Click  **Display VM Hierarchy Viewer** in the management pane toolbar.

The **VM Hierarchy Viewer** window is displayed. This window contains some extra controls to manipulate the report display. These controls are described in the following table.

Table 3.31 Virtual machine graphical report controls

Control	Purpose
	Reposition the hierarchy viewer component within the viewport.
	Zoom a hierarchy viewer component so that all nodes are visible within the viewport.
	Zoom the hierarchy viewer component.
	Hide or show the control panel.

Control	Purpose
	Change the layout of the hierarchy viewer component from the layout you defined to one of the layout options.

- To create an XML report of the graphical report, click **Generate Report**. The report is generated and sent to the browser.

3.7.1.10 View Virtual Machine Events

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 3.32 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.

Toolbar Icon Option	Icon	Description
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...**  .
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.

2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

3.7.1.11 Generate Report

You can generate an XML report on one or more virtual machines. For more information about object reporting, see [Section 7.1, "Reports"](#).

To generate a report on virtual machines:

1. Select a server pool in the **Server Pools** folder in the navigation pane.
2. Select the **Virtual Machines** perspective in the management pane.
3. Select one or more virtual machines in the management pane table.
4. Click 🗑️ **Generate Report** in the management pane toolbar.
5. The report is generated and sent to the browser.

Chapter 4 Repositories Tab

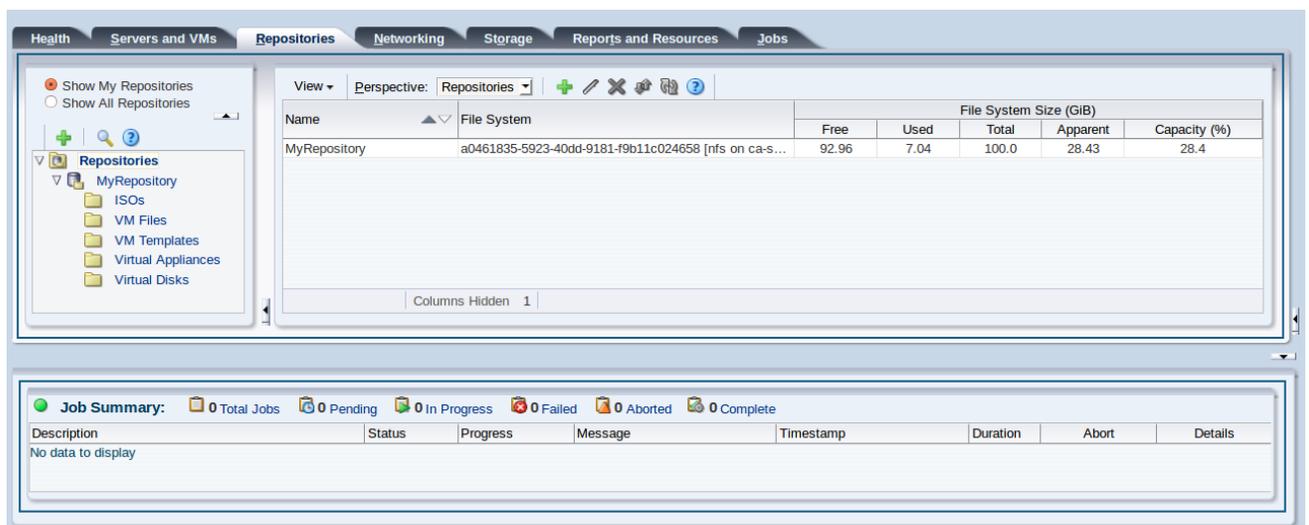
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Use the **Repositories** tab to create and configure storage repositories and their content; virtual appliances, virtual machine templates, ISO files (CDROMs), [virtual disks](#) and to display virtual machine configuration files.

Figure 4.1, “Repositories tab” shows the **Repositories** tab.

Figure 4.1 Repositories tab



The **Repositories** tab contains the **Perspectives** set out in [Table 4.1, “Repositories Tab Perspective”](#). The **Perspectives** available in any particular view vary depending on the item selected in the navigation tree.

This table provides a quick reference for all of the available perspectives in the **Repositories** tab. Each perspective provides a different view of your configuration and also includes its own toolbar.

Table 4.1 Repositories Tab Perspective

Management Pane Perspective	Description
Repositories Perspective	<p>Displays information about the storage repositories, and the resources in each repository. Use this tab to view, create, edit, present/unpresent, refresh and delete storage repositories.</p> <p>You can also use this tab to create and manage the contents of storage repositories; virtual appliances, ISO files, template files, virtual disks and virtual machine configuration files. To view the contents of each storage repository, select it in the navigation tree, and then select Repositories in the Perspective drop-down list.</p> <p>See Understanding Repositories in the <i>Oracle VM Concepts Guide</i> for more information on managing storage repositories.</p>
Info	<p>Displays a high-level view of the selected object. The Info pane contents change to reflect information about the object selected in the navigation tree. You can use this pane to view information about repositories in your environment.</p> <p>Select Info in the Perspective drop-down list to display the Info pane.</p>
Events	<p>Events are displayed for each object in the navigation tree and displays events related to that object. Select Events in the Perspective drop-down list to display the Events pane.</p>

4.1 Toolbar

The navigation pane includes its own toolbar that provides quick access to the most commonly used configuration tools for the **Repositories** tab. Clicking on any of the icons provided in the toolbar opens a dialog or wizard that can guide you through the configuration process for that item. The toolbar icons included in the Repositories navigation pane are:

-  [Create New Repository](#)
-  [Find Icon](#)
-  [Help Icon](#)

The toolbar also includes a filter that controls which repositories are represented within the navigation tree and within the perspectives available in the management pane. The filter includes two radio buttons:

- **Show My Repositories:** Filters the content to only show repositories that are currently under the ownership of this Oracle VM Manager instance.
- **Show All Repositories:** Filters the content to show all repositories that have been discovered by this Oracle VM Manager instance, regardless of whether or not they are owned by the current Oracle VM Manager instance .

If you release ownership of a repository and it is not displayed on this tab, you should check that the filter is not set to [Show My Repositories](#) if you wish to perform an action on the repository.

4.1.1 Create New Repository

A storage repository should be at least 10 GB in size. In addition to this minimum size requirement, you should include enough storage space for virtual machines, templates, ISO files and other virtual machine resources.

To create a storage repository for your server pool:

1. Select the **Repositories** tab.
2. Click **Create New Repository**  in the toolbar.
3. In the **Create a Repository** dialog box, enter the following information:
 - **Repository Name:** The name you wish to use to identify the repository.
 - **Repository Location:** Either a network file server or a physical disk.
4. If you selected **Network File Server** as location, click **Search**  to select a location in the **Select Network File System** dialog box:
 - Select a **Network File Server** from the list. The available file systems appear. Note that only a refreshed file system can be used.
 - Select the file system you wish to install the storage repository on. Click **OK**.



Note

When searching for a file system, there is an option to provide a **Name Filter**. You can use this filter to specify search criteria to limit the objects displayed. See [Section 1.16, "Name Filters"](#) for more information.



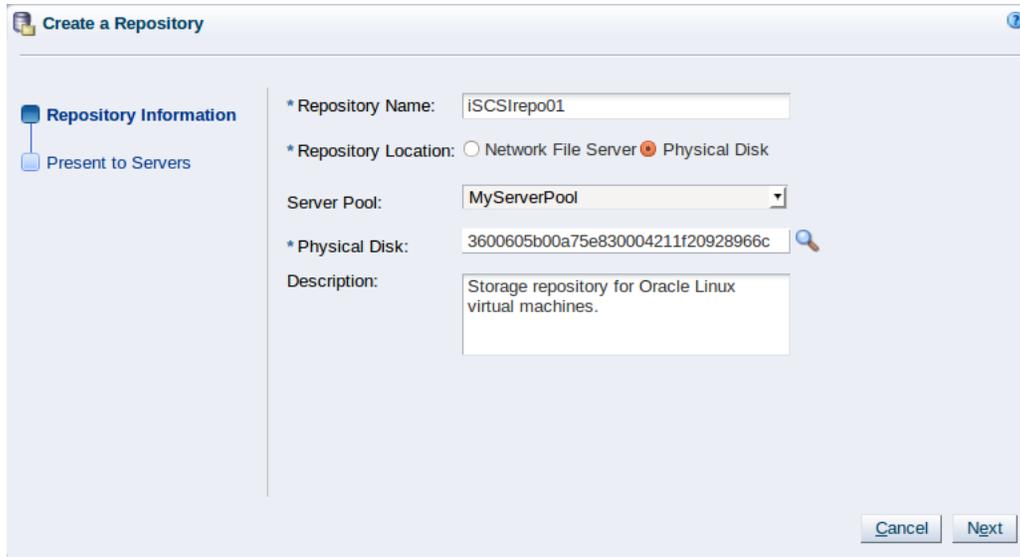
5. Optionally provide this additional information:
 - **Share Path:** Path to a subdirectory on the selected file system.
 - **Description:** Information you would like to add about this storage repository.
6. If you selected **Physical Disk** as the **Repository Location**, click **Search**  to select a location in the **Select Physical Disk** dialog box:

- Select a **Storage Array** and, if applicable, a **Volume Group** from the respective lists. The available disks appear.
- Select the physical disk you wish to install the storage repository on. Click **OK**.



Note

When searching for a physical disk, there is an option to provide a **Name Filter**. You can use this filter to specify search criteria to limit the objects displayed. See [Section 1.16, “Name Filters”](#) for more information.



7. Select from the list to which **Server Pool** this storage repository should be provided, or alternatively select [None](#) if you are creating a repository on a local disk for use on a single Oracle VM Server. Optionally enter additional information about this storage repository in the **Description** field.



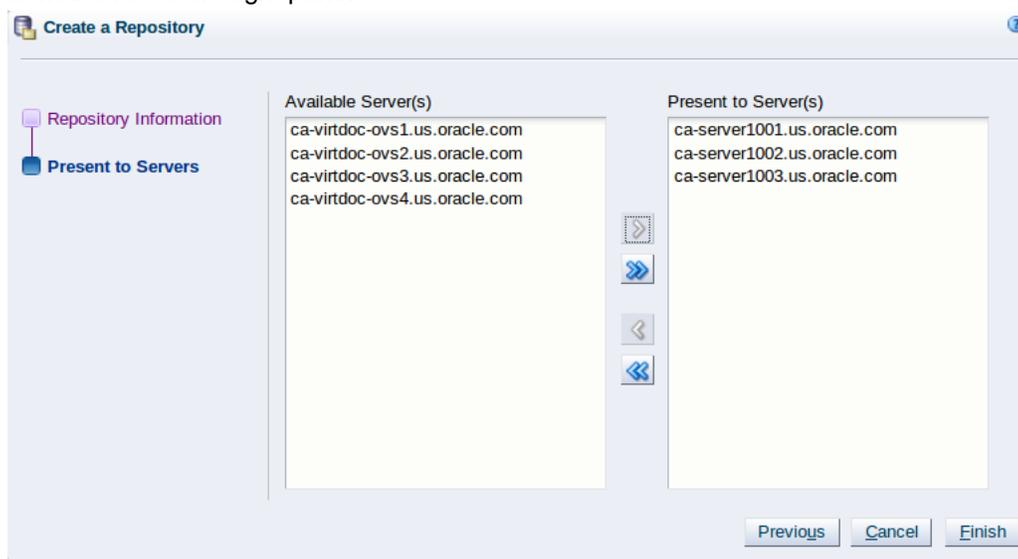
Note

When you create a storage repository on a LUN, only clustered server pools can be selected. If a non-clustered server pool or no server pool is selected, then you must specify a physical disk in local storage to create the repository.

8. Click **Next** to proceed to the second section of the wizard: **Present to Servers**.

When the storage repository is prepared and created, it must also be made available for use by your Oracle VM Servers before it can be populated. Typically you present the storage repository to all the Oracle VM Servers in the server pool. However, should you wish to set up storage differently, Oracle VM Manager allows you to present a repository to a selection of Oracle VM Servers instead of the entire server pool. See also [Section 4.3.1.4, “Present or Unpresent Repository”](#)

9. In the **Present to Servers** dialog box, use the arrow buttons to move the required Oracle VM Servers from the left to the right pane.



10. Click **Finish** to create the new storage repository and present it to the selected Oracle VM Servers. The new storage repository is displayed in the **Repositories** table in the management pane.

At this point, the storage repository has been created, Oracle VM Manager has taken ownership, and the selected Oracle VM Servers have access in order to store virtual machines, ISO files, templates and so on. To modify the configuration of servers with access to the storage repository, see [Section 4.3.1.4, “Present or Unpresent Repository”](#).

4.2 Summary

On the **Repositories** tab there is a navigation pane. At the top of the navigation pane is the navigation toolbar discussed in [Section 4.1, “Toolbar”](#). Within the navigation pane is a navigation tree that allows you to navigate through the different object types that comprise your environment.

Different objects may be nested at different levels within the navigation tree depending on their relationships to each other. Clicking on different objects or folders within the navigation tree enables access to the different perspectives available for that object in the management pane.

The navigation tree that is available within the **Repositories** tab conforms to the following structure:

- [Repositories Folder](#)
 - [Repository Item](#)
 - [Virtual Appliances Item](#)
 - [ISOs Item](#)
 - [VM Files Item](#)
 - [VM Templates Item](#)
 - [Virtual Disks Item](#)

Each navigation element has a number of associated perspectives offering different views of the objects contained by the selected navigation element, or the configuration information specific to it. For many of

these perspectives, an associated toolbar is provided so that it is possible to perform different configuration or management tasks on elements selected in the management pane.

4.3 Repositories Folder

The **Repositories** navigation folder contains each storage repository that has been configured within the environment. The structure of the navigation provided in the navigation tree is discussed in more detail in [Section 4.2, “Summary”](#).

Clicking on the **Repositories** navigation folder in the navigation tree allows you to access different perspectives in the management pane. Each perspective provides its own view of all of the storage repositories within Oracle VM Manager. Most of the perspectives also include separate perspective toolbars that enable you to perform various configuration or management tasks specific to the view currently displayed within the management pane. The **Repositories** navigation folder offers the following perspectives within the management pane:

- [Repositories Perspective](#)

4.3.1 Repositories Perspective

The Repositories perspective lists the different storage repositories configured in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the repository.
- **File System:** The UUID and path location to the storage repository file system.
- **File System Size:** Displays the following attributes of the storage repository file system:
 - **Free:** Amount of available space on the file system, in GiB.
 - **Used:** Amount of space that is in use on the file system, in GiB.
 - **Total:** Capacity of the file system, in GiB.
 - **Apparent:** Apparent size, in GiB. The apparent size is the total size of the entire repository.



Note

Oracle VM Manager uses a separate interval to collect the apparent size of the repository. That interval is longer than the interval at which other file system statistics are collected. For this reason, when changes to the contents of the repository file system occur, you might notice that it takes several minutes for the apparent size statistic to update after other file system statistics are updated.

- **Capacity (%):** Percentage of the file system that is allocated. If the value is 100%, then all available disk space is allocated. If the value is greater than 100%, then the disk space is oversubscribed. For example, the repository contains several virtual disks that are sparsely allocated. If all of the virtual disks reach the maximum size, then the capacity exceeds the available disk space.

This perspective includes a toolbar that consists of the following options:

Table 4.2 Repositories Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create New Repository	+	Displays the Create a Data Repository wizard. Use this option to create a storage repository.

Toolbar Icon Option	Icon	Description
Edit Selected Repository		Displays the Edit Repository wizard. Use this option to edit a storage repository.
Delete Selected Repository		Displays the Delete Confirmation dialog box. Use this option to delete the selected storage repository.
Present-Unpresent Selected Repository		Displays the Present this Repository to Server(s) dialog box. Use this option to present or unpresent the repository to an entire server pool or to and from individual Oracle VM Servers.
Refresh Selected Repository		Refreshes one or more selected storage repositories. Oracle VM Manager re-checks the disk contents of the selected repositories. Any detected changes are reflected in the various content tabs (Virtual Appliances, ISO files, ...) of the storage repository.
Help		Displays context sensitive help.

4.3.1.1 Create New Repository

A storage repository should be at least 10 GB in size. In addition to this minimum size requirement, you should include enough storage space for virtual machines, templates, ISO files and other virtual machine resources.

To create a storage repository for your server pool:

1. Select the **Repositories** tab.
2. Click **Create New Repository**  in the toolbar.
3. In the **Create a Repository** dialog box, enter the following information:
 - **Repository Name:** The name you wish to use to identify the repository.
 - **Repository Location:** Either a network file server or a physical disk.
4. If you selected **Network File Server** as location, click **Search**  to select a location in the **Select Network File System** dialog box:
 - Select a **Network File Server** from the list. The available file systems appear. Note that only a refreshed file system can be used.
 - Select the file system you wish to install the storage repository on. Click **OK**.



Note

When searching for a file system, there is an option to provide a **Name Filter**. You can use this filter to specify search criteria to limit the objects displayed. See [Section 1.16, "Name Filters"](#) for more information.

Create a Repository

Repository Information

Present to Servers

* Repository Name: MyNFSRepository

* Repository Location: Network File Server Physical Disk

* Network File System: nfs on ca-sastor1.us.oracle.com:/export/v

Share Path:

Description:

Cancel Next

5. Optionally provide this additional information:

- **Share Path:** Path to a subdirectory on the selected file system.
- **Description:** Information you would like to add about this storage repository.

6. If you selected **Physical Disk** as the **Repository Location**, click **Search**  to select a location in the **Select Physical Disk** dialog box:
 - Select a **Storage Array** and, if applicable, a **Volume Group** from the respective lists. The available disks appear.
 - Select the physical disk you wish to install the storage repository on. Click **OK**.



Note

When searching for a physical disk, there is an option to provide a **Name Filter**. You can use this filter to specify search criteria to limit the objects displayed. See [Section 1.16, “Name Filters”](#) for more information.

7. Select from the list to which **Server Pool** this storage repository should be provided, or alternatively select **None** if you are creating a repository on a local disk for use on a single Oracle VM Server. Optionally enter additional information about this storage repository in the **Description** field.



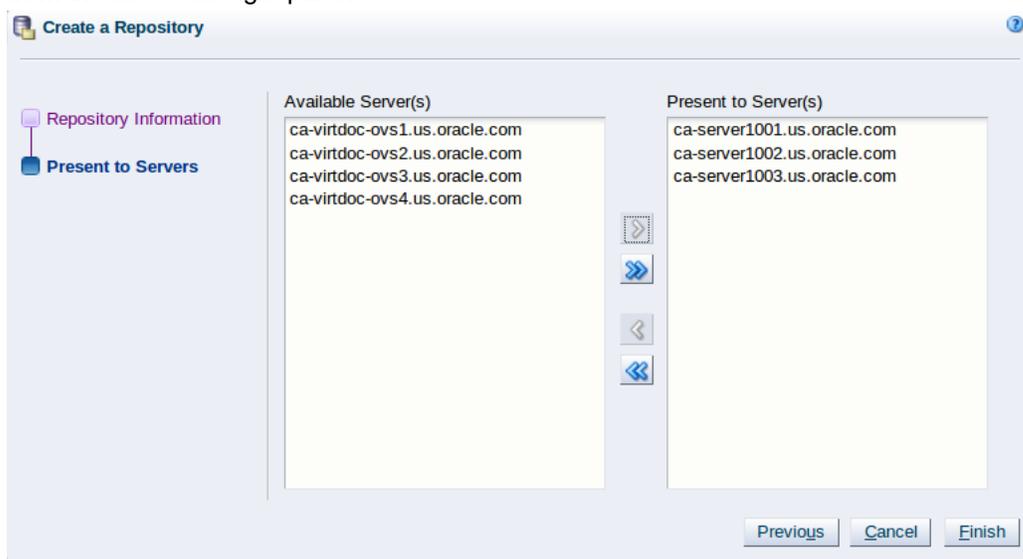
Note

When you create a storage repository on a LUN, only clustered server pools can be selected. If a non-clustered server pool or no server pool is selected, then you must specify a physical disk in local storage to create the repository.

8. Click **Next** to proceed to the second section of the wizard: **Present to Servers**.

When the storage repository is prepared and created, it must also be made available for use by your Oracle VM Servers before it can be populated. Typically you present the storage repository to all the Oracle VM Servers in the server pool. However, should you wish to set up storage differently, Oracle VM Manager allows you to present a repository to a selection of Oracle VM Servers instead of the entire server pool. See also [Section 4.3.1.4, “Present or Unpresent Repository”](#)

- In the **Present to Servers** dialog box, use the arrow buttons to move the required Oracle VM Servers from the left to the right pane.



- Click **Finish** to create the new storage repository and present it to the selected Oracle VM Servers. The new storage repository is displayed in the **Repositories** table in the management pane.

At this point, the storage repository has been created, Oracle VM Manager has taken ownership, and the selected Oracle VM Servers have access in order to store virtual machines, ISO files, templates and so on. To modify the configuration of servers with access to the storage repository, see [Section 4.3.1.4, “Present or Unpresent Repository”](#).

4.3.1.2 Edit Repository

To edit a storage repository:

- Select the repository in the tree view in the navigation pane and click **Edit Selected Repository**  in the toolbar.



Note

The **Edit Repository** dialog box is only editable if the repository is owned by the current Oracle VM Manager instance. If the repository is owned by another Oracle VM Manager instance, this dialog box is read-only.

- In the **Edit Repository** dialog box you can make the following changes:

Repository Name: Edit the name of the selected repository.

Server Pool: This option is available if your repository location is a **Physical Disk**. It allows you to change the server pool that the repository is associated with. This option makes it simple to [move](#) OCFS2 repositories from one server pool to another. Usually after changing server pool association, you should change the Oracle VM Servers or server pool where the repository is presented. See [Section 4.3.1.4, “Present or Unpresent Repository”](#) for more information on presenting a repository to Oracle VM Servers.

Description: Optionally enter a more elaborate description of the selected repository.

Release Ownership: This check box is displayed if the repository is currently under ownership of the current Oracle VM Manager instance. Select this check box to allow the repository to be used by another Oracle VM Manager.

Take Ownership: This check box is displayed if the repository is not under the ownership of the current Oracle VM Manager instance. Select this check box to take ownership of the repository. The repository should first be released from the ownership of any other Oracle VM Manager instance.

By clicking on the **Present Repository** tab, you can easily change the servers or server pools on which the repository is presented. See [Section 4.3.1.4, “Present or Unpresent Repository”](#) for more information on this.



Note

The **Present Repository** tab is only available if the repository is owned by the current Oracle VM Manager instance.

3. Click **OK** to save the changes to the storage repository.

4.3.1.3 Delete Repository

It is possible to delete a storage repository entirely, removing the entire directory structure from the file system where it is hosted.

To delete an owned storage repository:

1. Make sure that all content has been removed from the storage repository you wish to delete.
2. Select one or more repositories in the table in the management pane and click **Delete Selected Repository**  in the toolbar.
3. Confirm that you wish to delete the storage repository: click **OK** to continue.

It is also possible to remove a storage repository from the current Oracle VM Manager instance without actually removing any of its contents. This can be useful if you intend to make use of the repository within an alternate Oracle VM Manager instance.

To delete a storage repository without removing the contents:

1. Select the repository in the table in the management pane and click **Present/Unpresent**  in the toolbar.
2. In the **Present Repository** dialog box, unpresent the storage repository from all Oracle VM Servers. Click **OK**.
3. Select the repository in the tree view in the navigation pane and click **Edit Selected Repository**  in the toolbar. Select the **Release Ownership** check box and click **OK**.
4. Select the now unowned repository in the table and click **Delete**.
5. Confirm that you wish to delete this storage repository: click **OK** to continue.

4.3.1.4 Present or Unpresent Repository

To present a storage repository to Oracle VM Servers:

1. Select the **Repositories** tab and select the repository of your choice in the navigation pane.

2. Click **Present/Unpresent**  in the toolbar to change the list of servers the repository is presented to.
3. In the **Present this Repository to Server(s)** dialog box, use the check box to select whether to present individual Oracle VM Servers, or all Oracle VM Servers in one or more server pools. Then use the arrow buttons to move the required Oracle VM Servers or server pools between the panes.

If you present a repository to a server pool, this has the same effect as selecting all of the Oracle VM Servers within the server pool and presenting the repository to them individually. If you add or remove servers from a server pool after you have presented the repository to a server pool, the configuration is not updated automatically. The option to present the repository to a server pool is a convenience and simply presents the repository to all servers that belong to a particular server pool at the time that you perform the action.

4. Click **OK** to present the storage repository to the selected Oracle VM Servers.

4.3.1.5 Refresh Repository

Refreshing a repository allows Oracle VM Manager to update the information that it has about the contents of a repository's file system and also refreshes information about the size and available free space on the file system where the repository is located. This is useful if manual changes have been made directly to the file system where the repository is located.

To refresh a storage repository:

1. Select one or more repositories in the table in the management pane and click **Refresh Selected Repository**  in the toolbar. Note that a repository refresh, does not automatically refresh the contents of a virtual appliance. To do this, refer to [Section 4.8.1.5, "Refresh Virtual Appliance"](#).

4.4 Repository Item

Each storage repository configured within the environment is displayed as a repository navigation item within the Repositories navigation folder. These repository navigation items are labelled according to the repository name that is configured within Oracle VM Manager. If a name is not available or not configured properly within Oracle VM Manager, the repository UUID is allocated as the repository name. The structure of the navigation provided in the navigation tree is discussed in more detail in [Section 4.2, "Summary"](#).

Clicking on a repository navigation item in the navigation tree allows you to access different perspectives in the management pane. Each perspective provides its own view of the repository within Oracle VM Manager. Most of the perspectives also include separate perspective toolbars that enable you to perform various configuration or management tasks specific to the view currently displayed within the management pane. A repository navigation item offers the following perspectives within the management pane:

- [Info Perspective](#)
- [Events Perspective](#)

4.4.1 Info Perspective

The Info perspective is common to many elements within the Oracle VM Manager Web Interface. This perspective always shows the individually configured parameters for an item that is currently selected in the navigation tree. Some of these configured parameters may be automatically populated through a discovery process, while others may have been configured manually during the creation of the object that is selected.

The Info perspective or dialog contains a perspective toolbar with the following options:

Table 4.3 Info Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Help		Displays context sensitive help.

This perspective includes the following information:

- **Repository Name:** The configured name for the repository.
- **Ownership:** The owner of the repository.
- **Path:** The path to the file system that is used for the repository file system.
- **Share Path:** The path to a subdirectory on the repository file system.
- **File System Size (GiB):** The total size of the file system.
- **File System Used (GiB):** The amount of file system that is in use.
- **Used (%):** The amount of file system that is in use as a percentage.
- **Apparent Size (GiB):** The apparent size in GiB. The apparent size is the total size of the entire repository.



Note

Oracle VM Manager uses a separate interval to collect the apparent size of the repository. That interval is longer than the interval at which other file system statistics are collected. For this reason, when changes to the contents of the repository file system occur, you might notice that it takes several minutes for the apparent size statistic to update after other file system statistics are updated.

- **Capacity (%):** The percentage of the file system that is allocated. If the value is 100%, then all available disk space is allocated. If the value is greater than 100%, then the disk space is oversubscribed. For example, the repository contains several virtual disks that are sparsely allocated. If all of the virtual disks reach the maximum size, then the capacity exceeds the available disk space.
- **ID:** The ID for the repository.
- **Description:** The description provided for the repository when it was created or edited.
- **Presented to Servers:** A list of the servers to which the repository has been presented.

4.4.2 Events Perspective

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 4.4 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.

3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 📄 to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 📄 .
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 📄 to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓ , or click **Acknowledge All** 📄 to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 📄 to clear all user acknowledgeable errors.

4.5 ISOs Item

The management pane includes the default ISO perspective, and toolbars that enable you to perform various configuration or management tasks specific to ISOs.

4.5.1 ISOs Perspective

The ISOs perspective lists the ISO files (CDROMs) configured in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the ISO file.
- **Size (GiB):** The size of the ISO file.
- **Description:** The description of the ISO file.

An arrow displays next to each ISO file in the table. Click the arrow to expand the view and display the name of the resource that uses the ISO file.

This perspective includes a toolbar that consists of the following options:

Table 4.5 ISOs Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Import ISO...		Displays the Import ISO dialog box. Use this option to import an ISO file.
Edit Selected ISO...		Displays the Edit ISO dialog box. Use this option to edit an ISO file.
Delete Selected ISO		Displays the Delete Confirmation dialog box. Use this option to delete the selected ISO file.
Clone ISO...		Clones (creates a copy of) an ISO file.
Help		Displays context sensitive help.

4.5.1.1 Import ISO

To import an ISO file:

1. Click the **Repositories** tab. Select the repository in which to store the ISO file. Select **ISOs** in the navigation tree.
2. Select **Import ISO...**  in the toolbar in the management pane.
3. The **Import ISO** dialog box is displayed. Select or edit the following:
 - **ISO download location:** The URL for the ISO file. The URL schemes supported are HTTP, HTTPS, and FTP. For example:

```
http://example.com/isos/myiso.iso
```
 - **Proxy:** The IP address or hostname of an optional proxy server to use when importing the ISO file.

Click **OK** to import the ISO file. When the import job is complete, the new ISO is displayed in the table in the management pane.

4.5.1.2 Edit ISO

To edit an ISO file:

1. Click the **Repositories** tab. Select the repository in which the ISO file is located. Select **ISOs** in the navigation tree.
2. Select the ISO in the table in the management pane. Click **Edit Selected ISO**  in the management pane toolbar.
3. The **Edit ISO** dialog box is displayed. Edit the **ISO Name** or **Description**. Click **OK**.

4.5.1.3 Delete ISO

To delete an ISO file, it must not be in use by any virtual machines.

To delete ISO files:

1. Click the **Repositories** tab. Select the repository in which the ISO files are located. Select **ISOs** in the navigation tree.
2. Select one or more ISO files in the table in the management pane. Click **Delete Selected ISO**  in the management pane toolbar.
3. The **Delete Confirmation** dialog box is displayed. Click **OK**.

4.5.1.4 Clone ISO

To copy an ISO file to the same repository, another repository, a file system, or a storage array, you [clone](#) the ISO file. To clone an ISO file, it must not be in use by any running virtual machines or other clone job.

To clone an ISO file:

1. Click the **Repositories** tab. Select the repository in which the ISO is located. Select **ISOs** in the navigation tree.
2. Select the ISO in the table in the management pane. Click **Clone ISO**  in the management pane toolbar.
3. The **Clone ISO** dialog box is displayed. Select or edit the following:

- **Clone Target Type:** The destination storage type for the cloned ISO, either:
 - Repository
 - Physical Disk
 - Storage Array
- **Clone Target:** The destination location for the cloned ISO. Click **Search Clone Target**  to select the destination.

The **Search Clone Target** dialog box is displayed. Select the location on which to clone the ISO and click **OK**.

- **Clone Type:** Whether to use a **Sparse Copy** or **Non-sparse Copy**. [Sparse Copy](#) creates a sparse disk, so the size of the disk is smaller than the original. Sparse copy is faster than using [Non-Sparse Copy](#). Non-Sparse Copy copies the entire ISO, and so is slower than creating a sparse disk.

Click **OK** to clone the ISO file.

4.6 VM Files Item

The management pane includes the default VM Files perspective, and toolbars that enable you to perform various configuration or management tasks specific to virtual machine configuration files.

4.6.1 VM Files Perspective

The VM Files perspective lists the virtual machine configuration files in your environment. The following columns are displayed in the management pane:

- **Virtual Machine:** The name of the virtual machine.
- **Server:** The Oracle VM Server on which the virtual machine is deployed.
- **Server Pool:** The server pool in which the virtual machine is deployed.

You can only view the list of virtual machine configuration files; you cannot perform any operations on them.

4.7 VM Templates Item

The management pane includes the default VM Templates perspective, and toolbars that enable you to perform various configuration or management tasks specific to virtual machine templates.

4.7.1 VM Templates Perspective

The VM Templates perspective lists the virtual machine templates configured in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the template.
- **Domain Type:** The domain type.
- **Max. Memory (MB):** The maximum memory that can be allocated.
- **Memory (MB):** The memory that is allocated.
- **Max. Processors:** The maximum number of CPUs that can be allocated.
- **Processors:** The number of CPUs that are allocated.
- **Operating System:** The operating system type.
- **Description:** The description of the template.

An arrow displays next to each virtual machine template in the table. Click the arrow to expand the view and display the **Configuration**, **Networks**, and **Disks** tabs. These tabs display the following information:

Configuration

- **Name:** The name that has been configured for the virtual machine.
- **Operating System:** The operating system type.
- **Max. Processors:** The maximum number of CPUs that can be allocated.
- **Processors:** The number of CPUs that are allocated.
- **Max. Memory (MB):** The maximum memory that can be allocated.
- **Memory (MB):** The memory that is allocated.
- **Processor Cap:** The percentage value configured for the processor cap.
- **Priority:** The CPU priority allocated for the virtual machine.
- **Mouse Type:** The mouse type configured for the virtual machine.
- **Domain Type:** The hypervisor and virtual machine type configured for the virtual machine.
- **High Availability:** Whether or not the High Availability flag is set for the virtual machine.
- **Huge Pages:** Whether or not the Huge Pages flag is set for the virtual machine.
- **Boot Order:** The configured boot order for disks attached to the virtual machine
- **Network Boot Path:** The network boot path configured for the virtual machine.
- **Restart Action On Crash:** The configured restart action in the instance that the virtual machine crashes.
- **Restart Action On Power Off:** The configured restart action in the instance that the virtual machine receives the power-off signal.
- **Restart Action On Restart:** The configured restart action in the instance that the virtual machine receives the restart signal.
- **ID:** The ID allocated by Oracle VM Manager for the virtual machine.

- **Origin:** The URL that was used to import the virtual machine or template, if it was imported.
- **Description:** The description of the virtual machine.
- **Config File Absolute Path:** The absolute path to the virtual machine configuration file.
- **Config File Mounted Path:** The mount point where the virtual machine configuration file is located on an Oracle VM Server.

Networks

- **VNIC:** The name of a VNIC configured for the virtual machine.
- **Ethernet Network:** The name of the ethernet network that the VNIC is attached to.
- **IP Addresses:** IP addresses configured for the VNIC.

Disks

- **Slot:** The slot number for the disk.
- **Disk Type:** The type of disk that is attached.
- **Name:** The name of the disk within Oracle VM Manager.
- **Size (GiB):** The size of the disk.
- **Repository:** The repository where the disk is located.
- **Absolute Path:** The absolute path to the location of the disk.
- **Mounted Path:** The mount point where the disk is located on an Oracle VM Server.
- **Location:** The location of the disk as reported by Oracle VM Manager.

This perspective includes a toolbar that consists of the following options:

Table 4.6 VM Templates Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Import VM Template...		Displays the Import VM Template dialog box. Use this option to import a virtual machine template.
Edit Selected VM Template...		Displays the Edit VM Template dialog box. Use this option to edit a virtual machine template.
Delete Selected VM Template		Displays the Delete Confirmation dialog box. Use this option to delete the selected virtual machine template.
Clone Template...		Displays the Clone Template wizard. Use this option to clone, or create a copy of, a virtual machine template.
Move Template...		Displays the Move Template wizard. Use this option to move the disks and configuration file to another storage repository.
Manage Clone Customizers...		Displays the Manage Clone Customizers for VM dialog box. Use this option to manage the clone customizers for a virtual machine template.
Display VM Config File Content...		Displays the VM Config File Content dialog box. Displays a read-only view of the configuration file for the selected virtual machine. Use this option to view the content of the virtual machine configuration file.

Toolbar Icon Option	Icon	Description
Help		Displays context sensitive help.

4.7.1.1 Import Template

To import a virtual machine template:

1. The Oracle VM template should be accessible to your Oracle VM environment from a location that can be reached using HTTP, HTTPS or FTP.
2. Click the **Repositories** tab. Select the repository in which to store the template. Select **VM Templates** in the navigation tree.
3. Select **Import VM Template...**  in the toolbar in the management pane.
4. The **Import VM Template** dialog box is displayed. Select or edit the following:

- **VM Template URLs:** The URLs for the templates. The URL schemes supported are HTTP, HTTPS, and FTP. For example:

```
http://example.com/mytemplate.tgz
```

To import a template using FTP, use the standard FTP syntax:

```
ftp://user:password@server/path/filename.tgz
```

If your template files are split into multiple compressed files ¹, concatenate those files and enter the URL for the concatenated file, for example to concatenate a number of compressed files to one compressed file, enter

```
$ cat template.tgz.1of3 template.tgz.2of3 template.tgz.3of3 > template.tgz
```

Then enter the URL to the single compressed template file, in this case, template.tgz.

To import a template that is not compressed as a single file, each component must be a complete file (if not, concatenate them to one file), for example to enter a virtual disk image and a virtual machine configuration file that together make up a complete template, you could enter:

```
http://myexample.com/System-sda.img
http://myexample.com/vm.cfg
```

Each template component should be listed on a new line. Each URL must be a reference to a complete file.

Alternatively, you can place all the files in the same directory on a web server, and import the vm.cfg file, and all the supporting virtual disk files are also imported.

- **Proxy:** The IP address or hostname of an optional proxy server to use when importing the template.

Click **OK** to import the template. When the import job is complete, the new template is displayed in the table in the management pane. Expand the table row to see more information about the template.

4.7.1.2 Edit Template

You can edit a virtual machine template to change the configuration, networking, disks and boot order.

¹ Templates can get very large, so it is not unusual that they are split into manageable chunks. This splitting is done without any attempt at preserving the structure, so the structure must be reconstructed by amalgamating the various files together again before import.

To edit a virtual machine template:

1. Click the **Repositories** tab. Select the repository in which the template is saved. Click **VM Templates** in the navigation tree.
2. Select the template to edit in the table in the management pane and click **Edit Selected VM Template...** .
3. The **Edit VM Template** dialog box is displayed. The dialog has four separate tabs:
 - **Configuration:** This tab allows you to edit the following information:
 - **VM Template Name:** The name of the template. The maximum name length is 256 characters and may contain any character. The name need not be unique.
 - **Enable Huge Pages:** Whether to enable [HugePages](#). If you enable HugePages, you must disable support for HugePages in the guest operating system. This option is not available for virtual machines in SPARC-based server pools.
 - **Description:** An optional description of the template.
 - **Operating System:** The guest operating system of the virtual machine in the template. This setting enables or disables certain virtual machine settings that your guest operating system may require.
 - **Mouse Device Type:** The mouse type to use for the template. This option is ignored if using a SPARC-based server pool.
 - **Domain Type:** The domain type of the virtual machine. Oracle recommends you create [paravirtualized virtual machines](#) if possible, as the performance of a paravirtualized virtual machine is superior to that of a [hardware virtualized machine](#) guest. This option is not available for virtual machines in SPARC-based server pools.
 - **XEN_HVM:** Hardware virtualization, or fully virtualized. When you select this option you must supply an ISO file in a repository (in the **Arrange Disks** step of the wizard) from which to create the virtual machine. See [Section 4.5.1.1, "Import ISO"](#) for information on importing an ISO file into a repository.
 - **XEN_HVM_PV DRIVERS:** Identical to **XEN_HVM**, but with additional paravirtualized drivers for improved performance of the virtual machine. See [What are Virtualization Modes or Domain Types?](#) in the [Oracle VM Concepts Guide](#) for more information about using paravirtualized drivers. This domain type is used to run Microsoft Windows guest operating systems with an acceptable performance level.
 - **XEN_PVM:** Paravirtualized. Enables you to select a location for the mounted ISO file from which to create the virtual machine. Before you create the virtual machine using the paravirtualized method, mount the ISO file on an NFS share, or HTTP or FTP server. You supply the location of the mounted ISO file in the **Network Boot Path** field in the **Boot Options** step of the wizard. For information on creating a mounted ISO file, see [Provisioning ISO Files for PVM Guest Installations](#) in the [Oracle VM Administrator's Guide](#).
 - **OVM/SPARC:** This domain type should be selected if the server pool and hypervisors use Oracle VM Server for SPARC as the hypervisor instead of Oracle VM Server for x86.
 - **Unknown:** This hypervisor should be selected if the domain type is unknown.
 - **Max. Memory (MB):** The maximum size of the memory the virtual machine is to be allocated. When you edit a running virtual machine, this is the maximum amount of memory that can be

allocated. This value must be between 32 and 2000000. For x86-based virtual machines, this value is incremented by 32 each time you click the up arrow, and, conversely, decreased by 32 if you click the down arrow. For SPARC-based virtual machines, the up arrow adds 512, and the down arrow subtracts 512.

- **Memory (MB):** The size of the memory the virtual machine is to be allocated. This is the memory allocation to use when starting the virtual machine. This value must be between 32 and 2000000. For x86-based virtual machines, this value is incremented by 32 each time you click the up arrow, and, conversely, decreased by 32 if you click the down arrow. For SPARC-based virtual machines, the up arrow adds 512, and the down arrow subtracts 512. You can change this when editing a running virtual machine, up to the value of the maximum memory set in the previous field. For HVM guests, increasing or decreasing the memory requires a restart of the virtual machine. For PVM guest, no restart is required.
- **Max Processors:** The maximum number of processors to be used by the virtual machine. The number of processors is expressed in number of physical CPU cores. The maximum number of processors depends on the domain type, as follows:
 - PVM: 256.
 - HVM: 128.
 - PVHVM: 128; or 32 if using Oracle VM Paravirtual Drivers for Microsoft Windows.
 - OVM/SPARC: Equivalent to the number of available CPUs on the server.

You cannot change the maximum number of processors if the virtual machine is running. To edit this value, you must first stop the virtual machine.

- **Processors:** The number of processors to be used by the virtual machine. The number of processors is expressed in number of physical CPU cores, up to the value of **Max. Processors**.

You can change the number of processors if the virtual machine is running.

- **Priority:** The CPU priority of the virtual machine. You can select a high (100), intermediate (50), or low (1) priority for the virtual CPUs, or a self-defined priority, by moving the slider. The higher the priority, the more physical CPU cycles are given to the virtual machine.

This option is ignored if using a SPARC-based server pool.

- **Processor Cap %:** Increase or decrease the percentage to which the virtual CPUs can receive scheduled time. This parameter defines the maximum percentage to which the virtual CPUs can receive scheduled time. You can select a high (100), intermediate (50), or low (1) percentage of scheduled time for the virtual CPUs, or a custom percentage, by moving the slider. Use this parameter to keep low priority virtual machines from consuming too many CPU cycles on a virtual machine server.

This option is ignored if using a SPARC-based server pool.

The **Priority** and **Processor Cap%** parameters are passed to the Xen hypervisor for use by the credit scheduler, which automatically load balances guest VCPUs across all available physical CPUs using an algorithm that combines these two parameters. Therefore, these parameters are a key factor for the performance of the virtual machine on x86 hardware.

On SPARC, each virtual machine uses dedicated physical CPU threads and CPUs are not shared between virtual machines, being exclusively assigned to a single virtual machine.

- **Restart Action on Crash:** The action to perform if a virtual machine crashes. This option is only available for virtual machines that are running on the Xen hypervisor and that have been configured to run on a particular Oracle VM Server, otherwise, this option is ignored. Options include the following:
 - **Restart:** Restarts the virtual machine operating system.
 - **Stop:** Stops the virtual machine. If **Enable High Availability** is selected, this option is not available.
 - **Restart After Dump:** Restarts the virtual machine operating system after first creating a core dump file for the virtual machine.
 - **Stop After Dump:** Stops the virtual machine after first creating a core dump file for the virtual machine. If **Enable High Availability** is selected, this option is not available.

Core dump files are saved to `/var/xen/dump` on the Oracle VM Server where the virtual machine is hosted. Each core dump file is named uniquely so that files are not overwritten. This can use up disk space rapidly. You must make sure there is either enough disk space available at this path on the Oracle VM Server where the virtual machine will run; or you should mount additional storage at this path to avoid using up disk space required to host dom0.

- **Networks:** This tab allows you to manage which networks to use. Use the arrow buttons to move the networks between the **Available Ethernet Networks** field and the **Selected Ethernet Networks** field. If no networks are available, you must first create a network with the virtual machine role as a dedicated network for virtual machine traffic is required. See [Section 5.1.1, "Create New Network"](#) for information on creating a network.
- **Disks:** This tab allows you to edit the storage configuration of your template, such as virtual disk, physical disks, and ISO files. On a separate slot, add one or more of the following disk types:
 - **Empty:** An empty slot.
 - **Virtual Disk:** This allows you to add or create a virtual disk. Virtual disks may be shared by virtual machines, or only available to a single virtual machine.
 - **Physical Disk:** The physical disks are the disks in a storage array. Physical disks may be shared by virtual machines.
 - **CD/DVD:** This adds an ISO file in a storage repository and can be used to create HVM and PVHVM virtual machines. When creating a virtual machine from an ISO file, you must use a single file. Installations that span multiple ISO files are not supported. ISO files cannot be used to create PVM virtual machines.

Add or create any virtual disks to use as the virtual machine's hard disk, select any physical disks to add, and select any ISO files to use to create the virtual machine. Add the disks in the order they should appear in the virtual machine. The disk with the boot partition or installation media should be the first disk listed. An HVM guest can have up to four disks, including empty CD/DVD drives. A PVM

guest can have up to 104 disks. A PVHVM guest can have up to 107 disks. An OVM/SPARC guest can have up to 1024 disks. Only one slot can contain an empty CD/DVD.

To create or add a virtual disk:

- a. To create a virtual disk, select **Virtual Disk** from the **Disk Type** drop-down list and click **Create a Virtual Disk** .
- b. The **Create Virtual Disk** dialog box is displayed. Enter or select the following to create a virtual disk:
 - **Repository:** The repository in which the virtual disk is to be created.
 - **Virtual Disk Name:** The name of the virtual disk to be created and made available to the virtual machine. See [How are Virtual Disks Managed?](#) in the *Oracle VM Concepts Guide* for more information about using virtual disks.
 - **Size (GiB):** The disk size of the virtual disk, in [GiB](#).
 - **Description:** A description of the virtual disk.
 - **Shareable:** Whether the virtual disk should be shareable (read/write) with other virtual machines.
 - **Allocation Type:** Whether to use a **Sparse Allocation** or **Non-sparse Allocation**. Sparse Allocation creates a sparse disk, so the size of the disk is initially small and increases as it is used. Sparse allocation is faster than using Non-Sparse Allocation when creating a virtual machine. Non-Sparse Allocation creates the entire disk when the virtual machine is created, and so is slower than creating a sparse disk. This information is not persistent and is not stored within Oracle VM Manager, so it is not possible to determine what allocation type was used to create a virtual disk in the future.

Click **OK**.

- a. To search for an existing virtual disk to add to the virtual machine, click **Select a Virtual Machine Disk** . The **Select a Virtual Machine Disk** dialog box is displayed. Select the virtual disk to use and Click **OK**.



Note

If your virtual machine needs more than one disk, you can create the disk(s) afterwards in the repository, and add them to the virtual machine. See [Section 4.9.1.1, “Create Virtual Disk”](#) and [Section 3.5.2.1, “Edit Virtual Machine”](#) for more information on creating a virtual disk and editing a virtual machine.

To add a physical disk:

- a. To add a physical disk to the virtual machine, select **Physical Disk** from the **Disk Type** drop-down list. Click **Select a Virtual Machine Disk** . The **Select a Physical Disk** dialog box is displayed. Select a physical disk from the list of available disks. If you want to leave the slot empty, select **Leave Slot Empty**. Click **OK**.

To add an ISO file:

- a. To add an ISO file to the virtual machine, 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 a Iso

file from the list of available files. If you want to leave the slot empty, select **Leave Slot Empty**. Click **OK**.



Note

When adding an ISO file to an existing virtual machine, the ISO file is available to the operating system, but may not be mounted. To access the ISO file, you may need to mount it, for example:

```
# mkdir /cdrom
# mount -o loop /dev/xvdb /cdrom
```

- **Boot Order:** This tab allows you to edit the boot media order for your virtual machine.

Select the boot media order for your virtual machine.

If you are creating a hardware virtualized machine virtual machine (HVM), you can choose the **PXE** boot option. If so, remember to put PXE first in the **Select your boot options** field, and change the boot order again after installation and before rebooting the virtual machine. To use PXE, you must configure a PXE/tftp environment to offer the necessary boot media and instructions to the virtual machine.

If you are creating a paravirtualized virtual machine (PVM), you also have the **Network** option available (not shown in here). If so, specify **Network** to be at the top of the right-hand-side column, and enter the location of the mounted ISO file from which to perform the operating system installation in the **Network Boot Path** field (also not shown in here), for example

```
http://example.com/Enterprise-R6-U1-Server-x86_64-dvd.iso/
```

For information on creating a mounted ISO file, see [Provisioning ISO Files for PVM Guest Installations](#) in the *Oracle VM Administrator's Guide*.

You cannot use the **Network Boot Path** field to boot a virtual machine using PXE. This field can only be used to specify the path to a mounted ISO file to use when installing a PVM guest.

4. When you have finished editing the virtual machine template, click **OK** to save the changes, or **Cancel** to exit out of the dialog without saving any changes.

4.7.1.3 Delete Template

You can delete a virtual machine template, and the virtual disk associated with it.

To delete a virtual machine template:

1. Click the **Repositories** tab. Select the repository in which the template is saved. Click **VM Templates** in the navigation tree.
2. Select one or more templates in the table in the management pane and click **Delete Selected VM Template... X**.
3. The **Delete Confirmation** dialog box is displayed. Select the virtual disks associated with the templates you want to delete, if any. Click **OK** to delete the templates.

4.7.1.4 Clone a Virtual Machine or Template

Cloning a virtual machine or a template means making a copy of it, so that you can create multiple virtual machines or templates from the original.

A clone can also be performed using two other file copy methods: [sparse copy](#), and [non-sparse copy](#). These two cloning methods can be used when cloning from and to different repositories, and when the storage used for the storage repository uses a generic Oracle VM Storage Connect plug-in. These cloning methods are slower than thin cloning, but more versatile.

**Note**

The virtual machine cloning procedure below uses the same dialog box to clone a virtual machine and a template.

To create a clone of a virtual machine or template:

1. Select the virtual machine or template to clone and display the **Clone** dialog box. You display this dialog box from different locations, depending on whether you are cloning a virtual machine or a template.
 - **Virtual Machine:** Click the **Servers and VMs** tab. Select the server pool on which the virtual machine resides in the navigation tree. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to clone in the management pane, and click **Clone Virtual Machine** .
 - **Virtual Machine Template:** Click the **Repositories** tab. In the navigation tree, select the repository in which the template resides, then **VM Templates**. Select the template in the management pane and click **Clone Template** .
2. The **Clone (Virtual Machine or Template)** dialog box is displayed.

Select or enter the following:

- **Clone to a:** Select the clone type, either **Virtual Machine** or **Template**, to specify the objects to create from the clone.
- **Clone Count:** The number of clones to create.
- **Name Index:** The start index number to use for the clone name suffix. The default is 0. This is used in conjunction with the **Clone Name** field to create the name for each clone.
- **Clone Name:** An optional name for the virtual machines or templates. The maximum name length is 256 characters and may contain any character. The name need not be unique. If no value is given, the default is the name of the virtual machine or template being cloned. Each clone is suffixed with a dot (.) and the clone index number, starting with the value for the **Name Index** field. For example, if the **Clone Name** field is set to `MyVM`, and the **Name Index** field is set to 1, the resulting clones would be named `MyVM.1`, `MyVM.2` and so on.
- **Target Server Pool:** The server pool on which the clone is to be deployed.



Note

The list of server pools that are available in the drop-down is limited to valid server pools that are capable of handling the cloning process correctly. This

helps you to prevent cloning to a server pool that may fail to process the request. If this list is empty, you should refer to the table presented under the **Why don't I see other server pools to clone to?** element in this dialog.

- **Description:** A description for the virtual machines or templates.
- **Advanced Clone:** Whether to use a clone customizer to set preferences for the clone operation.
- **Clone Customizer:** The clone customizer to create the clones. This is used to set virtual disk mappings to enable you to copy disks to other storage locations. It also allows you to create network mappings so you can use new VNICs and other networks for the clone. Click **Create...** to create a new clone customizer. See [Section 3.5.2.14, "Manage Clone Customizers"](#) for information on creating a clone customizer. This field is enabled if **Advanced Clone** is checked.
- **Target Repository:** The repository to store the cloned virtual machine configuration file. This does not affect any clone disk mappings you set using a clone customizer; this option is only for the virtual machine configuration file. This field is enabled if **Advanced Clone** is checked.
- **Why don't I see other server pools to clone to?** A collapsed window element, providing a table of server pools that do not meet the requirements to accept a clone request. Expanding any of the entries in this table displays the reason that the server pool does not qualify.



Tip

If you clone a virtual machine or template without using a clone customizer, the storage repository is locked for the duration of the cloning job; this may be some time in some circumstances. To quickly create clones and not lock the storage repository, use a clone customizer.

Click **OK**.

The virtual machines are created and deployed to the server pool. The templates are created in the storage repository.

It is important to understand that older templates may use a different device type to attach virtual disks. This may affect your ability to attach new virtual disks, such as a virtual CDROM device. There are some limitations on mixing virtual disks of differing device types on a virtual machine. See [How are Virtual Disks Managed?](#) in the *Oracle VM Concepts Guide* for more information about how device types are allocated to virtual disks and what you may need to do to solve any issues surrounding this problem.

4.7.1.5 Move a Template

You can [move](#) a virtual machine template's resources, such as the virtual disk and virtual machine configuration files, to a different storage repository, or change the location of the disks and network used in the template. You can change the location of disks and the network to use when you move a virtual machine template using a clone customizer.

To move a virtual machine template:

1. Click the **Repositories** tab. Select the repository in which the template is saved. Click **VM Templates** in the navigation tree.
2. Select the template to move in the table in the management pane and click **Move Template** .
3. The **Move Template** dialog box is displayed.

Select a clone customizer from the **Clone Customizer** drop-down list. If no clone customizers are displayed or you want to create a new one, click **Create**. See [Create a Clone Customizer](#) for information on creating a clone customizer.

Select the repository to which you want to move the template's virtual machine configuration from the **Target Repository** drop-down list.

Click **Finish** to move the template.

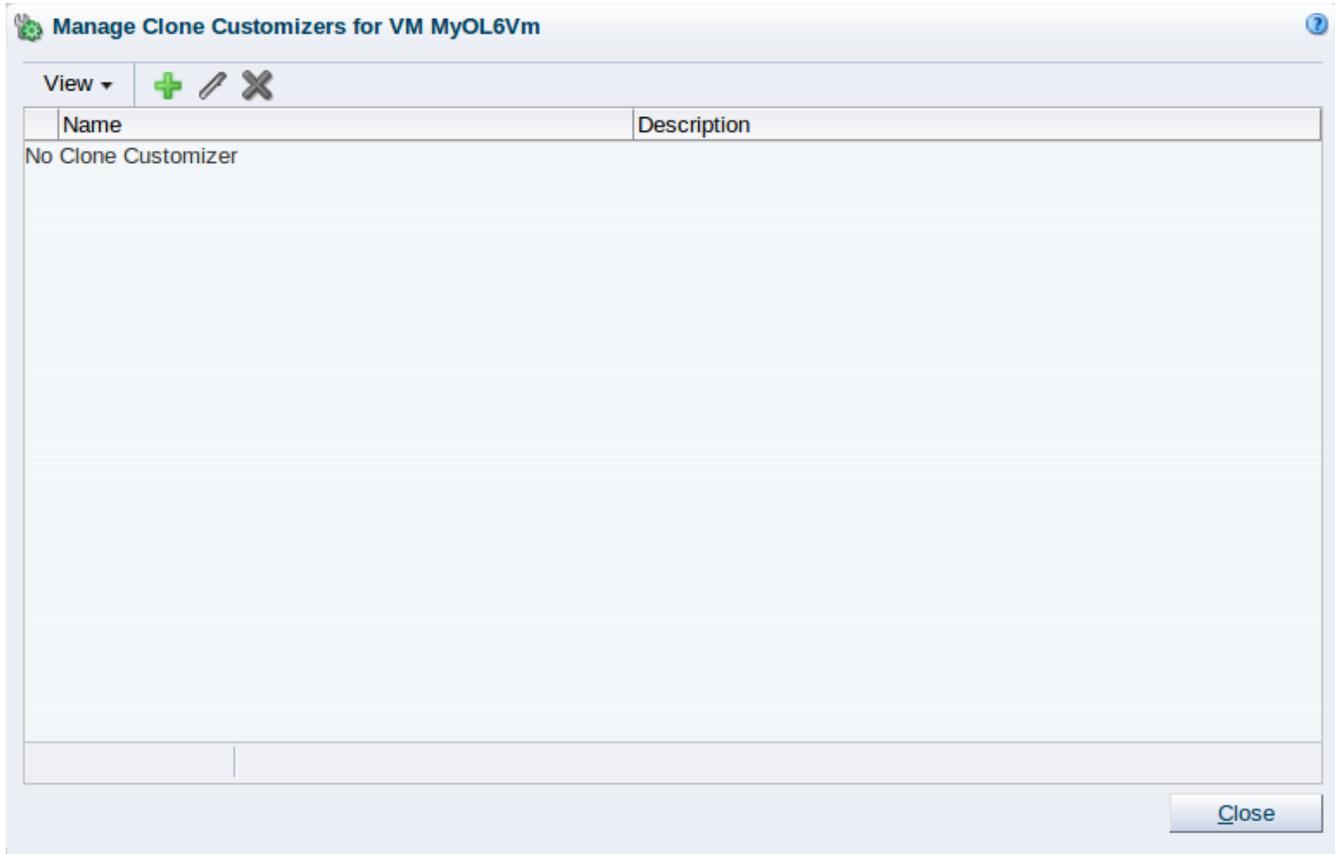
4.7.1.6 Manage Clone Customizers

Cloning a virtual machine or template means making a copy of it, so that you can create multiple virtual machines or templates from the original. You can create a clone customizer to set up the clone parameters, such as networking, and the virtual disk, and ISO resources. A clone customizer is also used when moving a virtual machine or template.

Create a Clone Customizer

To create a clone customizer:

1. Select the virtual machine or template and display the **Manage Clone Customizers for (Virtual Machine or Template)** dialog box by:
 - **Virtual Machine:** Click the **Servers and VMs** tab. Select the server pool on which the virtual machine resides in the navigation tree. Select **Virtual Machines** from the **Perspective** drop-down list. Select the virtual machine to clone in the management pane, and click **Manage Clone Customizers...** .
 - **Virtual Machine Template:** Click the **Repositories** tab. In the navigation tree, select the repository in which the template resides, then **VM Templates**. Select the template in the management pane and click **Manage Clone Customizers** .



2. Select **Create Clone Customizer...** + .

3. The **Create a Clone Customizer** wizard is displayed.

Create a Clone Customizer

- Name and Description**
- Storage Mappings
- Network Mappings

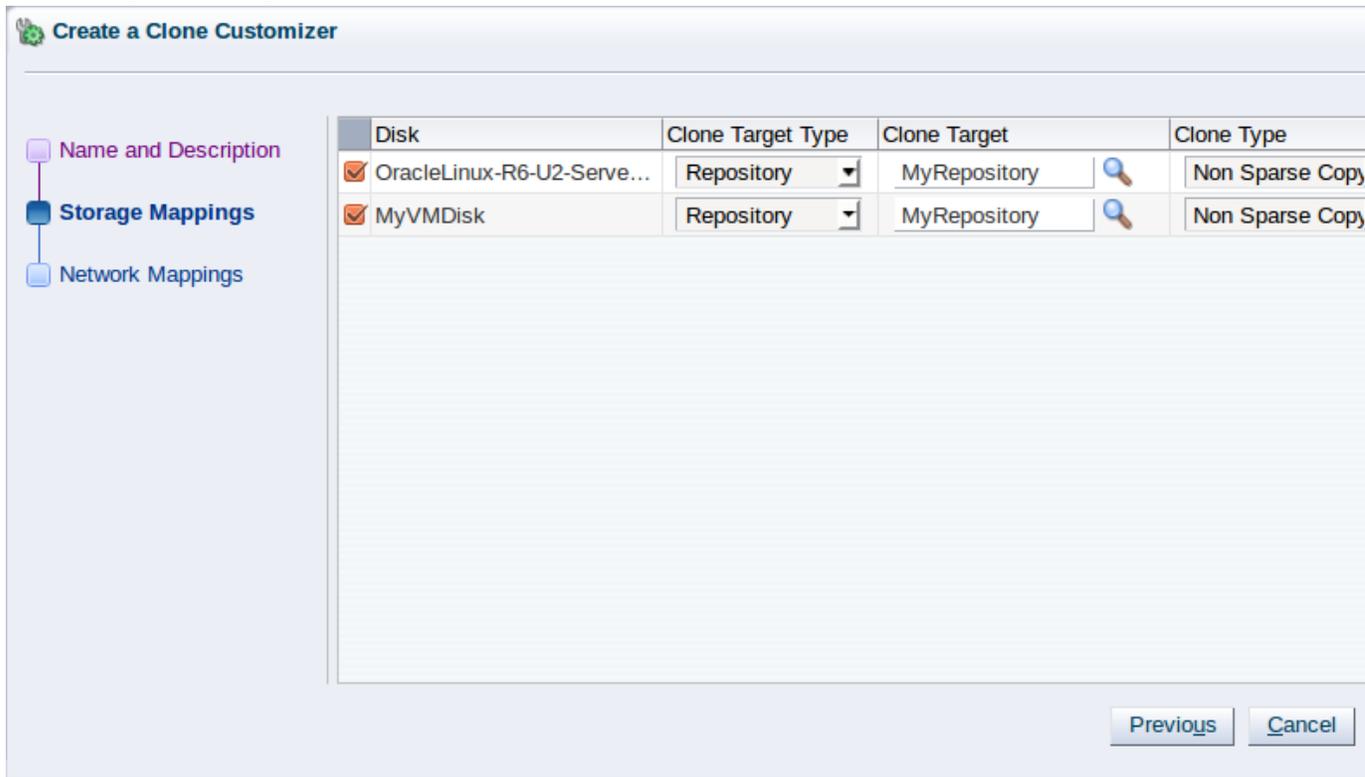
* Clone Customizer Name:

Description:

Cancel

In the **Name and Description** step of the wizard, enter a **Name** and **Description** for the clone customizer, and click **Next**.

4. The **Storage Mappings** step of the wizard is displayed.



Select the following storage mappings:

- **Disk:** The disks to include in the clone.
- **Clone Target Type:** The type of storage location where the disk is to be created, either a **Repository** or a **Physical Disk**.
- **Clone Target:** The location on the storage type where the disk is to be created.
- **Clone Type:** Whether to use a sparse or non-sparse files for the disk.

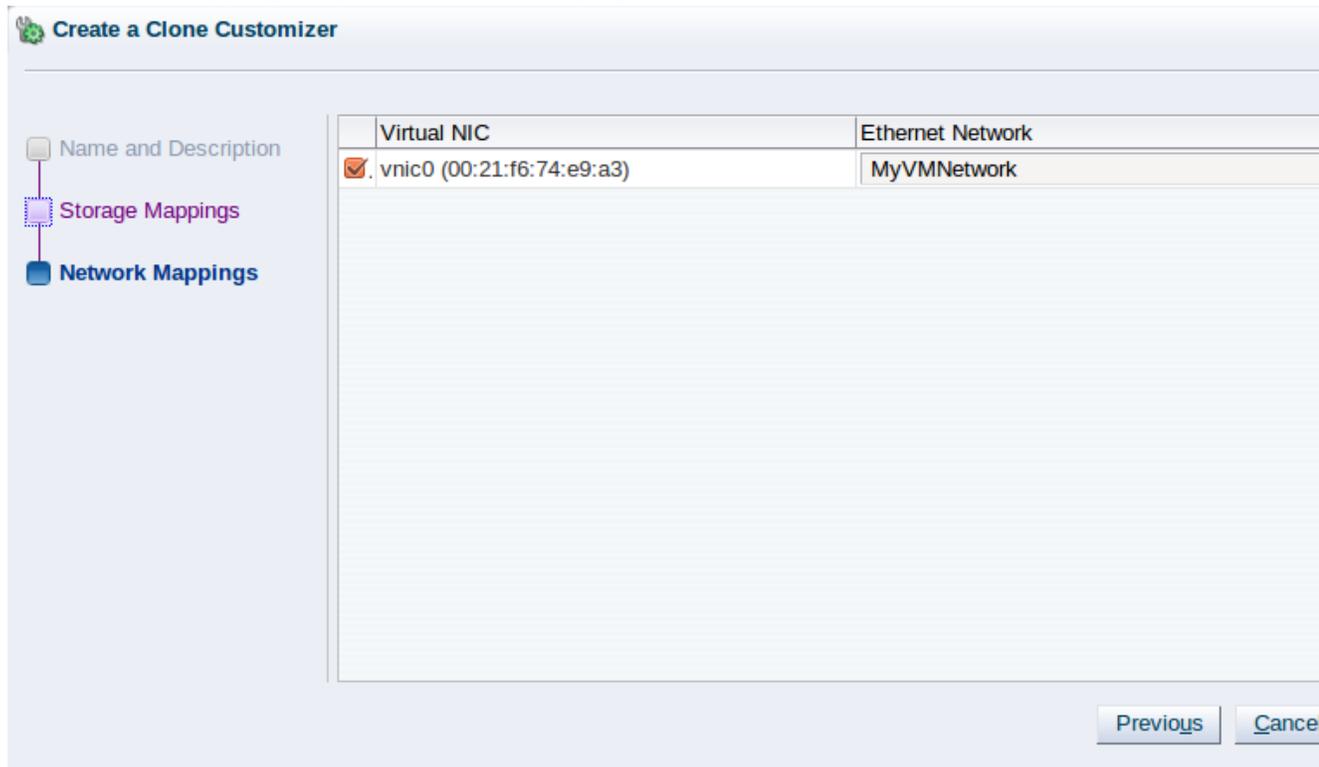


Caution

When sparse virtual disk space allocation is used, the available space in a repository can be over-subscribed. Sparse allocation is useful to increase virtual machine density. However, errors occur if the space allocated to a storage repository becomes exhausted, so the administrator must carefully monitor disk space.

Click **Next**.

5. The **Network Mappings** step of the wizard is displayed.



Select the **Virtual NICs** to include in the clone customizer, and the **Ethernet Network** to which they should belong.



Note

The network configuration is not changed when moving a virtual machine or template. It is only used when cloning a virtual machine or template.

Click **Finish**.

The clone customizer is now available to use to create a virtual machine, or template. See [Section 4.7.1.4, "Clone a Virtual Machine or Template"](#) for information on using the clone customizer to create a virtual machine or template.

Edit a Clone Customizer

To edit a clone customizer:

1. Select the object to which the clone customizer belongs, either a virtual machine, or a virtual machine template. Click **Manage Clone Customizers...** .
2. The **Manage Clone Customizers for (VM or Template)** dialog box is displayed. Select the clone customizer to edit and click **Edit Clone Customizer...** .
3. The **Edit Clone Customizer** dialog box is displayed. Edit the clone customizer.

Click **OK**. The changes to the clone customizer are saved.

Delete a Clone Customizer

To delete a clone customizer:

1. Select the object to which the clone customizer belongs, either a virtual machine, or a virtual machine template. Click **Manage Clone Customizers...** .
2. The **Manage Clone Customizers for (VM or Template)** dialog box is displayed. Select the clone customizer to delete and click **Delete Clone Customizer** .
3. A dialog box is displayed to confirm you want to delete the clone customizer. Confirm you want to delete the clone customizer and click **OK**. The clone customizer is deleted.

4.7.1.7 View Virtual Machine Configuration File

You can view the content of a virtual machine configuration file. The content is not editable but you can view and copy the text according to your needs.

To view a virtual machine configuration file:

1. Click the **Repositories** tab.
2. Select the repository in which the virtual machines is located in the navigation tree.
3. Select the virtual machine to which the configuration file belongs in the table in the management pane. Click **VM Config File Content...** .
4. The **VM Config File Content** dialog box is displayed with the content of the virtual machine configuration file. You can view and copy the text according to your needs.
5. Click **OK** to close the dialog.

4.8 Virtual Appliances Item

The management pane includes the default Virtual Appliances perspective, and toolbars that enable you to perform various configuration or management tasks specific to virtual appliances.

4.8.1 Virtual Appliances Perspective

The Virtual Appliances perspective lists the virtual appliances configured in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the virtual appliance.
- **Origin:** The origin of the virtual appliance which is the URL from which this virtual appliance was imported.
- **Description:** The description of the virtual appliance.
- **ID:** The unique identifier for this object within Oracle VM Manager

An arrow displays next to each virtual appliance in the table. Click the arrow to expand the view and display the virtual machines and virtual disks that the virtual appliance contains. Each of these is displayed in its own subtab.

On the **Virtual Machines** subtab, it is possible to see a list of virtual machines contained within the virtual appliance. These are displayed in tabular format with the following columns:

- Name: The name that has been configured for the virtual machine within the virtual appliance.
- Description: The description that has been configured for the virtual machine within the virtual appliance.

On the **Virtual Disks** subtab, it is possible to see a list of the virtual disks contained within the virtual appliance. These are displayed in tabular format with the following columns:

- Name: The name that has been configured for the virtual disk within the virtual appliance.
- VM(s): A comma separated list of virtual machines within the virtual appliance that are configured to use the virtual disk.
- Format: The format of the virtual disk image file.
- Capacity: The capacity of the virtual disk in gibibytes (GiB).
- Populated Size: The populated size of the virtual disk image file in gibibytes (GiB).

This perspective includes a toolbar that consists of the following options:

Table 4.7 Virtual Appliances Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Import Virtual Appliance...		Displays the Import Virtual Appliance dialog box. Use this option to import a virtual appliance.
Create Virtual Machine...		Displays the Create Virtual Machine dialog box. Use this option to create a virtual machine from a virtual appliance.
Edit Selected Virtual Appliance...		Displays the Edit Virtual Appliance dialog box. Use this option to edit a virtual appliance.
Delete Selected Virtual Appliance		Displays the Delete Confirmation dialog box. Use this option to delete the selected virtual appliance.
Refresh Selected Virtual Appliance...		Refreshes one or more selected virtual appliances.
Help		Displays context sensitive help.

4.8.1.1 Import Virtual Appliance

To import a virtual appliance:

1. Create or locate a virtual appliance file. This should be a single .ova file, which contains the .ovf descriptive file(s), and disk image file(s) for the virtual appliance.



Note

OVF files in the version 0.9 format (as used by ESX 3.5) are not supported. If the virtual appliance uses an unsupported format, you can attempt to convert it to a newer version with a tool such as VMware's Converter or OVF Tool, or you can use qemu-img to convert the vmdk files to raw disk files and recreate the virtual machine manually.

2. Place the virtual appliance in a location accessible from your Oracle VM Manager [host computer](#).



Note

Supported URL schemes are HTTP, HTTPS, and FTP.

3. Click the **Repositories** tab. Select the repository in which to store the virtual appliance. Select **Virtual Appliances** in the navigation tree.
4. Select **Import Virtual Appliance...**  in the toolbar in the management pane.
5. The **Import Virtual Appliance** dialog box is displayed. Select or edit the following fields:

- **Virtual Appliance download location:** URL for the virtual appliance; for example: `http://example.com/appliances/myvirtappliance.ova`
- **Proxy:** Optional IP address or hostname of a proxy server.
- **Create VM:** Option to create the virtual machine(s) that the virtual appliance contains during the import.

If the virtual appliance contains more than virtual machine, Oracle VM Manager creates a separate virtual machine for each one in the virtual appliance.

- **Server Pool:** Option to deploy the virtual machine(s) to a specific server pool after creation.

Click **OK** to import the virtual appliance. When the import job is complete, the new virtual appliance is displayed in the table in the management pane.

If you selected the option to create virtual machines from the virtual appliance, the virtual machines are located in the server pool that you specified or the **Unassigned Virtual Machines** folder on the **Servers and VMs** tab.

4.8.1.2 Create Virtual Machine

To create a virtual machine from a virtual appliance:

1. Click the **Repositories** tab. Select the repository in which the virtual appliance is located. Select **Virtual Appliances** in the navigation tree.
2. Select **Create Virtual Machine...**  in the toolbar in the management pane.
3. The **Create Virtual Machine** dialog box is displayed. Select the virtual machine you want to create in the **Available Virtual Appliance VM(s):** column and move it to the **Selected Virtual Appliance VM(s):** column.

You can select multiple virtual machines if the virtual appliance contains more than one. Oracle VM Manager creates a separate virtual machine for each one that you select.

4. Optionally select the server pool in which to deploy the virtual machine(s) from the **Server Pool** drop-down menu. If you do not select a server pool, the virtual machines are deployed to the **Unassigned Virtual Machines** folder on the **Servers and VMs** tab.
5. Click **OK**. Oracle VM Manager creates the selected virtual machines from the virtual appliance and deploys them to the server pool that you specified or the **Unassigned Virtual Machines** folder.

4.8.1.3 Edit Virtual Appliance

To edit a virtual appliance:

1. Click the **Repositories** tab. Select the repository in which the virtual appliance is located. Select **Virtual Appliances** in the navigation tree.
2. Select the virtual appliance in the table in the management pane. Click **Edit Selected Virtual Appliance...**  in the management pane toolbar.

3. Edit the **Name** or **Description**. Click **OK**.

4.8.1.4 Delete Virtual Appliance

To delete virtual appliances:

1. Click the **Repositories** tab. Select the repository in which the virtual appliances are located. Select **Virtual Appliances** in the navigation tree.
2. Select one or more virtual appliances in the table in the management pane. Click **Delete Selected Virtual Appliance**  in the management pane toolbar.
3. The **Delete Confirmation** dialog box is displayed. Click **OK**.

4.8.1.5 Refresh Virtual Appliance

The contents of virtual appliances are not automatically refreshed when you refresh a repository. For this reason, you must refresh the virtual appliance to see the contents of a new or modified virtual appliance.

To refresh virtual appliances:

1. Click the **Repositories** tab. Select the repository in which the virtual appliances are located. Select **Virtual Appliances** in the navigation tree.
2. Select one or more virtual appliances in the table in the management pane. Click **Refresh Selected Virtual Appliance**  in the management pane toolbar.
3. The contents of the virtual appliances are refreshed from the storage repository.

4.9 Virtual Disks Item

The management pane includes the default Virtual Disks perspective, and toolbars that enable you to perform various configuration or management tasks specific to virtual disks.

4.9.1 Virtual Disks Perspective

The Virtual Disks perspective lists the virtual disks in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the virtual disk.
- **Used (GiB):** The amount of disk used.
- **Max. (GiB):** The maximum allocated disk size that may be used.
- **Shareable:** Whether the disk is shareable with other virtual machines.
- **Absolute Path:** The absolute path to where the virtual disk is located.
- **Mounted Path:** The mount point where the virtual disk is located when it is mounted on a server.
- **File:** The location path in the storage repository.
- **Description:** The description of the virtual disk.

An arrow displays next to each virtual disk in the table. Click the arrow to expand the view and display the name of the virtual machine that uses the virtual disk.

This perspective includes a toolbar that consists of the following options:

Table 4.8 Virtual Disks Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create Virtual Disk...		Displays the Create Virtual Disk dialog box. Use this option to create a new virtual disk.
Import Virtual Disk		Displays the Import Virtual Disk dialog box. Use this option to import a virtual disk.
Edit Virtual Disk...		Displays the Edit Virtual Disk dialog box. Use this option to edit an virtual disk.
Delete Selected Virtual Disk		Displays the Delete Confirmation dialog box. Use this option to delete the selected virtual disk.
Clone Virtual Disk		Displays the Clone Virtual Disk dialog box. Use this option to clone (create a copy of) a virtual disk.
Help		Displays context sensitive help.

4.9.1.1 Create Virtual Disk

To create a new virtual disk:

1. Click the **Repositories** tab. Select the repository in which to store the virtual disk. Select **Virtual Disks** in the navigation tree.
2. Click **Create Virtual Disk...**  in the management pane toolbar.
3. The **Create Virtual Disk** dialog box is displayed. Enter or select the following:
 - **Virtual Disk Name:** A name for the virtual disk.
 - **Size (GiB):** The size of the disk, in GiB.
 - **Description:** A description of the virtual disk.
 - **Shareable:** Whether the virtual disk is shareable. Shareable disks have read/write privileges in multiple virtual machines and should be used with caution.
 - **Allocation Type:** Whether to use a **Sparse Allocation** or **Non-sparse Allocation**. Sparse Allocation creates a sparse disk, so the size of the disk is initially small and increases as it is used. Sparse allocation is faster than using Non-Sparse Allocation when creating a virtual machine. Non-Sparse Allocation creates the entire disk when the virtual machine is created, and so is slower than creating a sparse disk. This information is not persistent and is not stored within Oracle VM Manager, so it is not possible to determine what allocation type was used to create a virtual disk in the future.



Caution

When sparse virtual disk space allocation is used, the available space in a repository can be over-subscribed. Sparse allocation is useful to increase virtual machine density. However, errors occur if the space allocated to a storage repository becomes exhausted, so the administrator must carefully monitor disk space.

4. Click **OK** to create the new disk. To display which virtual machines use a disk, expand the table row in the management pane.

4.9.1.2 Import Virtual Disk

To import a virtual disk:

1. Click the **Repositories** tab. Select the repository in which to store the virtual disk. Select **Virtual Disks** in the navigation tree.
2. Click **Import Virtual Disk...**  in the management pane toolbar.
3. The **Import Virtual Disk** dialog box is displayed. Select or edit the following:

- **Virtual Disk download location:** The URL for the virtual disk file. The URL schemes supported are HTTP, HTTPS, and FTP. For example:

`http://example.com/vdisks/myvdisk.img`

- **Proxy:** The IP address or hostname of an optional proxy server to use when importing the virtual disk.

Click **OK** to import the virtual disk file. When the import job is complete, the new virtual disk is displayed in the table in the management pane.

4.9.1.3 Edit Virtual Disk

To edit a virtual disk:

1. Click the **Repositories** tab. Select the repository in which the virtual disk is located. Select **Virtual Disks** in the navigation tree.
2. Select the virtual disk in the table in the management pane. Click **Edit Virtual Disk...**  in the management pane toolbar.
3. The **Edit Virtual Disk** dialog box is displayed. Enter or select the following:
 - **Virtual Disk Name:** A name for the virtual disk.
 - **Size (GiB):** The size of the disk, in GiB.
 - **Resize Action:** Whether the virtual disk should use sparse or non-sparse allocation. This drop-down selector does not default to the allocation type that was used when the disk was created, as this information is not stored within Oracle VM Manager. The allocation type specified here only applies to any additional disk space that is allocated in the case that the virtual disk size is increased. This information is not persistent and is not stored within Oracle VM Manager, so it is not possible to determine what allocation type was used for a virtual disk in the future.
 - **Description:** A description of the virtual disk.
 - **Shareable:** Whether the virtual disk is shareable. Shareable disks have read/write privileges in multiple virtual machines and should be used with caution.



Note

The actual virtual disk image file is saved with a filename that contains the UUID for the virtual disk image. This is displayed in the **ID** field at the top of the dialog. This field is not editable.

Click **OK** to save the changes.

**Warning**

When resizing a disk there is always a risk of data corruption. Also, the file system on the virtual disk may not be aware of the resize operation, so you may have to perform operating specific procedures to make the guest virtual machine aware of the change in disk size. Usually, after resizing a virtual disk, you may need to shutdown and then restart the guest virtual machine that is making use of the disk before it is able to register the new disk size.

4.9.1.4 Delete Virtual Disk

To delete virtual disks:

1. Click the **Repositories** tab. Select the repository in which the virtual disks are located. Select **Virtual Disks** in the navigation tree.
2. Select one or more virtual disks in the table in the management pane. Click **Delete Selected Virtual Disk**  in the management pane toolbar.
3. The **Delete Confirmation** dialog box is displayed. Click **OK**.

4.9.1.5 Clone Virtual Disk

To clone a virtual disk:

1. Click the **Repositories** tab. Select the repository in which the virtual disk is located. Select **Virtual Disks** in the navigation tree.
2. Select the virtual disk in the table in the management pane. Click **Clone Virtual Disk**  in the management pane toolbar.
3. The **Clone Virtual Disk** dialog box is displayed. Select or edit the following:
 - **Clone Target Type:** The destination storage type for the cloned virtual disk, either:
 - Repository
 - Physical Disk
 - Storage Array
 - **Clone Target:** The destination location for the cloned virtual disk. Click **Search Clone Target**  to select the destination.

The **Search Clone Target** dialog box is displayed. Select the location on which to clone the virtual disk and click **OK**.
 - **Clone Type:** Whether to use a **Sparse Copy** or **Non-sparse Copy**. Sparse Copy creates a sparse disk, so the size of the disk is smaller than the original. Sparse copy is faster than using Non-Sparse Copy. Non-Sparse Copy copies the entire virtual disk, and so is slower than creating a sparse disk.

Click **OK** to clone the virtual disk.

Chapter 5 Networking Tab

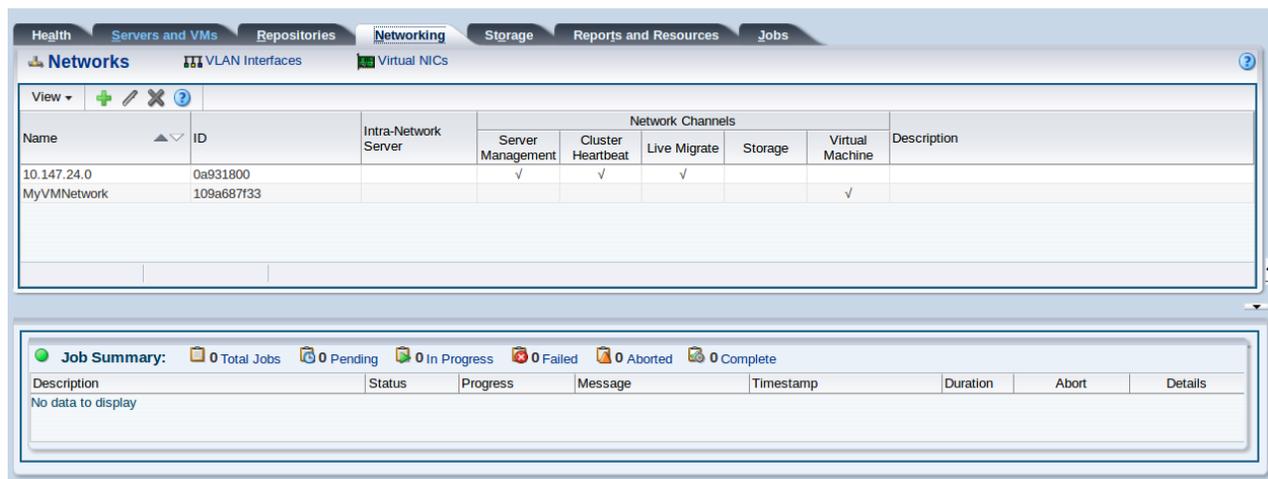
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Use the **Networking** tab to manage networks and their functions in your environment, create, edit and delete networks, manage VLAN interfaces, and manage Virtual NICs used by [virtual machines](#).

Figure 5.1, “Networking tab” shows the Networking tab.

Figure 5.1 Networking tab



The **Networking** tab contains the subtabs set out in [Table 5.1, “Networking Subtabs”](#).

Table 5.1 Networking Subtabs

Subtab	Description
Networks	<p>Displays information about networks. Use this tab to create, edit, and delete networks.</p> <p>Select the Networks subtab to display this pane. Select a network in the table to view and edit information about networks within your environment. You can use this pane to create new networks either using ports, bonds or VLAN interfaces ^a; or as virtual networks on a single server for the use of any virtual machines on that server.</p>

Subtab	Description
	See Section 5.1, “Networks” for more information on managing networks.
VLAN Interfaces	<p>Displays information about VLAN Interfaces. Use this tab to create, edit and delete VLAN interfaces.</p> <p>Select the VLAN Interfaces subtab to display this pane. Select a VLAN Interface in the table to view and edit information about the ports, VLAN IDs and IP address assignment for a VLAN .</p> <p>See Section 5.2, “VLAN Interfaces” for more information on managing VLAN Interfaces.</p>
Virtual NICs	<p>Displays information about virtual NICs. Use this tab to view the virtual NICs in use by your virtual machines. You can also use this tab to define the MAC address range that should be used when a virtual NIC is created on a virtual machine.</p> <p>See Section 5.3, “Virtual NICs” for more information on managing virtual NICs.</p>

^a If you intend to create a network using VLAN interfaces, these need to be configured first on the VLAN Interfaces pane.

5.1 Networks

The **Networks** subtab provides facilities to add, edit and delete networks; and presents a tabular view of the networks that are currently configured within the Oracle VM environment. Configuration options can be accessed using the toolbar at the top of the tab.

The toolbar at the top of the tab consists of the following options:

Table 5.2 Networks Subtab Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create New Network...		Displays the Create Network dialog box. Use this option to create a new network within Oracle VM Manager.
Edit Selected Network...		Displays the Edit Network dialog box. Use this option to change the network configuration for an existing network.
Delete Selected Network		Displays the Delete Confirmation dialog box. Use this option to delete the selected network.
Help		Displays context sensitive help.

The table view in the **Networks** subtab includes the following fields:

- **ID:** The UUID for the network.
- **Name:** The name defined for the network within Oracle VM Manager.
- **Intra-Network Server:** The name of the server on which a local network is defined, if the network is of this type.
- **Network Channels:** A grouping of the different network channels or roles that a network may support.
 - **Server Management:** A check box item to indicate whether or not the network is a member of the Server Management channel.

- **Cluster Heartbeat:** A check box item to indicate whether or not the network is a member of the Cluster Heartbeat channel.
- **Live Migrate:** A check box item to indicate whether or not the network is a member of the Live Migrate channel.
- **Storage:** A check box item to indicate whether or not the network is a member of the Storage channel.
- **Virtual Machine:** A check box item to indicate whether or not the network is a member of the Virtual Machine channel.
- **Description:** A field to present the text description defined for the network within Oracle VM Manager.

5.1.1 Create New Network

To create a new Network

1. On the **Networking** tab, click the **Networks** subtab.
 2. Click the **Create New Network** icon . A dialog is displayed with the following two options:
 - **Create a Network with Ports/Bond Ports/VLAN Interfaces:** Use this option to create a normal network that makes use of physical ports, bond ports or VLAN Interfaces defined on your servers.
-
- Note**
- If you have not already defined any VLAN interfaces as described in [Section 5.2, "VLAN Interfaces"](#), you are unable to add any VLAN interfaces to the network. In other words, you must define your VLAN interfaces on the VLAN Interfaces subtab before attempting to add any VLAN interfaces to a network.
- **Create a Local Network on a single server:** Use this field to create a virtual network running on a single Oracle VM Server, usually to facilitate communication between virtual machines running on that server.
3. Click **Next** to begin one of the following procedures:
 - [Create a Network with Ports/Bond Ports/VLAN Interfaces](#)
 - [Create a Local Network on a single server](#)

Create a Network with Ports/Bond Ports/VLAN Interfaces

1. After you select a network configuration, the **Create Network** wizard displays the following fields to configure your network:
 - **Name:** The name of the network in Oracle VM Manager.
 - **Description:** Optional information you would like to add about this network.
 - **Network Uses:** A set of check boxes that allow you to define the various network roles or channels that are enabled on the network.
 - **Management:** Used to manage the physical Oracle VM Servers in a server pool, for example, to update the Oracle VM Agent on the different Oracle VM Servers. This network function is assigned to at least one network by default.

- **Live_Migrate:** Used to migrate virtual machines from one Oracle VM Server to another in a server pool, without changing the status of the virtual machine.
- **Cluster_Heartbeat:** Used to verify if the Oracle VM Servers in a clustered server pool are up and running.
- **Virtual_Machine:** Used for the network traffic between the different virtual machines in a server pool.
- **Storage:** Enables you to associate specific networks with storage use.

Click **Next** to continue to the next stage of the wizard, or click **Cancel** to exit the wizard without making any changes.

- The **Select Ports** stage of the wizard is displayed. This dialog allows you to define which ports or bonds on each Oracle VM Server are attached to the network and presents a tabular view of ports and bonds that are attached to the network.

**Note**

If you only wish for your network to contain VLAN interfaces, there is no requirement for you to add any network ports to the network in this dialog. You are able to add VLAN interfaces to the network in the next stage of the wizard.

At the top of the table is a toolbar containing options to **+** **Add New Ports**, **✎** **Edit Port(s)**, or **✕** **Delete Port(s)**.

To Add A Port To The Network

- Click the **+** **Add New Ports** icon at the top of the table.
- The **Add Ports to Network** dialog is displayed. Select the server where the network port or bond that you wish to add is located, and expand the node alongside it. Select the port or ports that you wish to add.

**Note**

Only ports that are not bonded are displayed. Once a port is part of a bond, it can no longer be used outside of that bond.

- Click **OK** to add the ports that you have selected, or click **Cancel** to exit without any changes.

To Edit A Port Within The Network

- Select the port or ports that you wish to edit within the network.
- Click the **✎** **Edit Port(s)** icon.
- The **Edit Port(s)** dialogue is displayed.
- For each port listed, you are able to edit the MTU setting, and the IP Address assignment settings.
- Click **OK** when you have finished editing ports to save the changes, or click **Cancel** to exit.

To Delete A Port From The Network

- Select the port or ports that you wish to remove from the network.
- Click the **✕** **Delete Port(s)** icon.
- The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the port from the network.

When you have finished defining the ports that belong to the network, you can click **Next** to continue to the next stage of the wizard, or click **Cancel** to exit the wizard. Note that if you only wish for your network to contain VLAN interfaces, there is no requirement for you to add any network ports to the network in this dialog, as you are able to add VLAN interfaces to the network in the next stage of the wizard.

- The **Select VLAN Interfaces** stage of the wizard is displayed. This dialog allows you to define which VLAN interfaces on each Oracle VM Server are attached to the network and presents a tabular view of VLAN interfaces that are attached to the network. Note that in order to add a VLAN interface to a network it must have been defined prior to starting this wizard, as described in [Section 5.2, "VLAN](#)

[Interfaces](#)". At the top of the table is a toolbar containing options to **+** **Add VLAN Interfaces**, **✎** **Edit VLAN Interface(s)**, or **✕** **Delete VLAN Interface(s)**.

To Add A VLAN Interface To The Network

- a. Click the **+** **Add VLAN Interfaces** icon in the toolbar.
- b. The **Add VLAN Interfaces to Network** dialog is displayed. In the panel on the left, you are able to expand nodes showing servers assigned to different server pools, or unassigned servers. By clicking on the different nodes in this panel, you are able to update the tabular view of the different available VLAN interfaces on the right.

Note that if you have not already defined any VLAN interfaces as described in [Section 5.2, "VLAN Interfaces"](#), no VLAN interfaces are displayed in this view and you are unable to add any VLAN interfaces to the network. In other words, you must define your VLAN interfaces on the **VLAN Interfaces** subtab, before attempting to add any VLAN interfaces to a network.

- c. Identify the VLAN interfaces that you wish to add to the network and check the check box alongside them.
- d. Click **OK** to add the selected VLAN interfaces to the network, or click **Cancel** to exit without making any changes.

To Edit A VLAN Interface Within The Network

- a. Select the VLAN interface that you wish to edit within the network.
- b. Click the **✎** **Edit VLAN Interface(s)** icon in the toolbar.
- c. The **Edit VLAN Interface(s)** dialog is displayed.
- d. For each VLAN interface listed, you are able to edit the MTU setting, and the IP Address assignment settings.
- e. Click **OK** when you have finished editing VLAN interfaces to save the changes, or click **Cancel** to exit.

To Delete A VLAN Interface From The Network

- a. Select the VLAN interfaces that you wish to remove from the network.
- b. Click the **✕** **Delete VLAN Interface(s)** icon.
- c. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the VLAN interface from the network.

When you have finished adding any VLAN interfaces to the network, you are able to click **Finish** to save the new network configuration. Alternatively, you can click **Cancel** to exit the wizard without saving the network changes. Note that if you edited the configuration for a Port, Bond or VLAN interface in any of the sub-wizards, these changes have already been effected.

Create a Local Network on a single server

1. After you select a network configuration, the **Create Network** wizard displays the following fields to configure your network:
 - **Name:** The name of the network in Oracle VM Manager.

- **Description:** Optional information you would like to add about this network.

Click **Next** to continue to the next stage of the wizard, or click **Cancel** to exit the wizard without making any changes.

2. The **Select Server** stage is displayed in the wizard. This stage provides a drop-down list of all of the servers configured within Oracle VM Manager. Select the server where you wish to create the local network, and click **Finish** to save the new network configuration. Alternatively, you can click **Cancel** to exit the wizard without saving the network changes.

5.1.2 Edit Existing Network

It is possible to edit the configuration for an existing network. The steps and options to do so are described below.

To edit the configuration for an existing network:

1. On the **Networking** tab, click the **Networks** subtab link and select the network that you wish to edit.
2. Click the  **Edit Network** icon in the toolbar.
3. A dialog opens to allow you to reconfigure the network. The dialog has three separate tabs:
 - **Configuration:** A tab containing a form allowing you to edit the following information:
 - **Name:** The name of the network in Oracle VM Manager.
 - **Description:** Optional information you would like to add about this network.
 - **Network Uses:** A set of check boxes that allow you to define the various network roles or channels that are enabled on the network.



Note

If the network is used by many servers, modifying this parameter may cause the edit operation to take several minutes to complete.

- **Management:** Used to manage the physical Oracle VM Servers in a server pool, for example, to update the Oracle VM Agent on the different Oracle VM Servers. This network function is assigned to at least one network by default.
- **Live_Migrate:** Used to migrate virtual machines from one Oracle VM Server to another in a server pool, without changing the status of the virtual machine.
- **Cluster_Heartbeat:** Used to verify if the Oracle VM Servers in a clustered server pool are up and running.
- **Virtual_Machine:** Used for the network traffic between the different virtual machines in a server pool.
- **Storage:** Reserved for future use and currently has no practical function or application.
- **Ports:** A tab allowing you to manage which ports or bonds on each Oracle VM Server are attached to the network. This tab contains a tabular view of ports and bonds that are already attached to the network. At the top of the table is a toolbar containing options to **+ Add New Ports**,  **Edit Port(s)**, or **✗ Delete Port(s)**.

To Add A Port To The Network

- a. Click the **+** **Add New Ports** icon at the top of the table.
- b. The **Add Ports to Network** dialog is displayed. Select the server where the network port or bond that you wish to add is located, and expand the node alongside it. Select the port or ports that you wish to add.



Note

Only ports that are not bonded are displayed. Once a port is part of a bond, it can no longer be used outside of that bond.

- c. Click **OK** to add the ports that you have selected, or click **Cancel** to exit without any changes.

To Edit A Port Within The Network

- a. Select the port or ports that you wish to edit within the network.
- b. Click the **✎ Edit Port(s)** icon.
- c. The **Edit Port(s)** dialog is displayed.
- d. For each port listed, you are able to edit the MTU setting, and the IP Address assignment settings.
- e. Click **OK** when you have finished editing ports to save the changes, or click **Cancel** to exit.

To Delete A Port From The Network

- a. Select the port or ports that you wish to remove from the network.
 - b. Click the **✖ Delete Port(s)** icon.
 - c. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the port from the network.
- **VLAN Interfaces:** A tab allowing you to manage which VLAN interfaces are attached to the network. This tab contains a tabular view of VLAN interfaces that are already attached to the network. At the top of the table is a toolbar containing options to **+** **Add VLAN Interfaces**, **✎ Edit VLAN Interface(s)**, or **✖ Delete VLAN Interface(s)**.

To Add A VLAN Interface To The Network

- a. Click the **+** **Add VLAN Interfaces** icon in the toolbar.
- b. The **Add VLAN Interfaces to Network** dialog is displayed. In the panel on the left, you are able to expand nodes showing servers assigned to different server pools, or unassigned servers. By clicking on the different nodes in this panel, you are able to update the tabular view of the different available VLAN interfaces on the right.

Note that if you have not already defined any VLAN interfaces as described in [Section 5.2, “VLAN Interfaces”](#), no VLAN interfaces are displayed in this view and you are unable to add any VLAN interfaces to the network. In other words, you must define your VLAN interfaces on the VLAN Interfaces subtab, before attempting to add any VLAN interfaces to a network.

- c. Identify the VLAN interfaces that you wish to add to the network and check the check box alongside them.

- d. Click **OK** to add the selected VLAN interfaces to the network, or click **Cancel** to exit without making any changes.

To Edit A VLAN Interface Within The Network

- a. Select the VLAN interface that you wish to edit within the network.
- b. Click the  **Edit VLAN Interface(s)** icon in the toolbar.
- c. The **Edit VLAN Interface(s)** dialog is displayed.
- d. For each VLAN interface listed, you are able to edit the MTU setting, and the IP Address assignment settings.
- e. Click **OK** when you have finished editing VLAN interfaces to save the changes, or click **Cancel** to exit.

To Delete A VLAN Interface From The Network

- a. Select the VLAN interfaces that you wish to remove from the network.
 - b. Click the  **Delete VLAN Interface(s)** icon.
 - c. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the VLAN interface from the network.
4. When you have finished editing the network, click **OK** to save the changes, or **Cancel** to exit out of the dialog without saving any changes.

5.1.3 Delete Existing Network

It is possible to delete a network. The steps and options to do so are described below.

To delete a network:

1. On the **Networking** tab, click the **Networks** subtab link and select the network that you wish to delete.
2. Click the  **Delete Network** icon in the toolbar.
3. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the network.

5.2 VLAN Interfaces

The **VLAN Interfaces** tab allows you to define and manage VLAN interfaces on your Oracle VM Servers ¹. If your network is configured to support VLANs, you should define interfaces for your different VLAN IDs on each of your servers, so that you are able to define Oracle VM networks that take advantage of VLAN separation.

The **VLAN Interfaces** tab is divided into two sections, a [Navigation Pane](#) and a [Management Pane](#) displaying a tabular view of the VLAN Interfaces associated with the item selected in the navigation pane.

5.2.1 Navigation Pane

The Navigation Pane displayed on the **VLAN Interfaces** tab is used to control the VLAN interfaces that are displayed in the [Management Pane](#). The Navigation Pane presents a tree view of the server objects that

¹ VLAN configuration within Oracle VM Manager has changed significantly in Oracle VM 3.3. If you have used previous releases of Oracle VM, it is important that you understand these changes and it is recommended that you refer to [Understanding Networks](#) in the [Oracle VM Concepts Guide](#).

have been discovered within your environment. Servers are grouped by **Server Pools** or are automatically presented beneath the node titled **Unassigned Servers**.

Expanding the **Server Pools** node, allows you to see each of the server pools configured within your environment. Selecting a particular server pool from the list presented, updates the Management Pane to show only the VLAN interfaces configured for that server pool.

Clicking on the **Unassigned Servers** node is equivalent to selecting an individual server pool. The Management Pane is updated to show only the VLAN interfaces configured for servers that do not belong to a server pool.

Both the **Unassigned Servers** node and any of the server pool nodes can be further expanded to list the servers that belong to these nodes. The VLAN interfaces displayed in the Management Pane can be further limited to each individual server listed.

Finally, you are able to expand server nodes to list the ports or bonds that are available for each server. By selecting a particular port for any server in the Navigation Pane, the list of VLAN interfaces presented in the Management Pane is limited to those interfaces configured for that specific port or bond.

5.2.2 Management Pane

The Management Pane on the **VLAN Interface** tab allows you to create, edit or delete VLAN interfaces configured within Oracle VM Manager. VLAN interfaces are listed in a tabular view that includes a toolbar providing options to manage interfaces. The VLAN Interfaces that are displayed in the table at any point in time are controlled using the [Navigation Pane](#).

The **VLAN Interface** tab includes a toolbar in the management pane that consists of the following options:

Table 5.3 VLAN Interface Subtab Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create VLAN Interface...		Displays the Create VLAN Interface(s) dialog box. Use this option to create a new VLAN Interface within Oracle VM Manager.
Edit Selected VLAN Interface...		Displays the Edit VLAN Interface(s) dialog box. Use this option to change the description, MTU settings or IP address assignment options for an existing VLAN Interface.
Delete Selected VLAN Interface		Displays the Delete Confirmation dialog box. Use this option to delete the selected VLAN Interface.
Help		Displays context sensitive help.

The table view in the **VLAN Interface** subtab includes the following fields:

- **Name:** The name of the VLAN interface as defined in Oracle VM Manager.
- **VLAN ID:** The VLAN ID that is assigned to the VLAN interface.
- **Server Pool:** The server pool where this VLAN interface is located (if any).
- **Server:** The server where the VLAN interface is located.
- **Port:** The network port on which the VLAN interface is assigned.
- **MTU:** The MTU value for the VLAN interface.

- **Network:** The network that the VLAN interface is attached to (if any).
- **Addressing:** A grouping of fields to display IP address assignment.
 - **Type:** Describes the network address assignment type (either Static, Dynamic or blank if None).
 - **IP Address:** The IP address allocated to the VLAN interface (if any).
 - **Netmask:** The netmask applied to the VLAN interface (if any).
- **Description:** The description of the VLAN interface as defined in Oracle VM Manager.

5.2.3 Create VLAN Interfaces

If your environment is configured to use VLANs, you need to configure VLAN interfaces within Oracle VM Manager before you are able to use them within a network configuration.

To Create A VLAN Interface

1. On the **Networking** tab, click the **VLAN Interfaces** subtab link.
2. Click the **+ Create VLAN Interface** icon in the toolbar.
3. The **Create VLAN Interface(s)** dialog is displayed.
4. A navigation tree similar to the one shown in the [Navigation Pane](#) is displayed in the pane on the right of the dialog. Use the navigation tree to identify server ports or bonds that are configured for your VLANs. You are able to expand nodes in the navigation tree to identify individual servers, and then expand each server to identify the ports that are available. Alongside each port, listed for a server, is a check box that allows you to enable the port to configure VLAN interfaces that are attached to it. You must select at least one port. Be careful not to select a port that is already in use or which is part of a bond. The user interface does not filter the ports to allow you to only select unused ports.
5. Once you have selected the ports for which you wish to create VLAN interfaces, you can click **Next** to continue to the next stage of the wizard, or click **Cancel** to exit the wizard without making any changes.
6. The **Select VLAN IDs** stage is displayed in the wizard. In the panel on the right, you are able to select a VLAN ID range. Using the two fields available you can specify a range of VLAN IDs that are configured on the network ports for which you are creating VLAN interfaces. Use the [Add](#), [Delete](#) and [Delete All](#) buttons to manage the VLAN IDs for which VLAN interfaces should be created. A VLAN interface is created for each VLAN ID specified in the list provided here. You must select at least one VLAN ID.
7. When you have finished selecting VLAN IDs, you can click **Next** to continue to the next stage of the wizard, or click **Cancel** to exit the wizard without making any changes.
8. The **Configure IP Address** stage is displayed in the wizard. On the panel on the right, a table is presented listing each of the VLAN interfaces that have been created. For each VLAN interface listed, you are able to edit the MTU setting, the IP Address assignment settings and the description. The **Addressing** field provides a drop-down selector that allows you to choose either [None](#), [Static](#) or [Dynamic](#) to specify how IP Addressing should be configured on this interface. If you select [Static](#) here, the IP Address and Mask fields become available to edit, otherwise they remain uneditable.

A **Filter By VLAN ID** drop-down selector is provided at the top of the table, to allow you to quickly limit the VLAN interfaces displayed in the table to make changes in a more orderly fashion.
9. Click **Finish** when you have finished editing VLAN interfaces to save the changes, or click **Cancel** to exit.

5.2.4 Edit VLAN Interfaces

To Edit A VLAN Interface

1. On the **Networking** tab, click the **VLAN Interfaces** subtab link.
2. Use the navigation pane to locate filter the list of VLAN interfaces displayed in the management pane.
3. Select the VLAN interface that you wish to edit from the interfaces listed in the management pane.
4. Click the  **Edit VLAN Interface** icon in the toolbar.
5. The **Edit VLAN Interface(s)** dialog is displayed.
6. For each VLAN interface listed, you are able to edit the MTU setting, the IP Address assignment settings and the description. The **Addressing** field provides a drop-down selector that allows you to choose either [None](#), [Static](#) or [Dynamic](#) to specify how IP Addressing should be configured on this interface. If you select [Static](#) here, the IP Address and Mask fields become available to edit, otherwise they remain uneditable.
7. Click **OK** when you have finished editing VLAN interfaces to save the changes, or click **Cancel** to exit.

5.2.5 Delete VLAN Interfaces

To Delete A VLAN Interface

1. On the **Networking** tab, click the **VLAN Interfaces** subtab link.
2. Use the navigation pane to locate filter the list of VLAN interfaces displayed in the management pane.
3. Select the VLAN interfaces that you wish to remove from Oracle VM Manager from the interfaces listed in the management pane.
4. Click the  **Delete VLAN Interface(s)** icon at the top of the table displayed in the management pane.
5. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the VLAN interface from Oracle VM Manager.

5.3 Virtual NICs

A VNIC is a virtualized Network Interface Card, used by a [Virtual Machine](#) as its network interface. A VNIC is assigned a MAC address. Each MAC address corresponds with a single virtual NIC, which is used by a virtual machine. You create VNICs when you create a virtual machine. The **Virtual NICs** tab is used to display the VNICs assigned to different virtual machines within your environment and to control the MAC addresses applied to each VNIC.

The **Virtual NICs** tab presents a list of all of the VNICs configured within Oracle VM Manager in tabular format. The following fields are displayed for each VNIC:

- **Name:** The name of the VNIC, which is usually the same as the MAC address assigned to it.
- **Virtual NIC:** The MAC address of the VNIC.
- **Network:** The network that the VNIC is attached to.
- **Assigned to VM:** The virtual machine that the VNIC is assigned to.
- **Assigned to VM Template:** The virtual machine template that the VNIC is assigned to.

Above the table on the **Virtual NICs** tab are a set of editable fields that allow you to customize the MAC address range that can be assigned to VNICs as they are generated within your environment. The fields accept valid hexadecimal characters between 00 and FF. The first three fields (octets) represent the Organizationally Unique Identifier (OUI). Changing these fields can cause network conflicts and ultimately network failure and is not recommended. If you edit the MAC address range, you must click the [Apply Range](#) button to save your changes. To reset the range, you can click the [Reset Range](#) button.

If you select to change the first three octets of the OUI, a warning message is displayed, explaining the consequences of this change, since the MAC addresses assigned to your VNICs can overlap with vendor assigned OUIs. If you proceed to make this change, despite this warning, you receive no subsequent warnings for changing these three octets.

Changing the MAC address range affects the creation of subsequent VNICs during the process of creating or editing a virtual machine. It does not automatically update the MAC addresses already assigned to your virtual machines. To do this, you must edit each virtual machine to change the MAC address there.

For information on creating, editing and removing VNICs on virtual machines, please refer to [Section 3.5.2.1, "Edit Virtual Machine"](#) and [Section 3.1.3, "Create Virtual Machine"](#).



Caution

It is important that you do not have overlapping MAC address ranges as this can lead to issues tracing network issues. Oracle VM Manager attempts to prevent the likelihood of this happening by generating unique MAC addresses. However, if you run more than one Oracle VM Manager instance, it is possible that an overlapping MAC address could be generated. If you create a MAC address that is already in the Oracle VM Manager database, an error message is displayed.

Chapter 6 Storage Tab

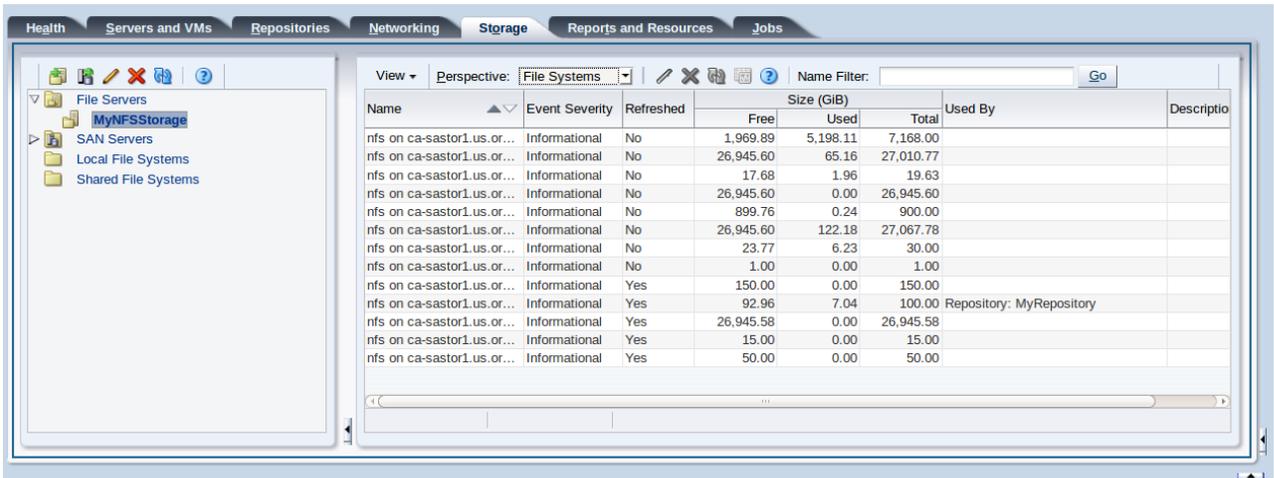
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Use the **Storage** tab to manage, discover and edit file servers and SAN servers (storage arrays), physical disks, access groups and volume groups.

Figure 6.1, “Storage tab” shows the **Storage** tab.

Figure 6.1 Storage tab



The **Storage** tab contains the **Perspectives** set out in [Table 6.1, “Storage Tab Perspective”](#). The **Perspectives** available in any particular view vary depending on the item selected in the navigation tree. This table provides a quick reference for all of the available perspectives in the **Storage** tab. Each perspective provides a different view of your configuration and also includes its own toolbar.

Table 6.1 Storage Tab Perspective

Management Pane Perspective	Description
File Servers	<p>Lists the file servers which contain file-based storage. Use this tab to register, edit, delete and discover file-based storage.</p> <p>Select File Servers in the navigation tree to display this tab.</p> <p>See What Types of Storage Can be Used? for more information on file-based storage.</p>
File Systems	<p>Lists the file systems available on the file server. Use this tab to discover edit, refresh, delete and display events for file systems.</p> <p>Use the Name Filter input field to specify search criteria to filter the displayed results.</p> <p>See Section 1.16, “Name Filters” for more information.</p> <p>Select a file server in the navigation tree and then select File Systems in the Perspective drop-down list to display this tab.</p>
Local File Systems	<p>Lists the local file systems available on the file server. Use this tab to refresh and delete local file systems.</p> <p>Select the Local File Systems folder in the navigation tree to display this tab.</p>
Shared File Systems	<p>Lists all of the shared file systems available within Oracle VM Manager within the management pane. Use this tab to edit, refresh and delete shared files systems.</p>

Management Pane Perspective	Description
	Select the Shared File Systems folder in the navigation tree to display this tab.
SAN Servers	<p>Lists the SAN servers (storage arrays). Use this tab to register, edit, delete, refresh and discover SAN servers.</p> <p>Use the Name Filter input field to specify search criteria to filter the displayed results.</p> <p>See Section 1.16, "Name Filters" for more information.</p> <p>Select SAN Servers in the navigation tree to display this tab.</p> <p>See What Types of Storage Can be Used? for more information on storage arrays.</p>
Physical Disks	<p>Lists the physical disks on the storage array. Use this tab to create, edit, clone, delete, refresh, display servers using a physical disk, and display events for physical disks.</p> <p>Select a storage array in the navigation tree and then select Physical Disks in the Perspective drop-down list to display this tab.</p>
Access Groups	<p>Lists the access groups for the storage array. Use this tab to create, edit, delete, present/unpresent and display events for storage array access groups. Also use this tab to grant access to physical disks in the storage array to Oracle VM Servers using the access groups.</p> <p>Select a storage array in the navigation tree and then select Access Groups in the Perspective drop-down list to display this tab.</p>
Volume Groups	<p>Lists the volume groups for the storage array. Use this tab to create, edit and delete storage array volume groups. Also use this tab to grant access to physical disks in the storage array to Oracle VM Servers using the volume groups.</p> <p>Select a storage array in the navigation tree and then select Volume Groups in the Perspective drop-down list to display this tab.</p>
Info	<p>Displays a high-level view of the selected object. The Info pane contents change to reflect information about the object selected in the navigation tree. You can use this pane to view information about repositories in your environment.</p> <p>Select Info in the Perspective drop-down list to display the Info pane.</p>
Events	<p>Events are displayed for each object in the navigation tree and displays events related to that object. Select Events in the Perspective drop-down list to display the Events pane.</p>

6.1 Toolbar

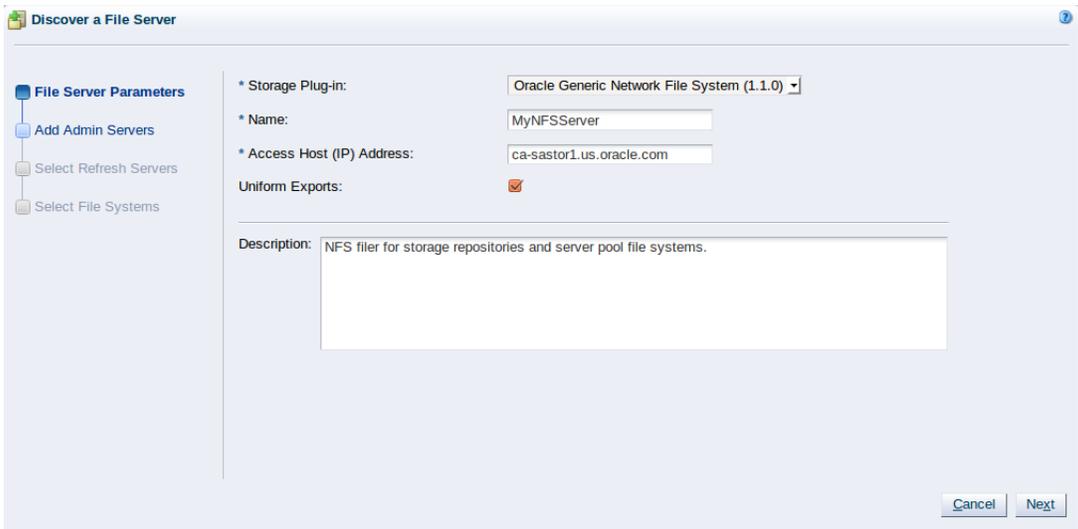
The navigation pane includes its own toolbar that provides quick access to the most commonly used configuration tools for the **Storage** tab. Clicking on any of the icons provided in the toolbar opens a dialog or wizard that can guide you through the configuration process for that item. The following tools are available in this toolbar:

-  [Discover File Server](#)
-  [Discover SAN Server](#)

6.1.1 Discover File Server

To discover a file server:

1. Make sure that your storage server exposes a writable file system to the storage network of your server pool.
2. Select the **Storage** tab.
3. Click **Discover File Server**  in the toolbar to start the **Discover a File Server** wizard.
4. The **File Server Parameters** step is displayed in the wizard, where you enter the information necessary for Oracle VM Manager to discover the external storage mount points.



Enter the storage information:

- **Storage Plug-in:** The Oracle VM Storage Connect plug-in corresponding to the type of file server (generic NFS or vendor-specific). As Oracle VM Storage Connect plug-in are located on the Oracle VM Servers, this field is only populated if you have already performed Server Discovery. You cannot add storage without taking this step first.
- **Name:** The name you wish to use to identify the file server.
- **Access Host (IP) Address:** The host name or IP address of the server offering the file system.
- **Uniform Exports:** If all Oracle VM Servers in all server pools have access to the same exports on the file server, leave this as the default (checked). If the file server is configured to offer different exports to different server pools, this box should be unchecked and, once you have completed the steps in the wizard, you need to configure Access Groups so that Oracle VM Manager can be made aware of export permissions. See [Section 6.4.4, “Access Groups Perspective”](#) for more information.



Important

Non-uniform exports are not intended for servers within the same server pool. Your NFS server should be configured to, at least, provide the same exports to all of the servers that belong to a particular clustered server pool.

- **Description:** Optional information you would like to add about this file server.

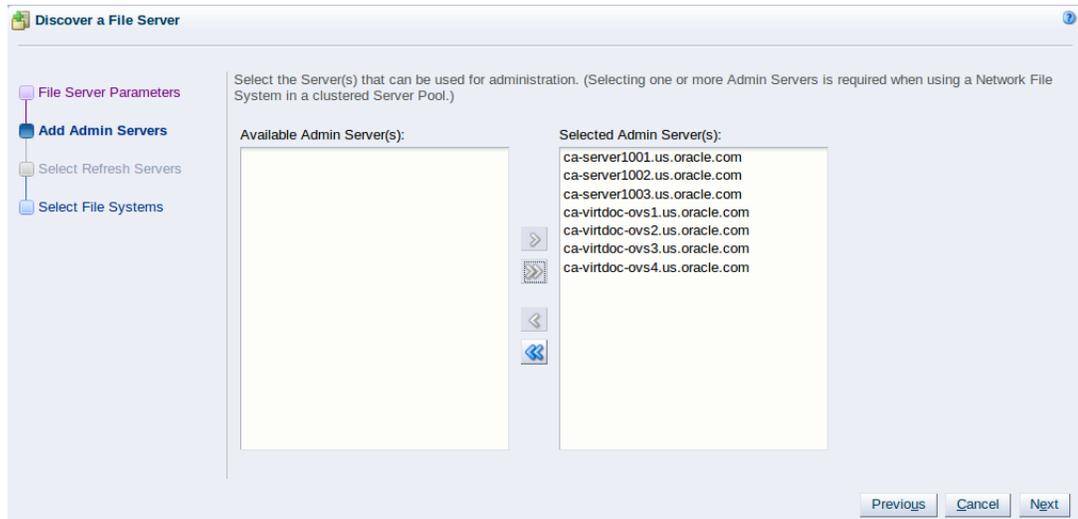
If you are adding a non-generic file server, for example a Sun ZFS Storage Appliance, also enter the additional plug-in options to enable Oracle VM Manager to access the file server's configuration management functions:

- **Admin Host:** The host name or IP address where administrative access to the file server is allowed with appropriate credentials.
- **Admin User Name:** A user name with administrator access to the file server.
- **Admin Password:** The administrator password for the user name you entered.

Click **Next**.

5. The **Add Admin Servers** step is displayed in the wizard. If you are working with a non-clustered server pool, you may skip this step. Admin servers are designated Oracle VM Servers that are capable of logging into a storage array or file server to perform administrative functions such as extending a file system or creating a new LUN. In the case of an NFS file server, admin servers are only used to validate the file server. For backward compatibility reasons, admin servers are also capable of being used to perform file server refreshes in much the same way as [refresh servers](#).

Use the arrow buttons to move the required Oracle VM Servers from the **Available Admin Server(s)** box to the **Selected Admin Server(s)** box.



Click **Next**.

6. If you are using non-uniform file system exports (as selected in the first dialog of this wizard), the **Select Refresh Servers** step is displayed in the wizard. Refresh server are designated Oracle VM Servers that have visibility of one or more file systems on an NFS file server. These servers are used for file system refreshing across server pools.

Each file system must be assigned at least one refresh server to allow for file system refreshing. During the refresh of a file server, the refresh servers are used to refresh all file systems used across all pools.

For this reason it is critical that your refresh server list contains at least one server from each server pool.

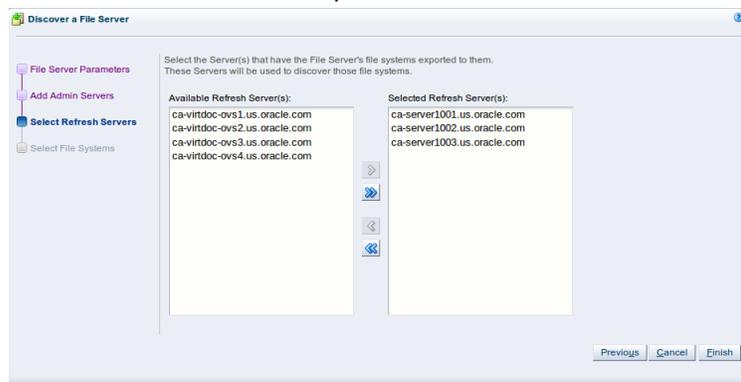


Important

In some environments, it is plausible to expect that the file server is configured to provide different file system exports to different server pools. Therefore, it is possible that no single server has access to all of the exports provided by a file server. By assigning a server from each server pool to handle file system refreshes, Oracle VM can ensure that all file systems are refreshed across all server pools. If your environment is set up in such a way, you need to configure Access Groups so that the manager can be made aware of export permissions. See [Section 6.4.4, “Access Groups Perspective”](#) for more information.

If you select the [Refresh All](#) option available in the context menu for Server Pools on the Servers and VMs tab, the configured refresh servers specified for each file system are used to perform a comprehensive file system refresh and you are not provided with an option to use one or more alternate refresh servers.

In this dialog, you must include at least one server from each server pool that you intend to create. You may select more than one server from each server pool in order to ensure high availability, but adding more than two servers is superfluous.



Note

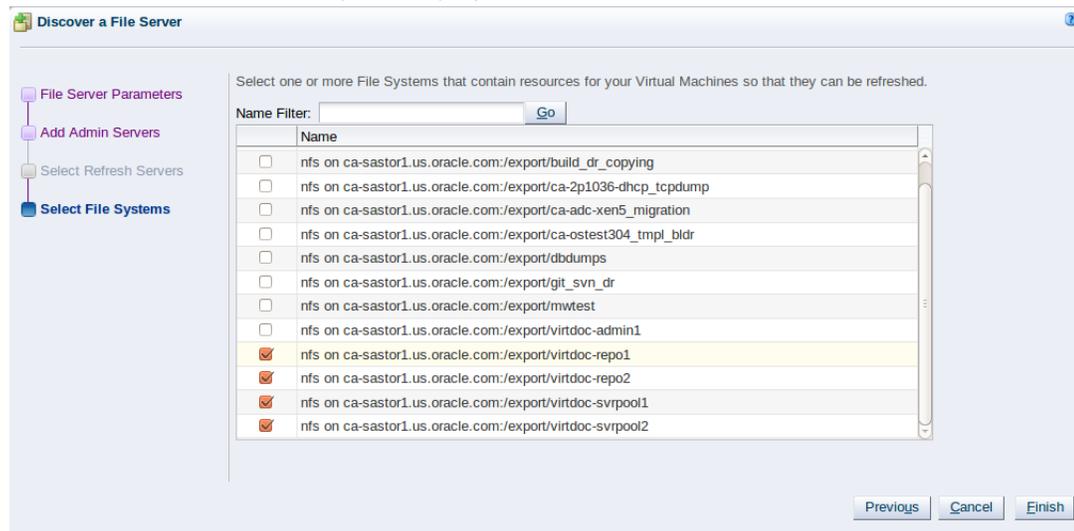
If you defined a group of admin servers in the previous step, for backward compatibility reasons, these servers are added to the refresh server list, and can be used to perform file server refreshes as well. This is not apparent in the Oracle VM Manager Web Interface.

7. If you are using non-uniform file system exports (as selected in the first dialog of this wizard), click **Finish** to complete the wizard. A message is displayed to inform you that you should now create access groups for the file server. See [Section 6.4.4, “Access Groups Perspective”](#) for information on creating an access group. When at least one access group is configured, you should then refresh the

file systems on the file server to make them available for use in Oracle VM Manager. [Section 6.3.1.4, “Refresh File Server”](#) for information on refreshing a file server.

If you are using uniform file system exports, click **Next** to proceed to the **Select File Systems** step of the wizard. If any file systems contain existing virtual machine resources, select the corresponding check boxes to have Oracle VM Manager add the existing resources to the environment.

At the top of the dialog box there is an option to provide a **Name Filter**. You can use this filter to specify search criteria to limit the objects displayed. See [Section 1.16, “Name Filters”](#) for more information.



Click **Finish** to complete the file server registration.

The new file server appears in the navigation pane, under **File Servers**.

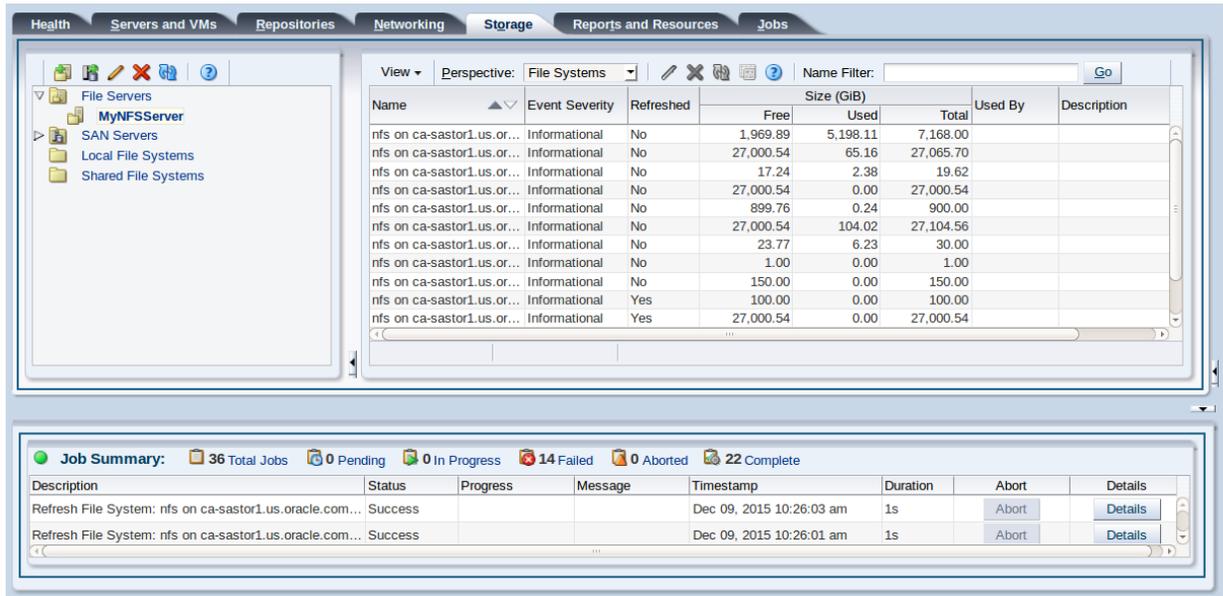


Note

If you created shares to be used as server pool file systems, these are discovered in the same process. Since these file systems are relatively small, be sure to keep those available for the server pools and create storage repositories on the higher capacity file systems.

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, and if you

select the file server in the navigation pane, the available file systems appear in the **File Systems** overview table in the management pane.



Warning

If a server is unable to mount the file system for some reason, such as a permissions related issue, Oracle VM Manager does not report the failure as this would stop any further mounting. If a server is unable to access a file system the reason is reported in the `/var/log/ovs-agent.log` log file on the server.

6.1.2 Discover SAN Server

This first phase covers the discovery and registration part, meaning how you discover the container of the storage elements you intend to use in your environment.

Depending on the selected storage type and plug-in, you may be required to enter additional information than shown in this example (which uses an iSCSI SAN server) when registering your storage array, as shown in the following table.

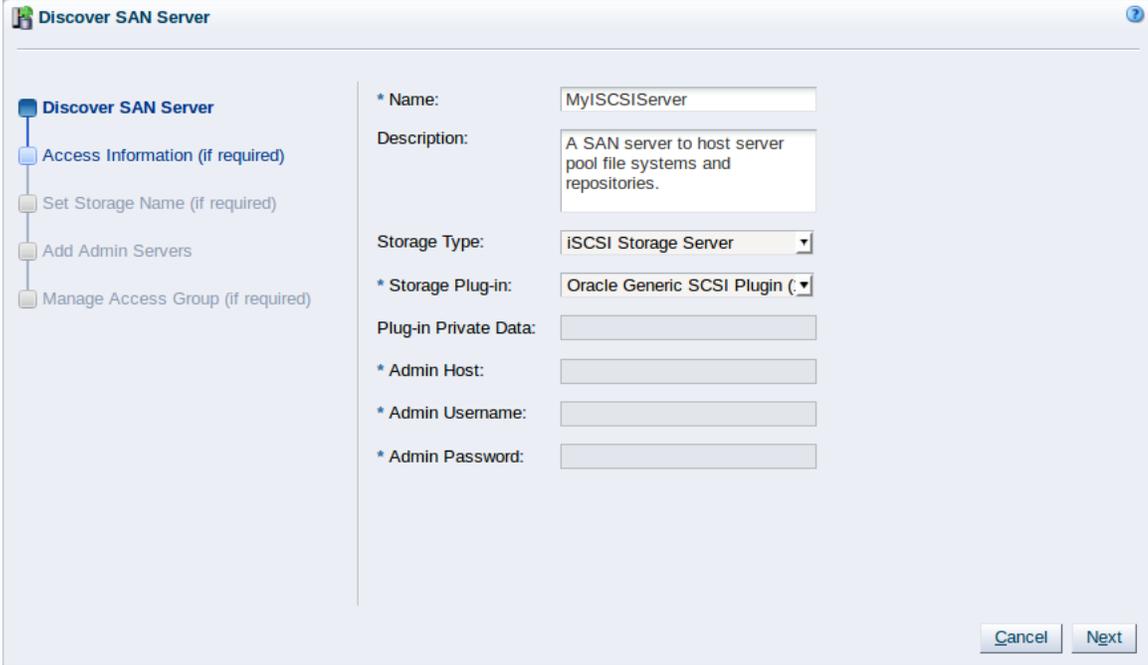
Table 6.2 Required Information for Registering Different Storage Types

Information Field Required	Generic iSCSI	Vendor-specific iSCSI	Generic Fibre Channel	Vendor-specific Fibre Channel
Access host and port	Yes	Yes	No	No
Access credentials/CHAP	No	Optional	No	No
Administration information	No	Yes	No	Yes
Plug-in private data	No	Optional	No	Optional

To discover a storage array:

1. Make sure that your storage server exposes raw disks (Fibre Channel SAN volumes, iSCSI targets and LUNs) to the storage network of your server pool.
2. Select the **Storage** tab.

3. Click **Discover SAN Server**  to start the **Discover SAN Server** wizard.
4. The **Discover SAN Server** step is displayed in the wizard, where you enter the information necessary for Oracle VM Manager to discover the external storage elements.



Enter the SAN storage information:

- **Name:** The name you wish to use to identify the SAN server.
- **Description:** Optional information you would like to add about this SAN server.
- **Storage Type:** The array is either a fibre channel or an iSCSI storage server.
- **Storage Plug-in:** The storage plug-in corresponding to the type of storage array, which is either generic iSCSI, or a vendor-specific iSCSI or fibre channel plug-in. As Oracle VM Storage Connect plug-in are located on the Oracle VM Servers, this field is only populated if you have already performed Server Discovery. You cannot add storage without taking this step first.
- **Plugin Private Data:** Any vendor-specific Oracle VM Storage Connect plug-in data that may be required. This is not available to generic storage.



Note

When registering a vendor-specific storage array, be sure to double-check the information you entered in the plug-in private data field. Once the storage

array is registered, this field can no longer be modified. If you need to update the plug-in private data, you must unregister and re-register the storage array.

- **Admin Host:** The host name or IP address of the administration host. This is not available to generic storage.
- **Admin Username:** The admin host username. This is not available to generic storage.
- **Admin Password:** The password for the admin user. This is not available to generic storage.

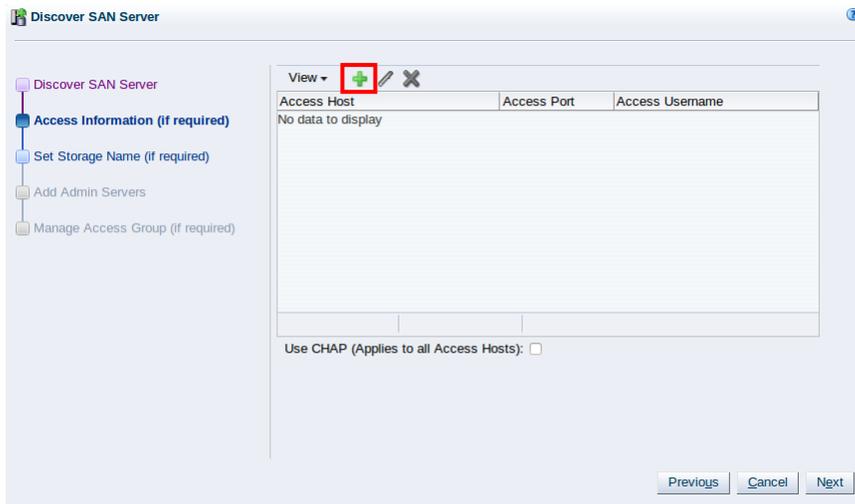
Click **Next**.

5. The **Access Information** step is displayed in the wizard.



Note

This is not applicable to Fibre Channel storage arrays. Although Fibre Channel storage arrays have a host, they do not have an access host IP address defined in Oracle VM Manager, and as a result, specifying access information is not required.



An access host is the IP address of the network interface that has access to the SAN server and creates a network path to the storage. In this dialog enter one or more access hosts to create network paths to the storage. To add multiple paths (for [multipathing](#)), add multiple access hosts. You must have at least one access host to the storage. On some iSCSI servers, only one access host is supported, so your screen may differ from the example in this step. If so, enter the access host IP

address, access port and optionally the CHAP authentication details on the screen that you see, and the remaining parts of this step are not required to perform.

If you want to use CHAP authentication to connect to the SAN server, check the **Use CHAP** check box.

Click **Create New Access Host** + to add access hosts for the SAN server.

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

+ Create Access Host

* Access Host:

* Access Port:

Access Username:

Access Password:

i Enable CHAP for all Access Hosts to enable the Username and Password.

Enter the IP address and access port of the host that has access to the SAN server. The default access port for iSCSI is 3260. If you checked CHAP authentication in the previous dialog, enter the username and password to access the storage. Click **OK**.

Discover SAN Server

Discover SAN Server

Access Information (if required)

Set Storage Name (if required)

Add Admin Servers

Manage Access Group (if required)

View

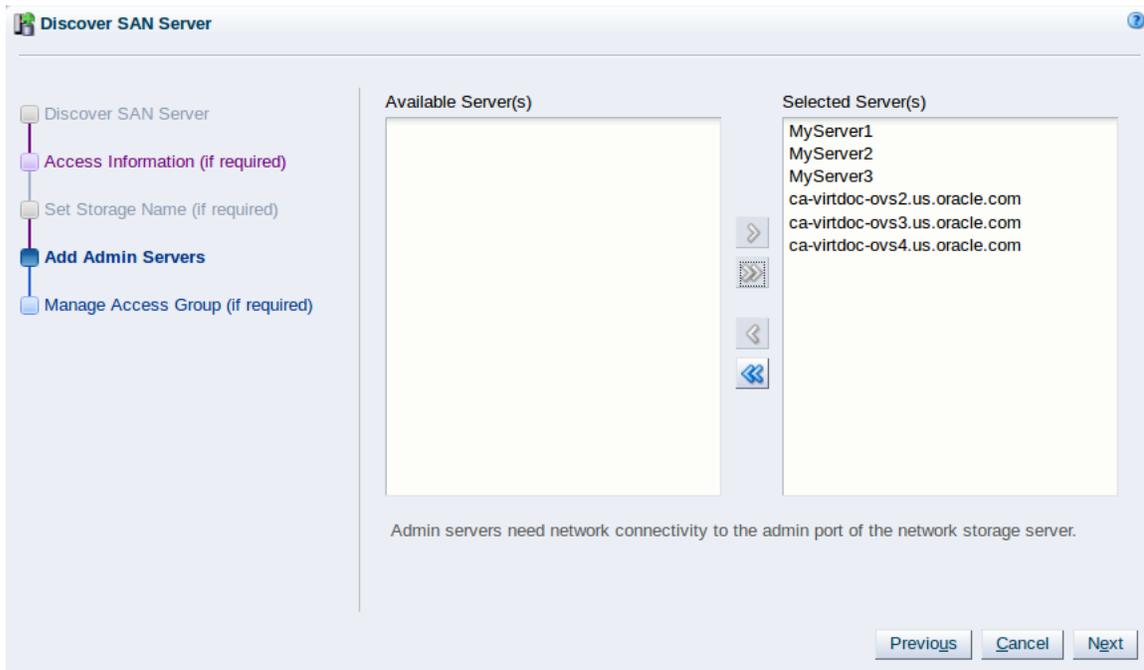
Access Host	Access Port	Access Username
10.172.76.130	3260	

Use CHAP (Applies to all Access Hosts):

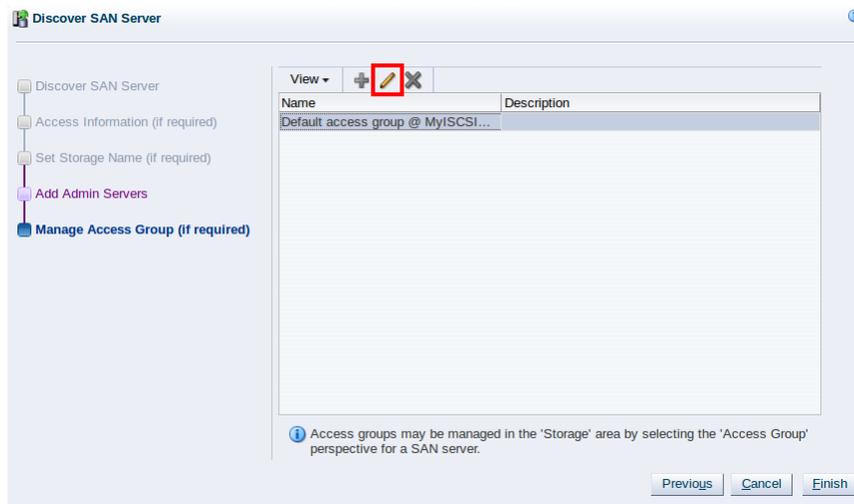
Repeat this step for each access host, for example, you may have access hosts such as 10.172.76.130, 10.172.76.131, 10.172.77.130, and 10.172.77.131 to enable [multipathing](#).

When you have entered all access hosts, click **Next**.

- 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, you must 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**.
- The **Add Admin Servers** step is displayed in the wizard. If you are working with a non-clustered server pool, you may skip this step.



Use the arrow buttons to move the required Oracle VM Servers from the **Available Server(s)** box to the **Selected Server(s)** 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**.

8. The **Manage Access Group** step is displayed in the wizard.

This final phase of the wizard offers you the access group configuration functionality. Within an access group you add the storage initiators to Oracle VM Servers to complete the storage configuration.



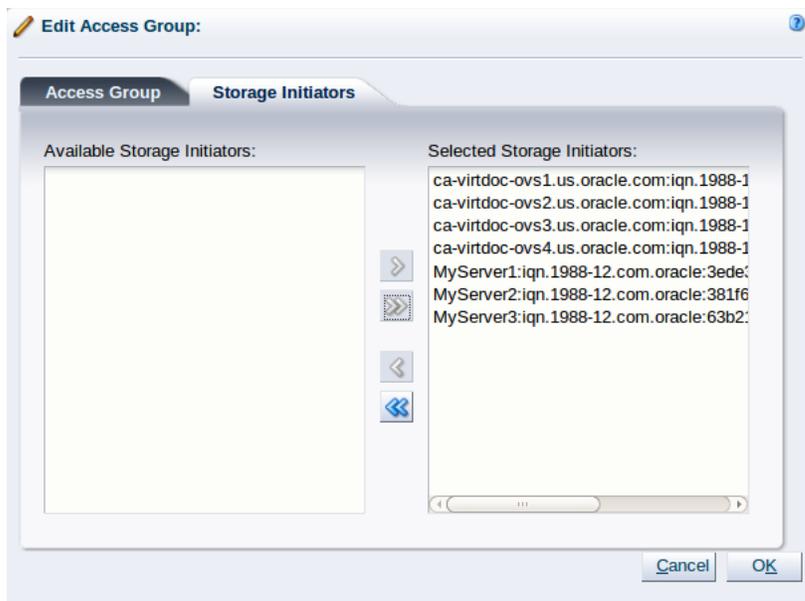
Important

You must add a storage initiator to an access group for each Oracle VM Server that you want to access the SAN server. If you do not add any storage initiators, Oracle VM cannot log in to the storage array and no LUNs can be accessed.

A default access group may be created during the discovery process.

- If no access group exists, you can create one from this dialog by clicking **Create Access Group** + .
- If you want to modify an existing access group for use with this SAN server, select it from the list and click **Edit Access Group** ✎ .
- If necessary, you can delete an access group by clicking **Delete Access Group** ✕

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**.

The access group management functionality is also available outside this wizard. To access it, you must go to the **Storage** tab, select a SAN server in the navigation pane, and change the **Perspective** field in the management pane to **Access Groups**, as described in [Section 6.6.4, “Access Groups Perspective”](#). Access group management for an individual Oracle VM Server is also described in [Section 3.5.7.1, “View Access Groups for Selected Initiator”](#).

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

The new storage array appears in the navigation pane, under SAN Servers. Prior to the access group configuration, the Oracle VM Storage Connect plug-in established a link to the storage location. By configuring the access group(s), you grant one or more Oracle VM Servers access to the storage array, so that the storage elements or physical disks offered by the SAN server appear in Oracle VM Manager. Access group configuration and management is described in detail in the next section. The exception to the rule is the fibre channel storage array, which does not use the concept of access groups but offers its LUNs to all Oracle VM Servers connected to the fibre channel storage network.



Note

If you configured CHAP authentication for your SAN server and CHAP is not properly configured on your SAN storage device, or the authentication credentials that you provide for your Access Groups are incorrect, none of the LUNs or physical disks available on your SAN server are discovered and no error message is returned. You may need to check the logs on your SAN server to evaluate the required action that should be taken.

6.2 Summary

On the **Storage** tab there is a navigation pane. At the top of the navigation pane is the navigation toolbar discussed in [Section 6.1, “Toolbar”](#). Within the navigation pane is a navigation tree that allows you to navigate through the different object types that comprise your environment.

Different objects may be nested at different levels within the navigation tree depending on their relationships to each other. Clicking on different objects or folders within the navigation tree enables access to the different perspectives available for that object in the management pane.

The navigation tree that is available within the **Storage** tab conforms to the following structure:

- [File Servers Folder](#)
 - [File Server Item](#)
- [SAN Servers Folder](#)
 - [SAN Server Item](#)
 - [Volume Group Item](#)
 - [Unmanaged Fibre Channel Storage Array Item](#)
 - [Unmanaged iSCSI Storage Array Item](#)
- [Local File Systems Item](#)
- [Shared File Systems Item](#)

Each navigation element has a number of associated perspectives offering different views of the objects contained by the selected navigation element, or the configuration information specific to it. For many of these perspectives, an associated toolbar is provided so that it is possible to perform different configuration or management tasks on elements selected in the management pane.

6.3 File Servers Folder

The **File Servers** navigation folder contains each file server that has been configured within the environment. The structure of the navigation provided in the navigation tree is discussed in more detail in [Section 6.2, “Summary”](#).

Clicking on the **File Servers** navigation folder in the navigation tree allows you to access different perspectives in the management pane. Each perspective provides its own view of all of the file servers within Oracle VM Manager. Most of the perspectives also include separate perspective toolbars that enable you to perform various configuration or management tasks specific to the view currently displayed within the management pane. The **File Servers** navigation folder offers the following perspectives within the management pane:

- [File Servers Perspective](#)

6.3.1 File Servers Perspective

The File Servers perspective lists the different file servers configured in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the file server.
- **Description:** A description entered for the file server when it was created or edited.

This perspective includes a toolbar that consists of the following options:

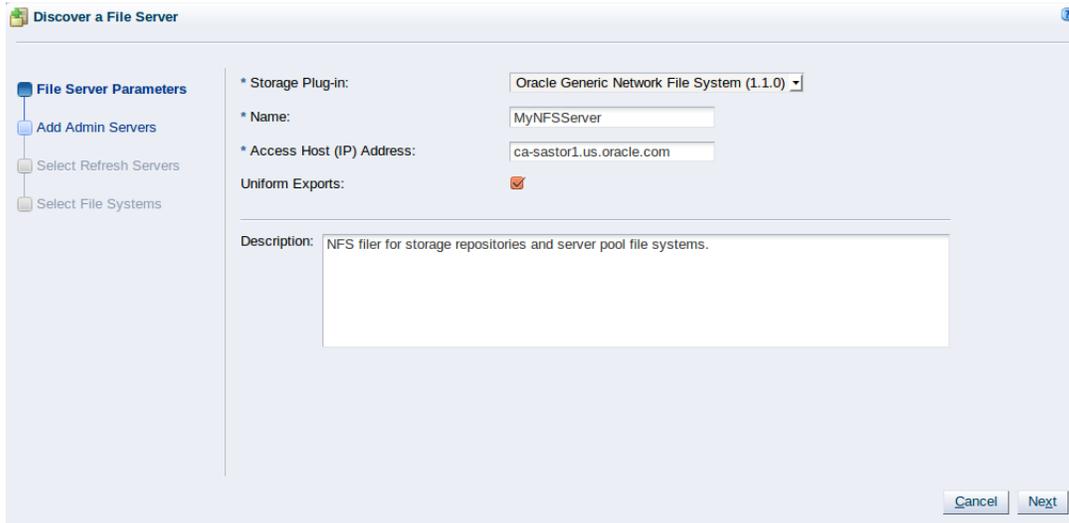
Table 6.3 File Servers Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Discover File Server...		Displays the Discover File Server wizard. Use this option to discover a new file server.
Edit File Server...		Displays the Edit File Server dialog box.
Delete File Server		Displays the Delete Confirmation dialog box. Use this option to delete the selected file server.
Refresh File Server		Refreshes the list of storage elements made available by the selected file server. Use this option to rescan a file server after making changes to its configuration. This updates the storage information known to Oracle VM Manager. Since refreshing storage may be time consuming, a confirmation dialog box is displayed before the operation is launched.
Generate Report		Generate an XML report on one or more file servers.
Help		Displays context sensitive help.

6.3.1.1 Discover File Server

To discover a file server:

1. Make sure that your storage server exposes a writable file system to the storage network of your server pool.
2. Select the **Storage** tab.
3. Click **Discover File Server**  in the toolbar to start the **Discover a File Server** wizard.
4. The **File Server Parameters** step is displayed in the wizard, where you enter the information necessary for Oracle VM Manager to discover the external storage mount points.



Enter the storage information:

- **Storage Plug-in:** The Oracle VM Storage Connect plug-in corresponding to the type of file server (generic NFS or vendor-specific). As Oracle VM Storage Connect plug-in are located on the Oracle VM Servers, this field is only populated if you have already performed Server Discovery. You cannot add storage without taking this step first.

- **Name:** The name you wish to use to identify the file server.
- **Access Host (IP) Address:** The host name or IP address of the server offering the file system.
- **Uniform Exports:** If all Oracle VM Servers in all server pools have access to the same exports on the file server, leave this as the default (checked). If the file server is configured to offer different exports to different server pools, this box should be unchecked and, once you have completed the steps in the wizard, you need to configure Access Groups so that Oracle VM Manager can be made aware of export permissions. See [Section 6.4.4, "Access Groups Perspective"](#) for more information.



Important

Non-uniform exports are not intended for servers within the same server pool. Your NFS server should be configured to, at least, provide the same exports to all of the servers that belong to a particular clustered server pool.

- **Description:** Optional information you would like to add about this file server.

If you are adding a non-generic file server, for example a Sun ZFS Storage Appliance, also enter the additional plug-in options to enable Oracle VM Manager to access the file server's configuration management functions:

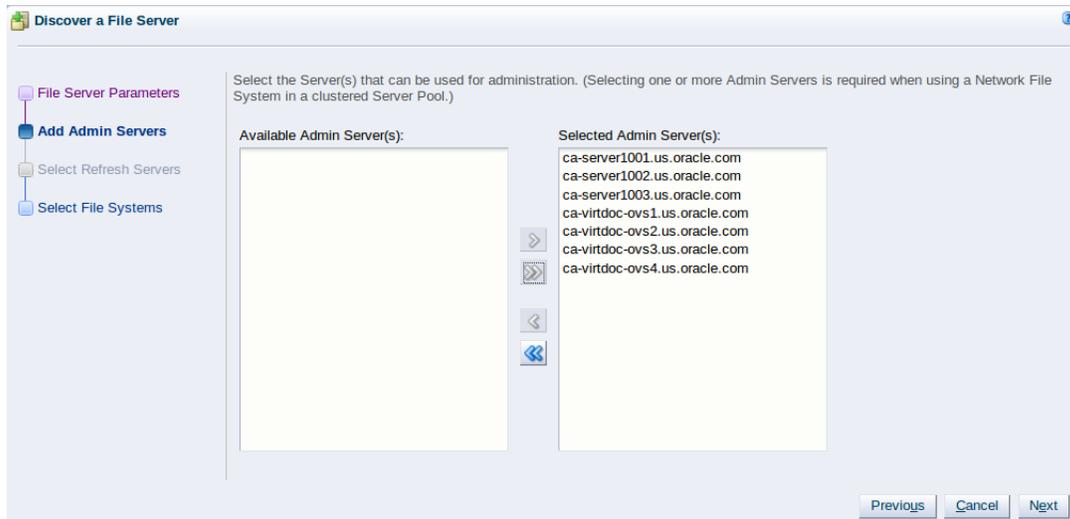
- **Admin Host:** The host name or IP address where administrative access to the file server is allowed with appropriate credentials.
- **Admin User Name:** A user name with administrator access to the file server.
- **Admin Password:** The administrator password for the user name you entered.

Click **Next**.

5. The **Add Admin Servers** step is displayed in the wizard. If you are working with a non-clustered server pool, you may skip this step. Admin servers are designated Oracle VM Servers that are capable of logging into a storage array or file server to perform administrative functions such as extending a file system or creating a new LUN. In the case of an NFS file server, admin servers are only used to

validate the file server. For backward compatibility reasons, admin servers are also capable of being used to perform file server refreshes in much the same way as [refresh servers](#).

Use the arrow buttons to move the required Oracle VM Servers from the **Available Admin Server(s)** box to the **Selected Admin Server(s)** box.



Click **Next**.

- If you are using non-uniform file system exports (as selected in the first dialog of this wizard), the **Select Refresh Servers** step is displayed in the wizard. Refresh server are designated Oracle VM Servers that have visibility of one or more file systems on an NFS file server. These servers are used for file system refreshing across server pools.

Each file system must be assigned at least one refresh server to allow for file system refreshing. During the refresh of a file server, the refresh servers are used to refresh all file systems used across all pools. For this reason it is critical that your refresh server list contains at least one server from each server pool.



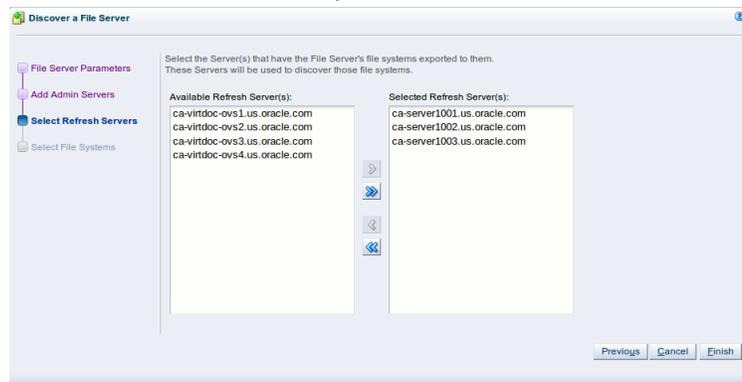
Important

In some environments, it is plausible to expect that the file server is configured to provide different file system exports to different server pools. Therefore, it is possible that no single server has access to all of the exports provided by a file server. By assigning a server from each server pool to handle file system refreshes, Oracle VM can ensure that all file systems are refreshed across all server pools. If your environment is set up in such a way, you need to configure Access Groups so that the manager can be made aware of export permissions. See [Section 6.4.4, "Access Groups Perspective"](#) for more information.

If you select the [Refresh All](#) option available in the context menu for Server Pools on the Servers and VMs tab, the configured refresh servers specified for each file system are used to perform a

comprehensive file system refresh and you are not provided with an option to use one or more alternate refresh servers.

In this dialog, you must include at least one server from each server pool that you intend to create. You may select more than one server from each server pool in order to ensure high availability, but adding more than two servers is superfluous.



Note

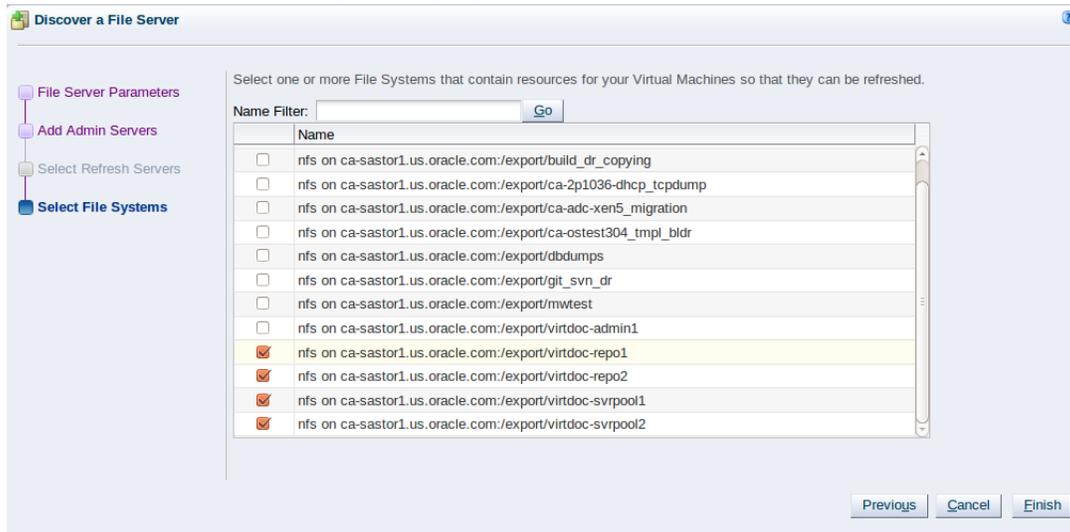
If you defined a group of admin servers in the previous step, for backward compatibility reasons, these servers are added to the refresh server list, and can be used to perform file server refreshes as well. This is not apparent in the Oracle VM Manager Web Interface.

7. If you are using non-uniform file system exports (as selected in the first dialog of this wizard), click **Finish** to complete the wizard. A message is displayed to inform you that you should now create access groups for the file server. See [Section 6.4.4, "Access Groups Perspective"](#) for information on creating an access group. When at least one access group is configured, you should then refresh the

file systems on the file server to make them available for use in Oracle VM Manager. [Section 6.3.1.4, “Refresh File Server”](#) for information on refreshing a file server.

If you are using uniform file system exports, click **Next** to proceed to the **Select File Systems** step of the wizard. If any file systems contain existing virtual machine resources, select the corresponding check boxes to have Oracle VM Manager add the existing resources to the environment.

At the top of the dialog box there is an option to provide a **Name Filter**. You can use this filter to specify search criteria to limit the objects displayed. See [Section 1.16, “Name Filters”](#) for more information.



Click **Finish** to complete the file server registration.

The new file server appears in the navigation pane, under **File Servers**.



Note

If you created shares to be used as server pool file systems, these are discovered in the same process. Since these file systems are relatively small, be sure to keep those available for the server pools and create storage repositories on the higher capacity file systems.

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, and if you

select the file server in the navigation pane, the available file systems appear in the **File Systems** overview table in the management pane.

Name	Event Severity	Refreshed	Size (GIB)			Used By	Description
			Free	Used	Total		
nfs on ca-sastor1.us.or...	Informational	No	1,969.89	5,198.11	7,168.00		
nfs on ca-sastor1.us.or...	Informational	No	27,000.54	65.16	27,065.70		
nfs on ca-sastor1.us.or...	Informational	No	17.24	2.38	19.62		
nfs on ca-sastor1.us.or...	Informational	No	27,000.54	0.00	27,000.54		
nfs on ca-sastor1.us.or...	Informational	No	899.76	0.24	900.00		
nfs on ca-sastor1.us.or...	Informational	No	27,000.54	104.02	27,104.56		
nfs on ca-sastor1.us.or...	Informational	No	23.77	6.23	30.00		
nfs on ca-sastor1.us.or...	Informational	No	1.00	0.00	1.00		
nfs on ca-sastor1.us.or...	Informational	No	150.00	0.00	150.00		
nfs on ca-sastor1.us.or...	Informational	Yes	100.00	0.00	100.00		
nfs on ca-sastor1.us.or...	Informational	Yes	27,000.54	0.00	27,000.54		

Description	Status	Progress	Message	Timestamp	Duration	Abort	Details
Refresh File System: nfs on ca-sastor1.us.oracle.com...	Success			Dec 09, 2015 10:26:03 am	1s	Abort	Details
Refresh File System: nfs on ca-sastor1.us.oracle.com...	Success			Dec 09, 2015 10:26:01 am	1s	Abort	Details



Warning

If a server is unable to mount the file system for some reason, such as a permissions related issue, Oracle VM Manager does not report the failure as this would stop any further mounting. If a server is unable to access a file system the reason is reported in the `/var/log/ovs-agent.log` log file on the server.

6.3.1.2 Edit File Server

It is possible to edit the configuration for an existing file server. The steps and options to do so are described below.

To edit the registered file server configuration:

1. If you need to modify a file server, select the **File Servers** folder in the navigation pane, select the file servers in the management pane table.
2. Click the  **Edit File Server** icon in the toolbar.
3. A dialog opens to allow you to reconfigure the file server. The dialog has three separate tabs:
 - **Configuration:** This tab allows you to edit the following information:
 - **Name:** The name of the file server in Oracle VM Manager.
 - **Access Host:** The host name or IP address of the server offering the file system.
 - **Uniform Exports:** If all Oracle VM Servers in all server pools have access to the same exports on the file server, leave this as the default (checked). If the file server is configured to offer different exports to different server pools, this box should be unchecked and, once you have completed the steps in the wizard, you need to configure Access Groups so that Oracle VM Manager can be made aware of export permissions. See [Section 6.4.4, "Access Groups Perspective"](#) for more information.



Important

Non-uniform exports are not intended for servers within the same server pool. Your NFS server should be configured to, at least, provide the same exports to all of the servers that belong to a particular clustered server pool.

If you change the file server from non-uniform to uniform file system exports, all refresh servers will be removed. A confirmation dialog is displayed before the action can be completed.

- **Description:** Optional information you would like to add about this file server.
- **Admin Host:** The host name or IP address where administrative access to the file server is allowed with appropriate credentials. (Only available for non-generic file servers).
- **Admin User Name:** A user name with administrator access to the file server. (Only available for non-generic file servers).
- **Admin Password:** The administrator password for the user name you entered. (Only available for non-generic file servers).
- **Admin Servers:** This tab allows you to manage which servers are delegated as Admin servers. Admin servers are Oracle VM Servers that are capable of logging into a storage array or file server to perform administrative functions such as extending a file system or creating a new LUN. In the case of an NFS file server, admin servers are only used to validate the file server.

- **Refresh Servers:**



Note

The **Refresh Servers** tab is only available if you are using non-uniform file system exports (the uniform exports check box on the **Configuration** tab is unchecked).

This tab allows you to manage which servers are delegated as Refresh servers. Each file system must be assigned at least one refresh server to allow for file system refreshing. During the refresh of a file server, the refresh servers are used to refresh all file systems used across all pools. For this reason it is critical that your refresh server list contains at least one server from each server pool.

4. When you have finished editing the file server, click **OK** to save the changes, or **Cancel** to exit out of the dialog without saving any changes.

6.3.1.3 Delete File Server

It is possible to delete an existing file server if it is no longer in use by any servers within any server pools and the Oracle VM Storage Connect plug-in that you are using supports this operation. The steps and options to do so are described below.

To delete the registered file server:

1. If you need to delete a file server, select the **File Servers** folder in the navigation pane and select one or more file servers in the management pane table.
2. Click on the **✗ Delete File Server** icon in the toolbar.
3. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the file server.

6.3.1.4 Refresh File Server

When changes are made to the disks, file systems or exports on a file server, it is useful to refresh the configuration of your file servers to make Oracle VM Manager aware of the changes.

To refresh the registered file server:

1. Select the **File Servers** folder in the navigation pane, select one or more file servers in the management pane table.
2. Click on the  **Refresh File Server** option in the toolbar.
3. The selected file servers are refreshed and their configurations are updated within Oracle VM Manager.

6.3.1.5 Generate Report

You can generate an XML report on one or more file servers. For more information about object reporting, see [Section 7.1, "Reports"](#).

To generate a report on file servers:

1. Select the **File Servers** folder in the navigation pane.
2. Select one or more file servers in the management pane table.
3. Click  **Generate Report** in the management pane toolbar.
4. The report is generated and sent to the browser.

6.4 File Server Item

Each **File Server** navigation item is listed underneath the [Section 6.3, "File Servers Folder"](#) when it has been expanded. The structure of the navigation provided in the navigation tree is discussed in more detail in [Section 6.2, "Summary"](#).

Clicking on a **File Server** navigation item in the navigation tree allows you to access different perspectives in the management pane. Each perspective provides its own view of the file server within Oracle VM Manager. Most of the perspectives also include separate perspective toolbars that enable you to perform various configuration or management tasks specific to the view currently displayed within the management pane. A **File Server** navigation item offers the following perspectives within the management pane:

- [Info Perspective](#)
- [Events Perspective](#)
- [File Systems Perspective](#)
- [Access Groups Perspective](#)

6.4.1 Info Perspective

The Info perspective is common to many elements within the Oracle VM Manager Web Interface. This perspective always shows the individually configured parameters for an item that is currently selected in the navigation tree. Some of these configured parameters may be automatically populated through a discovery process, while others may have been configured manually during the creation of the object that is selected.

The Info perspective or dialog contains a perspective toolbar with the following options:

Table 6.4 Info Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Help		Displays context sensitive help.

This perspective includes information reported by the NFS File Server based on information returned by the Oracle VM Storage Connect plug-in in use. Some fields may not be populated, if the plug-in does not support them. The information and fields available may vary depending on the plug-in that you are using. The Generic File Server plug-in returns the following information:

- **File Server Name:** The configured name for the file server.
- **Description:** The configured description for the file server.
- **Storage Name:** The storage server controller name specified when the storage server was created. Uniquely identifies the correct controller if the storage server manager supports multiple controllers.
- **Status:** The status of the file server as reported by the file server.
- **Validated:** Whether or not the file server has been validated by Oracle VM Manager. No special storage operations supported by the Oracle VM Storage Connect plug-in may occur until the storage server is validated by Oracle VM Manager.
- **Storage Plug-In:** The name of the Oracle VM Storage Connect plug-in that is used to connect to the file server.
- **Storage Plug-In Version:** The version number of the Oracle VM Storage Connect plug-in used to connect to the file server.
- **Plug-in Private Data:** Additional parameters passed to the Oracle VM Storage Connect plug-in.
- **Total Size (GiB):** The total size, in [GiB](#), reported by the file server.
- **Free Size (GiB):** The available free size, GiB, reported by the file server.
- **Used Size (GiB):** The amount of used space, in GiB, reported by the file server.

Additional fields may be listed to indicate the support status for various storage related functions as reported by the Oracle VM Storage Connect plug-in in use.

6.4.2 Events Perspective

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.5 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the [navigation tree](#). Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.

3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 🗑️ .
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

6.4.3 File Systems Perspective

The File Systems perspective lists the different file systems configured in your environment and running on an NFS file server. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the file system.
- **Event Severity:** The event level severity for each file system.
- **Refreshed:** Whether or not the file system has been refreshed.
- **Size (GiB):** A grouping that consists of the following columns:
 - **Free:** The size of the file system, in [GiB](#), that is currently free.
 - **Used:** The size of the file system, in GiB, that is currently in use.
 - **Total:** The total size, in GiB, of the file system.
- **Used By:** The server pool or servers that are making use of the file system.
- **Description:** A description entered for the file system when it was created or edited.

Note that the sizing data represented for any file system is most accurate immediately after a file system refresh has been performed. The sizing data for file systems that are in use to host repositories or server pool cluster data may be updated automatically at regular intervals if the file system statistics collection service is configured. See [Section 7.4, “Preferences”](#) for more information on configuring this service and [Section 2.4, “File System Statistics”](#) for more information on how this service gathers data.

This perspective includes a toolbar that consists of the following options:

Table 6.6 File Systems Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Edit File System...		Displays the Edit File System dialog box.
Delete File System		Displays the Delete Confirmation dialog box. Use this option to delete the selected file system.
Refresh File System		Refreshes the file systems made available by the selected file server. Use this option to rescan the file systems after making changes to its configuration. This updates the storage information known to Oracle VM Manager.
Display Selected File System Events...		Display the Events dialog box which contains the job event associated with the selected file systems.
Help		Displays context sensitive help.

6.4.3.1 Edit File System

It is possible to edit the configuration for an existing file system. The steps and options to do so are described below.

To edit an NFS file system:

1. If you need to modify an NFS file system, select a file server item contained the **File Servers** folder in the navigation pane, change perspective to the **File Systems** perspective. Select the file system that you wish to edit in the management pane table.
2. Click on the  **Edit File System** icon in the toolbar.
3. A dialog opens to allow you to reconfigure the file system. You can edit the following parameters:
 - **Name:** The name of the file system in Oracle VM Manager.
 - **Description:** Optional information you would like to add about this file system.
4. When you have finished editing the file system, click OK to save the changes, or Cancel to exit out of the dialog without saving any changes.

6.4.3.2 Delete File System

It is possible to delete an existing file system on an NFS File Server if it is no longer in use by any servers within any server pools. The steps and options to do so are described below.

To delete an NFS file system:

1. If you need to delete an NFS file system, select a file server item contained the **File Servers** folder in the navigation pane, change perspective to the **File Systems** perspective. Select the file system or file systems that you wish to delete in the management pane table.
2. Click on the  **Delete File System** icon in the toolbar.

3. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the file system.

6.4.3.3 Refresh File System

When changes are made to the file systems or exports on a file server, it is useful to refresh the configuration of your file systems to make Oracle VM Manager aware of the changes.

To refresh the file system:

1. Select a file server item contained the **File Servers** folder in the navigation pane, change perspective to the **File Systems** perspective. Select the file system or file systems that you wish to refresh in the management pane table.
2. Click on the  **Refresh File System** option in the toolbar.
3. The selected file systems are refreshed and their configurations are updated within Oracle VM Manager.

6.4.3.4 Display Events

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error *event* associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or *virtual machine* appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.7 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...**  .
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.

4. Select the error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

6.4.4 Access Groups Perspective

Usually an NFS server is configured to export the same file systems to different server pools. This setup is described as having *uniform exports*. If, however, your NFS server is configured to export *different* file systems to *different* server pools, no single server in any server pool has full access to all of the exports available on the NFS server. This setup is described as having *non-uniform exports*. In these cases, in order for Oracle VM Manager to properly handle file system refreshes, you need to configure Access Groups to define the permissions available to each server pool. If your exports are uniform across all server pools, you do not need to perform this operation.

It is important to understand that when describing uniform and non-uniform exports, we are describing how the NFS server is configured to present exports to all of the servers belonging to a particular server pool. Within any clustered server pool, all of the servers must have access to the same exports on the NFS server.

The Access Groups perspective lists the different Access Groups configured in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the access group.
- **Event Severity:** The event level severity associated with the access group.
- **File Server:** The file server that the access group applies to.
- **Servers:** The servers that belong to the access group.
- **Description:** A description entered for the access group when it was created or edited.

This perspective includes a toolbar that consists of the following options:

Table 6.8 Access Groups Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create An Access Group		Displays the Create an Access Group dialog box. Use this option to create a new access group.
Edit Access Group		Displays the Edit Access Group dialog box. Use this option to edit access group settings such as name, description, file systems belonging to the Access Group and the servers that have access to these file systems.
Delete Access Group		Displays the Delete Confirmation dialog box. Use this option to delete the selected access group.
Display Selected Access Group Events...		Display the Events dialog box which contains the job event associated with the selected access groups.
Help		Displays context sensitive help.

6.4.4.1 Create Access Group

To create Access Groups for non-uniform exports

1. In the Storage tab, expand the **File Servers** folder in the navigation pane and select a file server listed here. In the management pane, select the **Access Groups** perspective from the drop down.
2. To add a new Access Group, click the **Create an Access Group** icon .
 - a. The **Create an Access Group** wizard appears. Enter a meaningful name and description for the Access Group that you are creating. The group defines the set of file systems that are available to a particular set of servers. Click **Next**.
 - b. In the **Select File Systems** step, identify the file systems that are accessible via the set of servers that you are going to assign to the Access Group. Use the arrow buttons to move them into the **Selected File System(s)** panel. Click **Next**.
 - c. In the **Select Servers** step, select either the individual servers or the server pools that have access to the file system exports that you selected in the previous step. Use the arrow buttons to move them into the **Selected Server(s)/Selected Server Pool(s)** panel. The option to add an entire server pool to the access group is a convenience and simply adds all of the servers that belong to a particular server pool at the time that you perform the action. If you add or remove a server from a server pool after you have created the access group, the access group configuration is not automatically updated.
 - d. Click **Finish** to complete the process of defining a new Access Group.



Note

A file system may only be associated with one Access Group. If you create a new Access Group for a file system that is already associated with an existing Access Group, the file system is disassociated from the original Access Group.

6.4.4.2 Edit Access Group

To edit Access Groups for non-uniform exports

1. In the Storage tab, expand the **File Servers** folder in the navigation pane and select a file server listed here. In the management pane, select the **Access Groups** perspective from the drop down.
2. To edit an existing Access Group, click the **Edit Access Group** icon . The **Edit Access Group** dialog opens. Tabs are provided to allow you to change the Access Group details, File Systems and Servers.

6.4.4.3 Delete Access Groups

To delete Access Groups for non-uniform exports

1. On the **Storage** tab, expand the **File Servers** folder in the navigation pane and select a file server listed here. In the management pane, select the **Access Groups** perspective from the drop down.
2. To delete an existing Access Group, click the **Delete Access Group** icon . A confirmation dialog is displayed before the action can be completed.

6.4.4.4 Display Events

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the

management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error *event* associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or *virtual machine* appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.9 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 📄 to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 📄.
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 📄 to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓, or click **Acknowledge All** 📄 to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 📄 to clear all user acknowledgeable errors.

6.5 SAN Servers Folder

The **SAN Servers** navigation folder contains each SAN server that has been configured within the environment. The structure of the navigation provided in the navigation tree is discussed in more detail in [Section 6.2, “Summary”](#).

Clicking on the **SAN Servers** navigation folder in the navigation tree allows you to access different perspectives in the management pane. Each perspective provides its own view of all of the SAN servers within Oracle VM Manager. Most of the perspectives also include separate perspective toolbars that enable you to perform various configuration or management tasks specific to the view currently displayed within the management pane. The **File Servers** navigation folder offers the following perspectives within the management pane:

- [SAN Servers Perspective](#)

6.5.1 SAN Servers Perspective

The SAN Servers perspective lists the different SAN servers configured in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the SAN server.
- **Status:** The status of the SAN server (whether or not the disk is online).
- **Size (GiB):** A grouping that consists of the following columns:
 - **Allocated:** The total size available for use by the SAN server.
 - **Free:** The size of the SAN server, in GiB, that is currently free.
 - **Used:** The size of the SAN server, in GiB, that is currently in use.
 - **Total:** The total size, in GiB, of the SAN server.
- **Description:** A description entered for the SAN server when it was created or edited.

This perspective includes a toolbar that consists of the following options:

Table 6.10 SAN Servers Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Discover SAN Server...		Displays the Discover SAN Server wizard. Use this option to discover a new SAN server.
Edit SAN Server...		Displays the Edit SAN Server dialog box.
Delete SAN Server		Displays the Delete Confirmation dialog box. Use this option to delete the selected SAN server.
Refresh SAN Server		Refreshes the list of storage elements made available by the selected SAN server. Use this option to rescan a SAN server after making changes to its configuration. This updates the storage information known to Oracle VM Manager. Since refreshing storage may be time consuming, a confirmation dialog box is displayed before the operation is launched.
Generate Report		Generate an XML report on one or more SAN servers.
Help		Displays context sensitive help.

6.5.1.1 Discover SAN Server

This first phase covers the discovery and registration part, meaning how you discover the container of the storage elements you intend to use in your environment.

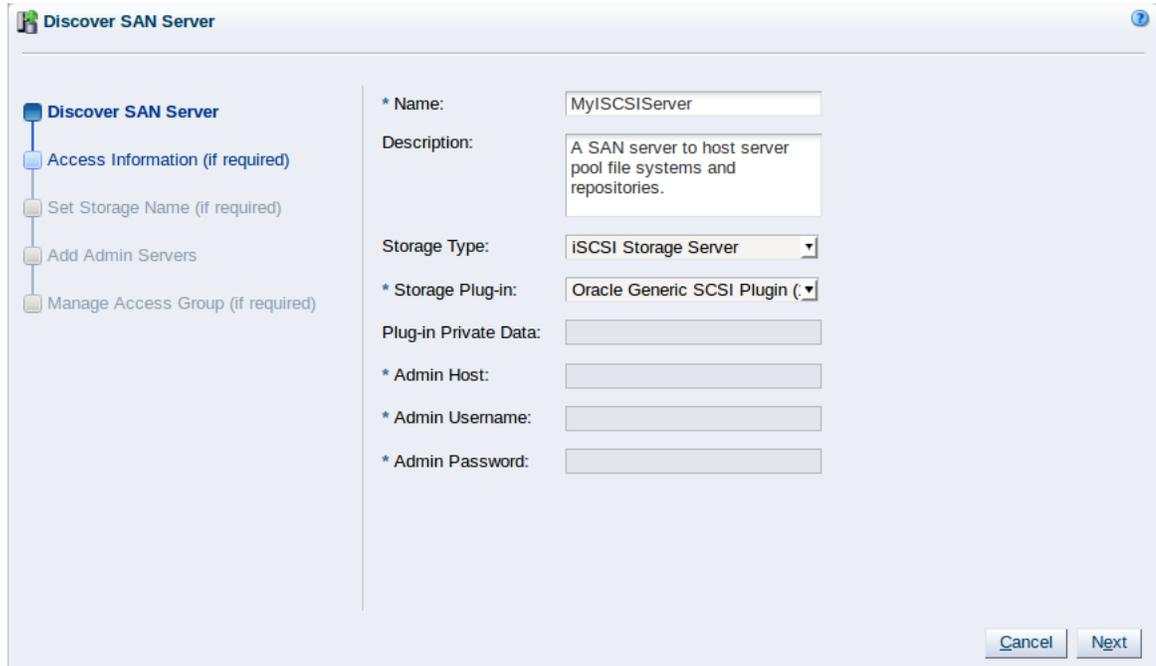
Depending on the selected storage type and plug-in, you may be required to enter additional information than shown in this example (which uses an iSCSI SAN server) when registering your storage array, as shown in the following table.

Table 6.11 Required Information for Registering Different Storage Types

Information Field Required	Generic iSCSI	Vendor-specific iSCSI	Generic Fibre Channel	Vendor-specific Fibre Channel
Access host and port	Yes	Yes	No	No
Access credentials/CHAP	No	Optional	No	No
Administration information	No	Yes	No	Yes
Plug-in private data	No	Optional	No	Optional

To discover a storage array:

1. Make sure that your storage server exposes raw disks (Fibre Channel SAN volumes, iSCSI targets and LUNs) to the storage network of your server pool.
2. Select the **Storage** tab.
3. Click **Discover SAN Server**  to start the **Discover SAN Server** wizard.
4. The **Discover SAN Server** step is displayed in the wizard, where you enter the information necessary for Oracle VM Manager to discover the external storage elements.



Enter the SAN storage information:

- **Name:** The name you wish to use to identify the SAN server.
- **Description:** Optional information you would like to add about this SAN server.
- **Storage Type:** The array is either a fibre channel or an iSCSI storage server.

- **Storage Plug-in:** The storage plug-in corresponding to the type of storage array, which is either generic iSCSI, or a vendor-specific iSCSI or fibre channel plug-in. As Oracle VM Storage Connect plug-in are located on the Oracle VM Servers, this field is only populated if you have already performed Server Discovery. You cannot add storage without taking this step first.
- **Plugin Private Data:** Any vendor-specific Oracle VM Storage Connect plug-in data that may be required. This is not available to generic storage.



Note

When registering a vendor-specific storage array, be sure to double-check the information you entered in the plug-in private data field. Once the storage array is registered, this field can no longer be modified. If you need to update the plug-in private data, you must unregister and re-register the storage array.

- **Admin Host:** The host name or IP address of the administration host. This is not available to generic storage.
- **Admin Username:** The admin host username. This is not available to generic storage.
- **Admin Password:** The password for the admin user. This is not available to generic storage.

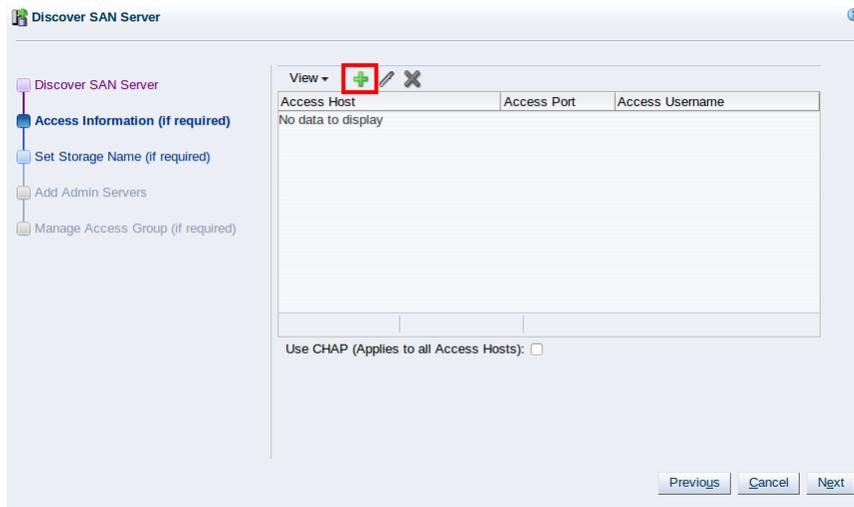
Click **Next**.

5. The **Access Information** step is displayed in the wizard.



Note

This is not applicable to Fibre Channel storage arrays. Although Fibre Channel storage arrays have a host, they do not have an access host IP address defined in Oracle VM Manager, and as a result, specifying access information is not required.



An access host is the IP address of the network interface that has access to the SAN server and creates a network path to the storage. In this dialog enter one or more access hosts to create network paths to the storage. To add multiple paths (for *multipathing*), add multiple access hosts. You must have at least one access host to the storage. On some iSCSI servers, only one access host is supported, so your screen may differ from the example in this step. If so, enter the access host IP

address, access port and optionally the CHAP authentication details on the screen that you see, and the remaining parts of this step are not required to perform.

If you want to use CHAP authentication to connect to the SAN server, check the **Use CHAP** check box.

Click **Create New Access Host** + to add access hosts for the SAN server.

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

+ Create Access Host

* Access Host:

* Access Port:

Access Username:

Access Password:

Enable CHAP for all Access Hosts to enable the Username and Password.

Enter the IP address and access port of the host that has access to the SAN server. The default access port for iSCSI is 3260. If you checked CHAP authentication in the previous dialog, enter the username and password to access the storage. Click **OK**.

Discover SAN Server

Discover SAN Server

Access Information (if required)

Set Storage Name (if required)

Add Admin Servers

Manage Access Group (if required)

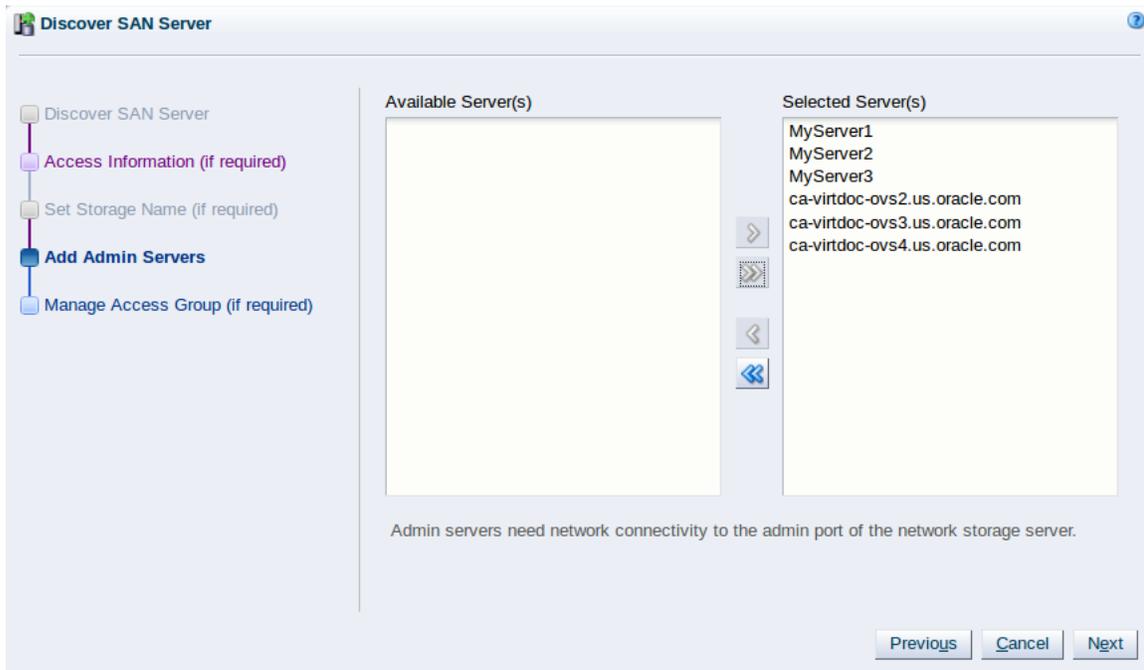
Access Host	Access Port	Access Username
10.172.76.130	3260	

Use CHAP (Applies to all Access Hosts):

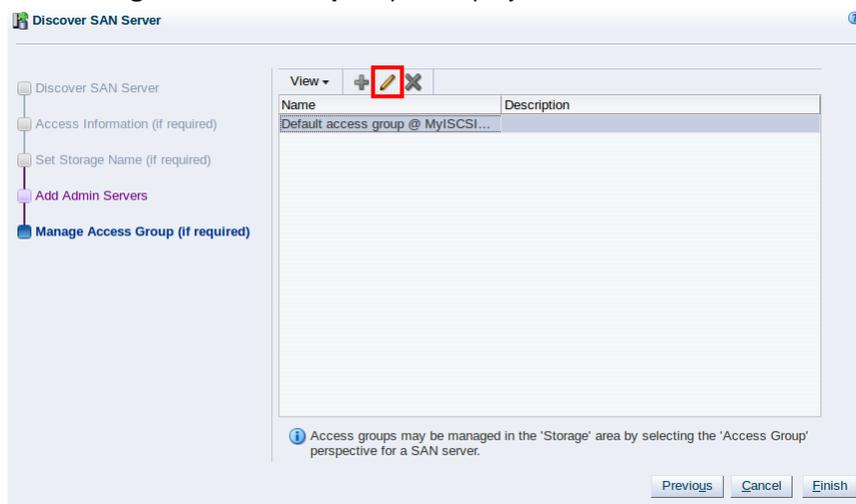
Repeat this step for each access host, for example, you may have access hosts such as 10.172.76.130, 10.172.76.131, 10.172.77.130, and 10.172.77.131 to enable [multipathing](#).

When you have entered all access hosts, click **Next**.

- 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, you must 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**.
- The **Add Admin Servers** step is displayed in the wizard. If you are working with a non-clustered server pool, you may skip this step.



Use the arrow buttons to move the required Oracle VM Servers from the **Available Server(s)** box to the **Selected Server(s)** 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**.

8. The **Manage Access Group** step is displayed in the wizard.

This final phase of the wizard offers you the access group configuration functionality. Within an access group you add the storage initiators to Oracle VM Servers to complete the storage configuration.

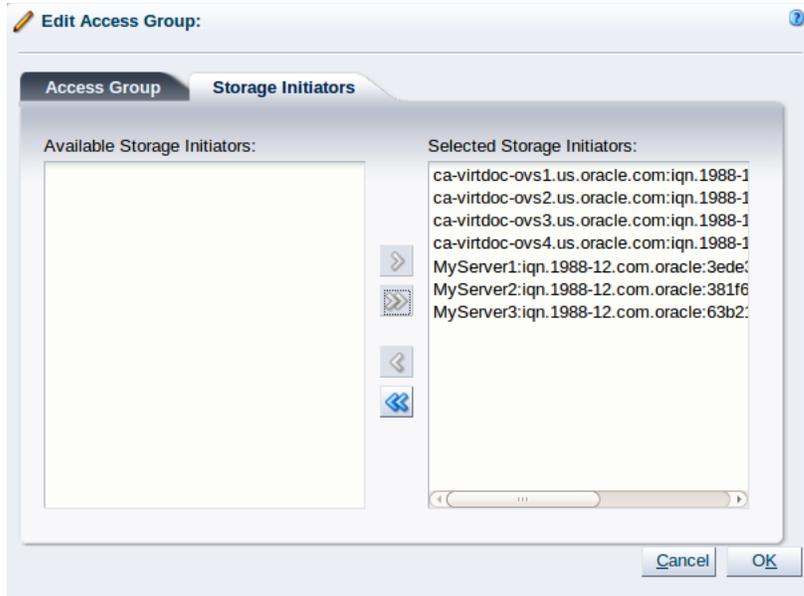
**Important**

You must add a storage initiator to an access group for each Oracle VM Server that you want to access the SAN server. If you do not add any storage initiators, Oracle VM cannot log in to the storage array and no LUNs can be accessed.

A default access group may be created during the discovery process.

- If no access group exists, you can create one from this dialog by clicking **Create Access Group +**.
- If you want to modify an existing access group for use with this SAN server, select it from the list and click **Edit Access Group ✎**.
- If necessary, you can delete an access group by clicking **Delete Access Group ✕**.

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**.

The access group management functionality is also available outside this wizard. To access it, you must go to the **Storage** tab, select a SAN server in the navigation pane, and change the **Perspective** field in the management pane to **Access Groups**, as described in [Section 6.6.4, “Access Groups Perspective”](#). Access group management for an individual Oracle VM Server is also described in [Section 3.5.7.1, “View Access Groups for Selected Initiator”](#).

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

The new storage array appears in the navigation pane, under SAN Servers. Prior to the access group configuration, the Oracle VM Storage Connect plug-in established a link to the storage location. By configuring the access group(s), you grant one or more Oracle VM Servers access to the storage array, so that the storage elements or physical disks offered by the SAN server appear in Oracle VM Manager. Access group configuration and management is described in detail in the next section. The exception to the rule is the fibre channel storage array, which does not use the concept of access groups but offers its LUNs to all Oracle VM Servers connected to the fibre channel storage network.



Note

If you configured CHAP authentication for your SAN server and CHAP is not properly configured on your SAN storage device, or the authentication credentials that you provide for your Access Groups are incorrect, none of the LUNs or physical disks available on your SAN server are discovered and no error message is returned. You may need to check the logs on your SAN server to evaluate the required action that should be taken.

6.5.1.2 Edit SAN Server

It is possible to edit the configuration for an existing SAN server. The steps and options to do so are described below.

To edit the registered SAN server configuration:

1. Select the **SAN Servers** folder in the navigation tree, select the **SAN Servers** option in the **Perspective** drop-down list, select the SAN server that you wish to edit in the table.
2. Click on the  **Edit SAN server** icon in the toolbar.
3. A dialog opens to allow you to reconfigure the SAN server. The dialog has three separate tabs:
 - **Configuration:** A tab containing a form allowing you to edit the following information:
 - **Name:** The name of the SAN server in Oracle VM Manager.
 - **Description:** Optional information you would like to add about this SAN server.
 - **Enable LIP Scan:** A Loop Initialization Protocol (LIP) scan is optional and is only applicable when modifying an Unmanaged FibreChannel Storage Array:
 - **Disabled:** This is the default scanning mechanism. When you refresh the storage array, the SCSI bus is scanned.
 - **Enabled:** A LIP, issued to an Oracle VM Server connected to a fabric, causes the Host Bus Adapter (HBA) driver to reset the SCSI bus, and therefore may also cause the target to reset. When LIP has completed, the SCSI bus is scanned.

**Note**

- If an Unmanaged FibreChannel Storage Array has admin servers lower than Release 3.4.5, then LIP Scan cannot be enabled.
- If an Unmanaged FibreChannel Storage Array has LIP Scan enabled, then no servers lower than Release 3.4.5 can be added to the list of admin servers.

- LIP scans are supported on the `lpfc` and `qla2xxx` Fibre Channel HBA drivers.
 - **Storage Plugin:** The Oracle VM Storage Connect plug-in used to access the SAN Server. A full list of available plug-ins is only displayed if the SAN server uses a non-generic Oracle VM Storage Connect plug-in.
 - **Storage Name:** The storage name used by an Oracle VM Storage Connect plug-in that requires it.
 - **Admin Host:** The host name or IP address where administrative access to the SAN server is allowed with appropriate credentials. (Only available for non-generic SAN servers).
 - **Admin User Name:** A user name with administrator access to the file server. (Only available for non-generic SAN servers).
 - **Change Password:** To modify the admin password, you must select the Change Password check box.
 - **Admin Password:** The administrator password for the user name you entered. (Only available for non-generic SAN servers).
 - **Access:** A tab allowing you to manage the IP addresses, port numbers and user credentials to use for each access host that is available for the SAN server. This tab is not available for Fibre Channel SAN servers.
 - **Admin Servers:** A tab allowing you to manage which servers are delegated as Admin servers. Admin servers are Oracle VM Servers that are capable of logging into a storage array or file server to perform administrative functions such as extending a file system or creating a new LUN.
4. When you have finished editing the SAN server, click OK to save the changes, or Cancel to exit out of the dialog without saving any changes.

6.5.1.3 Delete SAN Server

It is possible to delete an existing SAN server if it is no longer in use by any Oracle VM Servers within any server pools and the Oracle VM Storage Connect plug-in that you are using supports this operation. The steps and options to do so are described below.

To delete the registered SAN server:

1. If you need to delete a SAN server, select the **SAN Servers** folder in the navigation tree, select the **SAN Servers** option in the **Perspective** drop-down list, select one or more SAN servers in the table
2. Click on the **✗ Delete SAN server** icon in the toolbar.
3. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the SAN server.

6.5.1.4 Refresh SAN Server

When changes are made to the disks or file systems on a SAN server, it is useful to refresh the configuration of your SAN servers to make Oracle VM Manager aware of the changes. This option is not available for unmanaged SAN servers.

To refresh the registered SAN server:

1. Select the **SAN Servers** folder in the navigation tree, select the **SAN Servers** option in the **Perspective** drop-down list, select one or more SAN servers in the table

2. Click on the  **Refresh SAN server** option in the toolbar.
3. The selected SAN servers are refreshed and their configurations are updated within Oracle VM Manager.

6.5.1.5 Generate Report

You can generate an XML report on one or more SAN servers. For more information about object reporting, see [Section 7.1, “Reports”](#).

To generate a report on SAN servers:

1. Select the **SAN Servers** folder in the navigation pane.
2. Select one or more SAN servers in the management pane table.
3. Click  **Generate Report** in the management pane toolbar.
4. The report is generated and sent to the browser.

6.6 SAN Server Item

Each **SAN Server** navigation item is listed underneath the [Section 6.5, “SAN Servers Folder”](#) when it has been expanded. The structure of the navigation provided in the navigation tree is discussed in more detail in [Section 6.2, “Summary”](#).

Clicking on a **SAN Server** navigation item in the navigation tree allows you to access different perspectives in the management pane. Each perspective provides its own view of the SAN server within Oracle VM Manager. Most of the perspectives also include separate perspective toolbars that enable you to perform various configuration or management tasks specific to the view currently displayed within the management pane. A **SAN Server** navigation item offers the following perspectives within the management pane:

- [Info Perspective](#)
- [Events Perspective](#)
- [Physical Disks Perspective](#)
- [Access Groups Perspective](#)
- [Volume Groups Perspective](#)

6.6.1 Info Perspective

The Info perspective is common to many elements within the Oracle VM Manager Web Interface. This perspective always shows the individually configured parameters for an item that is currently selected in the navigation tree. Some of these configured parameters may be automatically populated through a discovery process, while others may have been configured manually during the creation of the object that is selected.

The Info perspective or dialog contains a perspective toolbar with the following options:

Table 6.12 Info Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Help		Displays context sensitive help.

This perspective includes the following information:

- **SAN Server Name:** The configured name for the SAN server.
- **Admin Host:** The configured admin host to access this SAN server.
- **Admin Username:** The configured admin username to access this SAN server.
- **Storage Name:** The name of storage array as returned by the Oracle VM Storage Connect plug-in.
- **Storage Type:** The storage type for the storage array.
- **Description:** The configured description for the SAN server.
- **SAN Server's Storage Description:** The description returned for the SAN server as returned by the Oracle VM Storage Connect plug-in.
- **Status:** The status of the SAN server as reported by the SAN server.
- **Validated:** Whether or not the SAN server has been validated by Oracle VM Manager. No special storage operations supported by the Oracle VM Storage Connect plug-in may occur until the storage server is validated by Oracle VM Manager.
- **Storage Plug-In:** The name of the Oracle VM Storage Connect plug-in used to connect to the SAN server.
- **Storage Plug-In Version:** The version number of the Oracle VM Storage Connect plug-in used to connect to the SAN server.
- **Plug-in Private Data:** Additional parameters passed to the Oracle VM Storage Connect plug-in.
- **Total Size (GiB):** The total size, in [GiB](#), reported by the SAN server.
- **Free Size (GiB):** The available free size, in GiB, reported by the SAN server.
- **Used Size (GiB):** The amount of used space reported by the SAN server.

Additional fields may be listed to indicate the support status for various storage related functions as reported by the Oracle VM Storage Connect plug-in in use.

6.6.2 Events Perspective

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.13 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** .
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** , or click **Acknowledge All**  to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** , or click **Acknowledge All**  to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** , or click **Acknowledge All**  to clear all user acknowledgeable errors.

6.6.3 Physical Disks Perspective

The Physical Disks perspective lists the different physical disks configured in your environment and running on a SAN storage array. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the physical disk
- **Event Severity:** The event level severity for the physical disk.
- **Size (GiB):** The size, in [GiB](#), of the physical disk.
- **Volume Group:** The volume group that the physical disk belongs to.
- **Server:** The servers that have access to the physical disk.
- **Status:** The status of the physical disk (whether or not the disk is online).
- **Shareable:** Whether the physical disk is shareable or not.
- **Description:** A description entered for the physical disk when it was created or edited.
- **VM(s):** Virtual machines using the physical disk.

Alongside each physical disk entry in the table, there is an arrow that allows you to expand the view for each entry. This exposes further information:

- **Name:** The user-specified alias for the physical disk. The name can be changed without changing the name of the physical disk on the storage array.

- **User Friendly Name:** The name of the physical disk on the storage array. The name was specified when the disk was created and cannot be changed.
- **SAN Server:** The SAN server that the physical disk belongs to.
- **Thin Provision:** Whether or not thin provisioning is supported by the physical disk.
- **Type:** The type of storage that the physical disk is a part of (for example, iSCSI or Fibre Channel).
- **Reserved by Server(s):** Whether or not the physical disk is unavailable for use by Oracle VM Manager.
- **Storage Targets:** The endpoint provided by the storage server through which the server may direct commands to the physical disk. The storage target provides access to the physical disk.
- **Server Pool:** The server pool that the physical disk belongs to.
- **Repository:** The repository that the physical disk belongs to.
- **VM(s):** Virtual machines using the physical disk.
- **ID:** The UUID for the physical disk. The UUID is a universally unique identifier that Oracle VM Manager assigns to the physical disk.
- **Page83 ID:** The unique SCSI identifier for the physical disk.
- **Access Groups:** The access groups that the physical disk belongs to.
- **Extra Information:** Information that is passed to and from the Oracle VM Storage Connect plug-in for use internally by the plug-in.
- **Absolute Path:** The absolute path to the location of the disk.

The management functions you can perform on the disk are available as icons in the perspective toolbar. Some management options are only available to SAN server disks that use a non-generic [Storage Connect](#) plug-in.

Table 6.14 Physical Disks Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create Physical Disk...		Displays the Create Physical Disk dialog box. Use this option to create a new physical disk in the selected volume group of the storage array of your choice. This option is not supported for storage arrays using a generic Oracle VM Storage Connect plug-in.
Edit Physical Disk...		Displays the Edit Physical Disk dialog box. Use this option to change the name, size, provisioning and share ability of the selected physical disk.
Delete Physical Disk		Displays the Delete Confirmation dialog box. Use this option to delete the selected physical disk.
Clone Physical Disk		Displays the Clone Physical Disk dialog box. Use this option to clone a physical disk to another physical disk or to a disk image on a file server.
Refresh Physical Disk		Refreshes the physical disks on a storage array. Use this option to rescan the physical disks after making changes to the configuration of a storage array. This updates the storage information known to Oracle VM Manager.

Toolbar Icon Option	Icon	Description
Display Servers using Physical Disk...		Displays the Servers using Physical Disk dialog box. Use this option to view which servers are using a selected physical disk.
Display Selected Physical Disk Events...		Display the Events dialog box which contains the job event associated with the selected physical disks.
Help		Displays context sensitive help.

6.6.3.1 Create Physical Disk (not supported on Generic)

On SAN Servers that are not using a generic Oracle VM Storage Connect plug-in, it is frequently possible to create a new physical disk.

To create a physical disk on a SAN Server:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list.
2. Click on the **+ Create Physical Disk** option in the toolbar.
3. The **Create Physical Disk** dialog is displayed. Enter or select the following:
 - **Volume Group:** A volume group that you want the physical disk to belong to.
 - **Name:** A name for the physical disk.
 - **Size (GiB):** The size of the physical disk, in [GiB](#).
 - **Extra Information:** Optional information that is passed to and from the Oracle VM Storage Connect plug-in for use internally by the plug-in.
 - **Description:** An optional description of the physical disk.
 - **Shareable:** Whether or not the physical disk is shareable.
 - **Thin Provision:** Whether or not thin provisioning is to be supported by the physical disk.
4. When you have finished editing the parameters to define the new physical disk, click **OK** to save the changes, or **Cancel** to exit out of the dialog without saving any changes.

6.6.3.2 Edit Physical Disk

It is possible to edit the configuration for a physical disk either available on a SAN server or as local or shared storage. The steps and options to do so are described below.

To edit Physical Disk configuration:

1. On the **Storage** tab, expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to edit in the table presented in the management pane.

To edit the physical disk configuration for a physical disk used by a particular server, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to edit in the table presented in the management pane.

2. Click on the **Edit Physical Disk** icon in the toolbar.

3. A dialog opens to allow you to reconfigure the Physical Disk. The dialog has the following options:
 - **ID:** A non-editable field containing the physical disk's UUID as it is stored within Oracle VM Manager.
 - **Name:** A field to change the name of the physical disk within Oracle VM Manager.
 - **Current Size(GiB):** A non-editable field containing the physical disk's current size, in [GiB](#).
 - **New Size(GiB):** A field to change the size, in GiB, of the physical disk. The size of the physical disk can only be increased in size.
 - **Description:** A text field allowing a description of the physical disk.
 - **Shareable:** A check box that determines whether or not the disk can be shared.
 - **Thin Provision:** A non-editable field describing whether or not thin provisioning is supported by the disk.
4. When you have finished editing the physical disk, click OK to save the changes, or Cancel to exit out of the dialog without saving any changes.

6.6.3.3 Delete Physical Disk

It is possible to delete an existing physical disk if it is no longer used in your Oracle VM environment and the Oracle VM Storage Connect plug-in that you are using supports this operation. Two types of physical disks are used in an Oracle VM environment:

- Local physical disk - A physical disk installed locally on a specific Oracle VM Server.
- SAN Server physical disk - A physical disk that is made available to the SAN Server during the discovery process.

Each physical disk type can be deleted using the Oracle VM Manager Web Interface.

To delete a registered physical disk that is no longer used:

1. There are two options available that you can use to delete a physical disk from your Oracle VM environment:
 - a. To delete a local physical disk:

Expand the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, and select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you want to delete in the table presented in the management pane.
 - b. To delete a SAN Server physical disk:

Use the instructions in step a or alternatively, expand the **Storage** tab, expand the **SAN Servers** folder in the navigation tree, and select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to delete in the table presented in the management pane.
2. Click on the **✗ Delete Physical Disk** icon in the toolbar.
3. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the physical disk.

6.6.3.4 Clone Physical Disk

It is possible to clone a physical disk. The steps and options to do so are described below.

To clone a Physical Disk:

1. On the **Storage** tab, expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to clone in the table presented in the management pane.

To clone a physical disk used by a particular server, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to clone in the table presented in the management pane.

2. Click on the  **Clone Physical Disk** icon in the toolbar.
3. A dialog opens to allow you to clone the Physical Disk. The dialog has the following options:
 - **Name:** A field to set the name of the physical disk clone that you are going to create within Oracle VM Manager.
 - **Clone Target Type:** A drop-down menu allowing you to select the type of storage to be used for the physical disk clone:
 - **Physical Disk:** Copies the data from one physical disk to another.
 - **Repository:** Copies the data from the physical disk into a virtual disk image in an existing repository.
 - **Clone Target:** A searchable field to allow you to select the target location where the clone is to be stored.
 - **Clone Type:** A drop-down menu allowing you to select the type of clone to create:
 - **Sparse Copy:** Copies only the written data from the physical disk to the target clone.
 - **Non-sparse Copy:** Performs a block copy of the physical disk to the target clone.
4. When you have finished setting the clone parameters for the physical disk, click OK to begin the clone job, or Cancel to exit out of the dialog without saving any changes.

6.6.3.5 Refresh Physical Disk

When changes are made to the physical disks on a SAN server or Oracle VM Server, it is useful to refresh the configuration of your physical disks to make Oracle VM Manager aware of the changes.

To refresh physical disks:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk or disks that you wish to refresh in the table presented in the management pane.

To refresh physical disks used by a particular server, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to refresh in the table presented in the management pane.

2. Click on the  **Refresh Physical Disk** option in the toolbar.

- The selected physical disks are refreshed and their configurations are updated within Oracle VM Manager.



Note

If you encounter an error, when refreshing a physical disk with a repository located on it, similar to the following:

```
OVMAPI_7281E Cannot perform operation on file system...
```

You may need to ensure that the repository is under the ownership of the Oracle VM Manager instance that you are using. See [Section 4.3.1.2, “Edit Repository”](#) for more information.

6.6.3.6 Display Servers Using a Physical Disk

It is possible to display the Oracle VM Servers that are using a physical disk available on a SAN server. The steps and options to do so are described below.

To display a list of Oracle VM Servers using a Physical Disk on a SAN server:

- Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to view in the table presented in the management pane.
- Click on the **Display Servers using Physical Disk** icon in the toolbar.
- A dialog opens to display the Oracle VM Servers that are configured to use the Physical Disk. The dialog provides the following information in tabular format:
 - **Name:** The name of the Oracle VM Server.
 - **Description:** The configured description for the Oracle VM Server.
 - **Status:** The running status of the Oracle VM Server.
 - **Utilization (%):** The percentage of the disk that is utilized by the Oracle VM Server.
 - **Maintenance Mode:** Whether or not the Oracle VM Server is in maintenance mode.
 - **Owned:** Whether or not the current instance of Oracle VM Manager has ownership of the Oracle VM Server.
- When you have finished viewing the list of servers with access to the physical disk, click Close to exit out of the dialog.

6.6.3.7 Display Events

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...** perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual](#)

[machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.15 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 🗑️.
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

6.6.4 Access Groups Perspective

The Access Groups perspective lists the different Access Groups configured in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the access group.
- **Event Severity:** The event level severity associated with the access group.
- **SAN Server:** The SAN server that the access group applies to.
- **Description:** A description entered for the access group when it was created or edited.

This perspective includes a toolbar that consists of the following options:

Table 6.16 Access Groups Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create Access Group...		Displays the Create an Access Group dialog box. Use this option to create a new access group. This option is only available for non-generic storage arrays.
Edit Access Group...		Displays the Edit Access Group dialog box. Use this option to edit access group settings such as name, description and the storage initiators that have access to the SAN Server.
Delete Access Group		Displays the Delete Confirmation dialog box. Use this option to delete the selected access group. This option is only available for non-generic storage arrays. This option is only available for non-generic storage arrays.
Display Selected Access Group Events...		Display the Events dialog box which contains the job event associated with the selected access groups.
Help		Displays context sensitive help.

6.6.4.1 Create Access Group

Except for generic storage arrays, it is possible to create multiple access groups in order to arrange and restrict physical disk access according to your requirements. The generic iSCSI storage arrays have a single access group available by default, where you can simply add or remove storage initiators from your Oracle VM Servers.

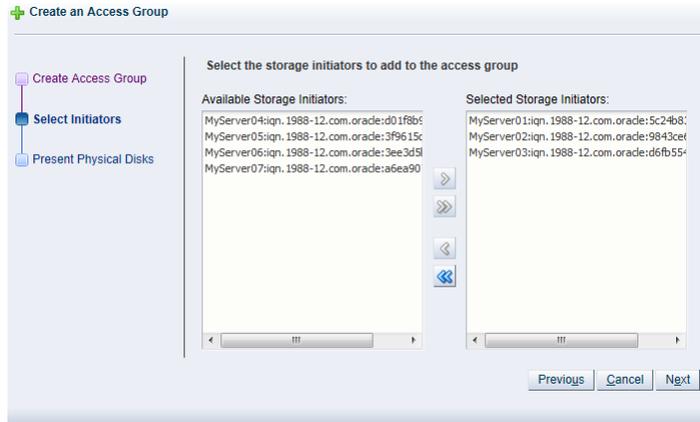
Generic fibre channel storage has no access groups and is always listed under the **Unmanaged Fibre Channel Storage Array** folder.

To configure an access group for a non-generic iSCSI storage array:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Access Groups** option in the **Perspective** drop-down list.
2. Click **Create Access Group**  to start the **Create an Access Group** wizard.
3. The **Create Access Group** step is displayed in the wizard. Enter a name for your new access group and optionally provide a description. Click **Next**.



4. The **Select Initiators** step is displayed in the wizard. It contains the available storage initiators for this type of storage on the Oracle VM Servers in your environment. Use the arrow buttons to move the required initiators from the **Available Storage Initiators** box to the **Selected Storage Initiators** box. Click **Next**.



Note

You can also use the **Storage Initiators** perspective in the **Servers and VMs** tab to view and configure storage initiators on an individual Oracle VM Server. See [Section 3.5.7.1, “View Access Groups for Selected Initiator”](#) for more information on using this method.



Important

If you have both iSCSI and Fibre Channel storage array types in your environment, you must ensure that the storage initiators that you are adding for the access group, match the storage type that you are defining this access group for. See [What are Access Groups?](#) in the *Oracle VM Concepts Guide* for more information on Access Groups.

5. The **Present Physical Disks** step is displayed in the wizard. It contains the available storage elements on the storage array you are registering.

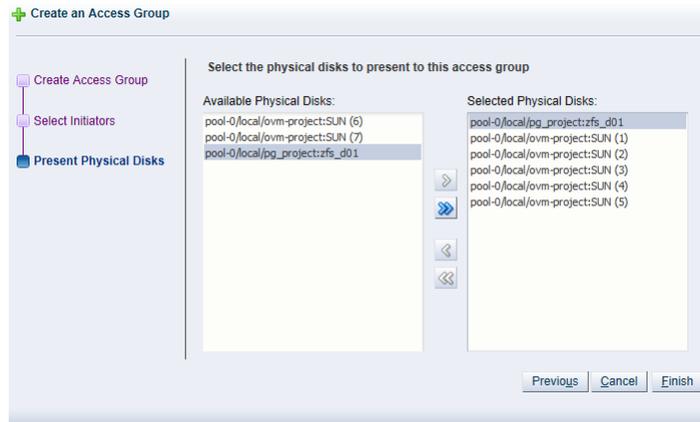


Note

If this is the first time you are configuring access to this storage array, the list of available physical disks may be empty. You may have to edit the access group afterwards to select physical disks.

Use the arrow buttons to move the required disks from the **Available Physical Disks** box to the **Selected Physical Disks** box. These disks are presented to the Oracle VM Servers that have the

iSCSI initiator that belongs to the access group. Click **Finish** to create the new access group with the selected initiators and physical disks.



The new access group now appears in the **Access Groups** table. If you change the **Perspective** of the management pane to **Physical Disks**, the list of presented physical disks appear in the table.

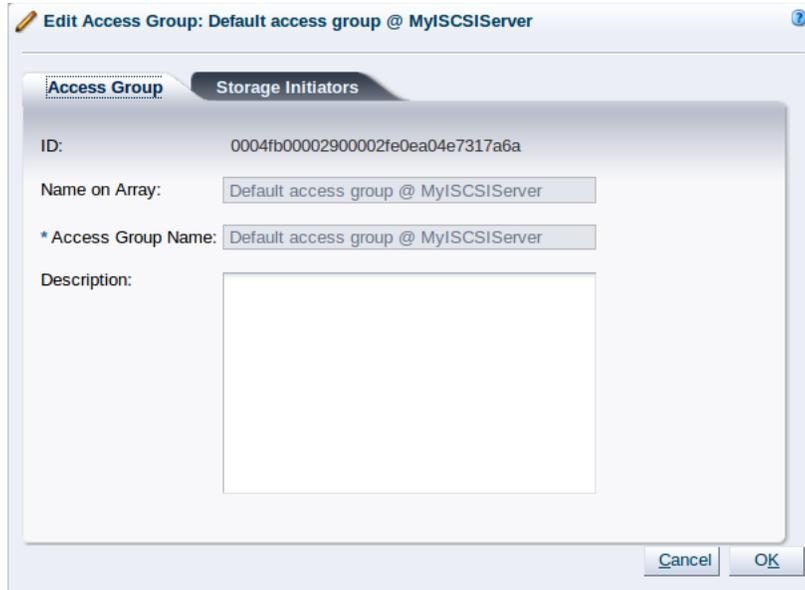
After configuring the access group it is advisable to refresh the SAN server to make sure that the current storage layout and access rules are in effect. The selected physical disks in your non-generic storage array are now available to the Oracle VM Servers in this access group.

6.6.4.2 Edit Access Group

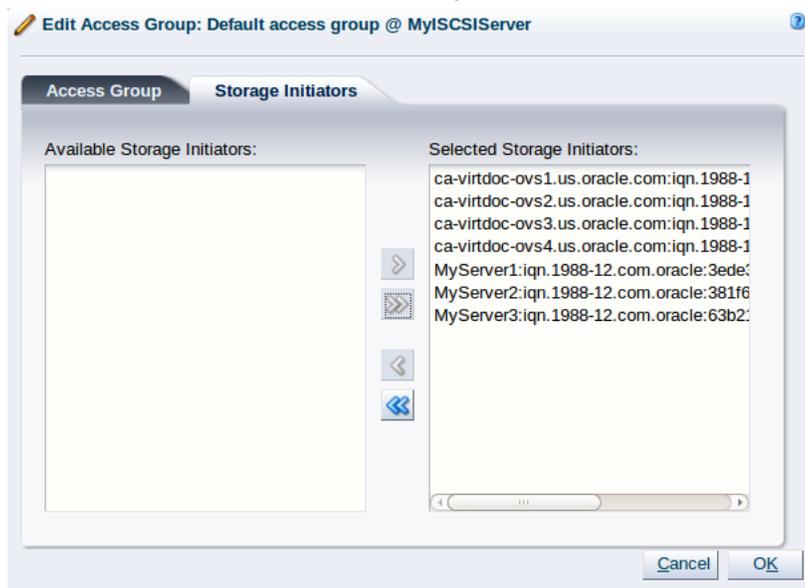
It is possible to edit an existing Access Group for a SAN Server. This option is also possible for a generic iSCSI storage array, although you are only able to edit the default access group that is created when you discover the SAN Server, since it is not possible to create additional access groups for generic Oracle VM Storage Connect plug-ins.

To edit the access group for an iSCSI storage array:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Access Groups** option in the **Perspective** drop-down list.
2. Select the access group that you wish to edit (a default access group is always present) and click **Edit Access Group** . The **Edit Access Group** dialog box is displayed.
3. In the **Access Group** tab, you can edit the **Name on Array** and **Access Group Name** for storage arrays that use a non-generic Oracle VM Storage Connect plug-in. When you have a generic plug-in, these items are greyed out. You can also provide or edit a description for the access group.



4. Select the **Storage Initiators** tab. It contains the available storage initiators for this type of storage on the Oracle VM Servers in your environment.
5. Use the arrow buttons to move the required initiators to the **Selected Storage Initiators** box.



Note

You can also use the **Storage Initiators** perspective in the **Servers and VMs** tab to view and configure storage initiators on an individual Oracle VM Server. See [Section 3.5.7.1, “View Access Groups for Selected Initiator”](#) for more information on using this method.



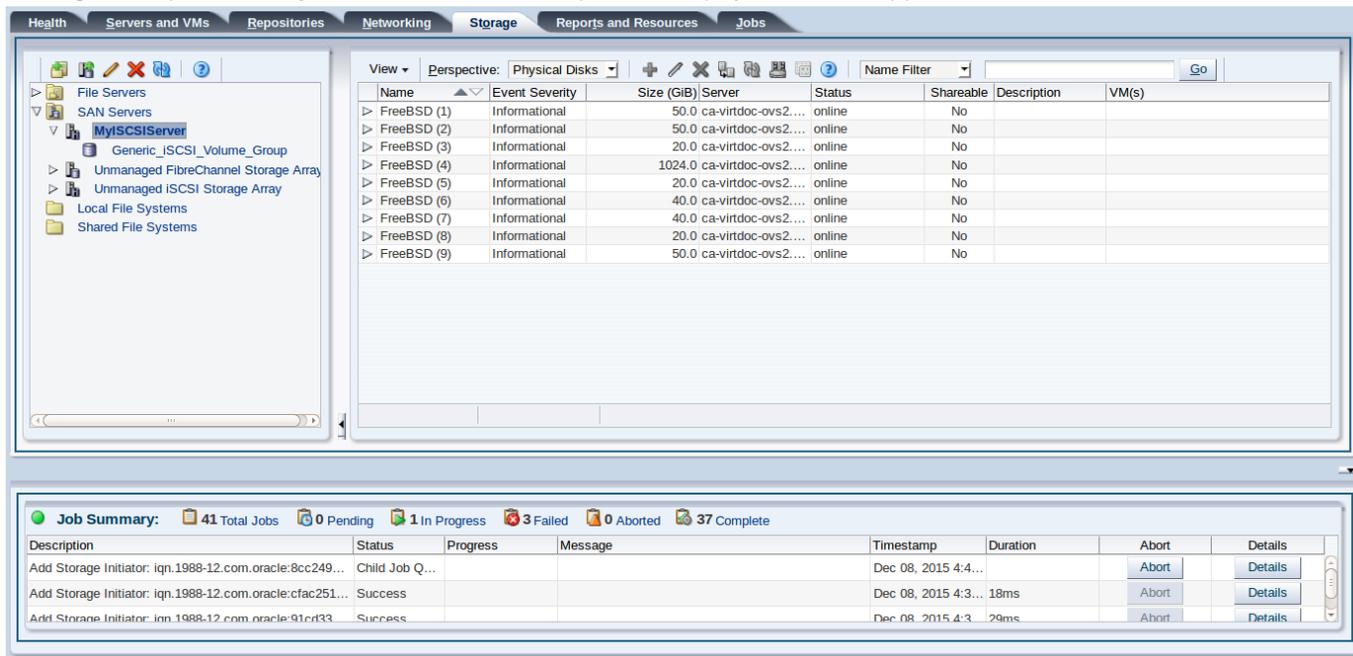
Important

If you have both iSCSI and Fibre Channel storage array types in your environment, you must ensure that the storage initiators that you are adding

for the access group, match the storage type that you are defining this access group for. See [What are Access Groups?](#) in the *Oracle VM Concepts Guide* for more information on Access Groups.

For a generic storage array you cannot select which physical disks are added; all disks are automatically presented to the selected Oracle VM Servers.

- Click **OK** to save your changes to the default access group. If you change the **Perspective** of the management pane to **Physical Disks**, the list of presented physical disks appears in the table.



- After configuring the access group it is advisable to refresh the storage array to make sure that the current storage layout and access rules are in effect.

The Oracle VM Servers in this access group now have the necessary permissions to use the physical disks of the storage array; they can be deployed either as disks for virtual machines (VMs) or for storage repositories. To create storage repositories on your physical disks, see [Chapter 4, Repositories Tab](#).

6.6.4.3 Delete Access Group

Except for generic storage arrays, it is possible to delete additional access groups that you may have defined apart from the default access group.

To delete one or more access groups:

- Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Access Groups** option in the **Perspective** drop-down list. Select the access group or groups, that you wish to delete, from the items listed in the management pane.
- Click on the **Delete Access Group** icon in the toolbar.
- The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the access group.

6.6.4.4 Display Events

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the

management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error *event* associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or *virtual machine* appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.17 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 📄 to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 📄.
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 📄 to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓, or click **Acknowledge All** 📄 to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 📄 to clear all user acknowledgeable errors.

6.6.5 Volume Groups Perspective

The Volume Groups perspective lists the different Volume Groups configured for each SAN Server in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the volume group.

- **Size (GiB):** A grouping that consists of the following columns:
 - **Free:** The size of the volume, in [GiB](#), that is currently free.
 - **Used:** The size of the volume, in GiB, that is currently in use.
 - **Total:** The total size, in GiB, of the volume.
- **Description:** A description entered for the volume group when it was created or edited.

This perspective includes a toolbar that consists of the following options:

Table 6.18 Volume Groups Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Edit Volume Group...		Displays the Edit Volume Group dialog box. Use this option to edit volume group settings such as name and description.
Help		Displays context sensitive help.

6.6.5.1 Edit Volume Group

It is possible to edit the configuration for a Volume Group available on a SAN server. The steps and options to do so are described below.

To edit Volume Group configuration on a SAN server:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Volume Groups** option in the **Perspective** drop-down list. Select the volume group that you wish to edit in the table presented in the management pane.
2. Click on the  **Edit Volume Group** icon in the toolbar.
3. A dialog opens to allow you to reconfigure the Volume Group. The dialog has the following options:
 - **ID:** A non-editable field containing the volume group's UUID as it is stored within Oracle VM Manager.
 - **Name:** A field to change the name of the volume group within Oracle VM Manager.
 - **Description:** A text field allowing a description of the volume group.
4. When you have finished editing the volume group, click OK to save the changes, or Cancel to exit out of the dialog without saving any changes.

6.7 Volume Group Item

Each **Volume Group** navigation item is listed underneath the [Section 6.6, "SAN Server Item"](#) when it has been expanded. The structure of the navigation provided in the navigation tree is discussed in more detail in [Section 6.2, "Summary"](#).

Clicking on a **Volume Group** navigation item in the navigation tree allows you to access different perspectives in the management pane. Each perspective provides its own view of the Volume Group within Oracle VM Manager. Most of the perspectives also include separate perspective toolbars that enable you to perform various configuration or management tasks specific to the view currently displayed within the management pane. A **Volume Group** navigation item offers the following perspectives within the management pane:

- [Info Perspective](#)
- [Physical Disks Perspective](#)
- [Events Perspective](#)

6.7.1 Info Perspective

The Info perspective is common to many elements within the Oracle VM Manager Web Interface. This perspective always shows the individually configured parameters for an item that is currently selected in the navigation tree. Some of these configured parameters may be automatically populated through a discovery process, while others may have been configured manually during the creation of the object that is selected.

The Info perspective or dialog contains a perspective toolbar with the following options:

Table 6.19 Info Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Help		Displays context sensitive help.

This perspective includes the following information:

- **Volume Group Name:** The configured name for the volume group.

6.7.2 Physical Disks Perspective

The Physical Disks perspective lists the different physical disks configured in your environment and running on a SAN storage array. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the physical disk
- **Event Severity:** The event level severity for the physical disk.
- **Size (GiB):** The size, in [GiB](#), of the physical disk.
- **Volume Group:** The volume group that the physical disk belongs to.
- **Server:** The servers that have access to the physical disk.
- **Status:** The status of the physical disk (whether or not the disk is online).
- **Shareable:** Whether the physical disk is shareable or not.
- **Description:** A description entered for the physical disk when it was created or edited.
- **VM(s):** Virtual machines using the physical disk.

Alongside each physical disk entry in the table, there is an arrow that allows you to expand the view for each entry. This exposes further information:

- **Name:** The user-specified alias for the physical disk. The name can be changed without changing the name of the physical disk on the storage array.
- **User Friendly Name:** The name of the physical disk on the storage array. The name was specified when the disk was created and cannot be changed.
- **SAN Server:** The SAN server that the physical disk belongs to.

- **Thin Provision:** Whether or not thin provisioning is supported by the physical disk.
- **Type:** The type of storage that the physical disk is a part of (for example, iSCSI or Fibre Channel).
- **Reserved by Server(s):** Whether or not the physical disk is unavailable for use by Oracle VM Manager.
- **Storage Targets:** The endpoint provided by the storage server through which the server may direct commands to the physical disk. The storage target provides access to the physical disk.
- **Server Pool:** The server pool that the physical disk belongs to.
- **Repository:** The repository that the physical disk belongs to.
- **VM(s):** Virtual machines using the physical disk.
- **ID:** The UUID for the physical disk. The UUID is a universally unique identifier that Oracle VM Manager assigns to the physical disk.
- **Page83 ID:** The unique SCSI identifier for the physical disk.
- **Access Groups:** The access groups that the physical disk belongs to.
- **Extra Information:** Information that is passed to and from the Oracle VM Storage Connect plug-in for use internally by the plug-in.
- **Absolute Path:** The absolute path to the location of the disk.

The management functions you can perform on the disk are available as icons in the perspective toolbar. Some management options are only available to SAN server disks that use a non-generic [Storage Connect](#) plug-in.

Table 6.20 Physical Disks Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create Physical Disk...		Displays the Create Physical Disk dialog box. Use this option to create a new physical disk in the selected volume group of the storage array of your choice. This option is not supported for storage arrays using a generic Oracle VM Storage Connect plug-in.
Edit Physical Disk...		Displays the Edit Physical Disk dialog box. Use this option to change the name, size, provisioning and share ability of the selected physical disk.
Delete Physical Disk		Displays the Delete Confirmation dialog box. Use this option to delete the selected physical disk.
Clone Physical Disk		Displays the Clone Physical Disk dialog box. Use this option to clone a physical disk to another physical disk or to a disk image on a file server.
Refresh Physical Disk		Refreshes the physical disks on a storage array. Use this option to rescan the physical disks after making changes to the configuration of a storage array. This updates the storage information known to Oracle VM Manager.
Display Servers using Physical Disk...		Displays the Servers using Physical Disk dialog box. Use this option to view which servers are using a selected physical disk.

Toolbar Icon Option	Icon	Description
Display Selected Physical Disk Events...		Display the Events dialog box which contains the job event associated with the selected physical disks.
Help		Displays context sensitive help.

6.7.2.1 Create Physical Disk (not supported on Generic)

On SAN Servers that are not using a generic Oracle VM Storage Connect plug-in, it is frequently possible to create a new physical disk.

To create a physical disk on a SAN Server:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list.
2. Click on the **+ Create Physical Disk** option in the toolbar.
3. The **Create Physical Disk** dialog is displayed. Enter or select the following:
 - **Volume Group:** A volume group that you want the physical disk to belong to.
 - **Name:** A name for the physical disk.
 - **Size (GiB):** The size of the physical disk, in [GiB](#).
 - **Extra Information:** Optional information that is passed to and from the Oracle VM Storage Connect plug-in for use internally by the plug-in.
 - **Description:** An optional description of the physical disk.
 - **Shareable:** Whether or not the physical disk is shareable.
 - **Thin Provision:** Whether or not thin provisioning is to be supported by the physical disk.
4. When you have finished editing the parameters to define the new physical disk, click **OK** to save the changes, or **Cancel** to exit out of the dialog without saving any changes.

6.7.2.2 Edit Physical Disk

It is possible to edit the configuration for a physical disk either available on a SAN server or as local or shared storage. The steps and options to do so are described below.

To edit Physical Disk configuration:

1. On the **Storage** tab, expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to edit in the table presented in the management pane.

To edit the physical disk configuration for a physical disk used by a particular server, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to edit in the table presented in the management pane.

2. Click on the **✏ Edit Physical Disk** icon in the toolbar.
3. A dialog opens to allow you to reconfigure the Physical Disk. The dialog has the following options:
 - **ID:** A non-editable field containing the physical disk's UUID as it is stored within Oracle VM Manager.

- **Name:** A field to change the name of the physical disk within Oracle VM Manager.
 - **Current Size(GiB):** A non-editable field containing the physical disk's current size, in [GiB](#).
 - **New Size(GiB):** A field to change the size, in GiB, of the physical disk. The size of the physical disk can only be increased in size.
 - **Description:** A text field allowing a description of the physical disk.
 - **Shareable:** A check box that determines whether or not the disk can be shared.
 - **Thin Provision:** A non-editable field describing whether or not thin provisioning is supported by the disk.
4. When you have finished editing the physical disk, click OK to save the changes, or Cancel to exit out of the dialog without saving any changes.

6.7.2.3 Delete Physical Disk

It is possible to delete an existing physical disk if it is no longer used in your Oracle VM environment and the Oracle VM Storage Connect plug-in that you are using supports this operation. Two types of physical disks are used in an Oracle VM environment:

- Local physical disk - A physical disk installed locally on a specific Oracle VM Server.
- SAN Server physical disk - A physical disk that is made available to the SAN Server during the discovery process.

Each physical disk type can be deleted using the Oracle VM Manager Web Interface.

To delete a registered physical disk that is no longer used:

1. There are two options available that you can use to delete a physical disk from your Oracle VM environment:
 - a. To delete a local physical disk:

Expand the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, and select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you want to delete in the table presented in the management pane.
 - b. To delete a SAN Server physical disk:

Use the instructions in step a or alternatively, expand the **Storage** tab, expand the **SAN Servers** folder in the navigation tree, and select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to delete in the table presented in the management pane.
2. Click on the **✘ Delete Physical Disk** icon in the toolbar.
3. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the physical disk.

6.7.2.4 Clone Physical Disk

It is possible to clone a physical disk. The steps and options to do so are described below.

To clone a Physical Disk:

1. On the **Storage** tab, expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to clone in the table presented in the management pane.

To clone a physical disk used by a particular server, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to clone in the table presented in the management pane.

2. Click on the  **Clone Physical Disk** icon in the toolbar.
3. A dialog opens to allow you to clone the Physical Disk. The dialog has the following options:
 - **Name:** A field to set the name of the physical disk clone that you are going to create within Oracle VM Manager.
 - **Clone Target Type:** A drop-down menu allowing you to select the type of storage to be used for the physical disk clone:
 - **Physical Disk:** Copies the data from one physical disk to another.
 - **Repository:** Copies the data from the physical disk into a virtual disk image in an existing repository.
 - **Clone Target:** A searchable field to allow you to select the target location where the clone is to be stored.
 - **Clone Type:** A drop-down menu allowing you to select the type of clone to create:
 - **Sparse Copy:** Copies only the written data from the physical disk to the target clone.
 - **Non-sparse Copy:** Performs a block copy of the physical disk to the target clone.
4. When you have finished setting the clone parameters for the physical disk, click OK to begin the clone job, or Cancel to exit out of the dialog without saving any changes.

6.7.2.5 Refresh Physical Disk

When changes are made to the physical disks on a SAN server or Oracle VM Server, it is useful to refresh the configuration of your physical disks to make Oracle VM Manager aware of the changes.

To refresh physical disks:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk or disks that you wish to refresh in the table presented in the management pane.

To refresh physical disks used by a particular server, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to refresh in the table presented in the management pane.

2. Click on the  **Refresh Physical Disk** option in the toolbar.
3. The selected physical disks are refreshed and their configurations are updated within Oracle VM Manager.

**Note**

If you encounter an error, when refreshing a physical disk with a repository located on it, similar to the following:

```
OVMAPI_7281E Cannot perform operation on file system...
```

You may need to ensure that the repository is under the ownership of the Oracle VM Manager instance that you are using. See [Section 4.3.1.2, “Edit Repository”](#) for more information.

6.7.2.6 Display Servers Using a Physical Disk

It is possible to display the Oracle VM Servers that are using a physical disk available on a SAN server. The steps and options to do so are described below.

To display a list of Oracle VM Servers using a Physical Disk on a SAN server:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to view in the table presented in the management pane.
2. Click on the  **Display Servers using Physical Disk** icon in the toolbar.
3. A dialog opens to display the Oracle VM Servers that are configured to use the Physical Disk. The dialog provides the following information in tabular format:
 - **Name:** The name of the Oracle VM Server.
 - **Description:** The configured description for the Oracle VM Server.
 - **Status:** The running status of the Oracle VM Server.
 - **Utilization (%):** The percentage of the disk that is utilized by the Oracle VM Server.
 - **Maintenance Mode:** Whether or not the Oracle VM Server is in maintenance mode.
 - **Owned:** Whether or not the current instance of Oracle VM Manager has ownership of the Oracle VM Server.
4. When you have finished viewing the list of servers with access to the physical disk, click Close to exit out of the dialog.

6.7.2.7 Display Events

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the

navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.21 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 🗑️.
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

6.7.3 Events Perspective

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...** 🗑️ perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual](#)

[machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.22 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 🗑️.
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers, SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

6.8 Unmanaged Fibre Channel Storage Array Item

An **Unmanaged Fibre Channel Storage Array** navigation item is listed underneath the [Section 6.5, “SAN Servers Folder”](#) when it has been expanded. The structure of the navigation provided in the navigation tree is discussed in more detail in [Section 6.2, “Summary”](#).

Clicking on a **Unmanaged Fibre Channel Storage Array** navigation item in the navigation tree allows you to access different perspectives in the management pane. Each perspective provides its own view of any unmanaged Fibre Channel storage arrays within Oracle VM Manager. Most of the perspectives also include separate perspective toolbars that enable you to perform various configuration or management tasks specific to the view currently displayed within the management pane. The **Unmanaged Fibre Channel Storage Array** navigation item offers the following perspectives within the management pane:

- [Info Perspective](#)

- [Events Perspective](#)
- [Physical Disks Perspective](#)
- [Access Groups Perspective](#)
- [Volume Groups Perspective](#)

6.8.1 Info Perspective

The Info perspective is common to many elements within the Oracle VM Manager Web Interface. This perspective always shows the individually configured parameters for an item that is currently selected in the navigation tree. Some of these configured parameters may be automatically populated through a discovery process, while others may have been configured manually during the creation of the object that is selected.

The Info perspective or dialog contains a perspective toolbar with the following options:

Table 6.23 Info Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Help		Displays context sensitive help.

This perspective usually includes the following information depending on what information is returned by the Oracle VM Storage Connect plug-in:

- **Storage Name:** The name of the storage array as returned by the Oracle VM Storage Connect plug-in.
- **Storage Type:** The type of storage array as returned by the Oracle VM Storage Connect plug-in.
- **Description:** The configured description for the storage array.
- **SAN Server's Storage Description:** The description returned for the storage array as returned by the Oracle VM Storage Connect plug-in.
- **Status:** The status of the storage array as returned by the Oracle VM Storage Connect plug-in.
- **Validated:** Whether or not the storage array has been validated by Oracle VM Manager. No special storage operations supported by the Oracle VM Storage Connect plug-in may occur until the storage server is validated by Oracle VM Manager.
- **LIP Scan:** Whether a Loop Initialization Protocol (LIP) scan is enabled or not for an Unmanaged FibreChannel Storage Array.
- **Storage Plug-In:** The name of the Oracle VM Storage Connect plug-in used to access the storage array.
- **Storage Plug-In Version:** The version number of the Oracle VM Storage Connect plug-in used to access the storage array.
- **Plug-in Private Data:** Additional parameters passed to the Oracle VM Storage Connect plug-in.
- **Total Size (GiB):** The total size, in [GiB](#), reported by the Oracle VM Storage Connect plug-in.
- **Free Size (GiB):** The available free space, in GiB, reported by the Oracle VM Storage Connect plug-in.
- **Used Size (GiB):** The amount of used space, in GiB, reported by the Oracle VM Storage Connect plug-in.

Additional fields may be listed to indicate the support status for various storage related functions as reported by the Oracle VM Storage Connect plug-in in use.

6.8.2 Events Perspective

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.24 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is

Toolbar Icon Option	Icon	Description
		always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 📄 to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 📄.
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 📄 to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓, or click **Acknowledge All** 📄 to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.

4. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

6.8.3 Physical Disks Perspective

The Physical Disks perspective lists the different physical disks configured in your environment and running on a SAN storage array. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the physical disk
- **Event Severity:** The event level severity for the physical disk.
- **Size (GiB):** The size, in [GiB](#), of the physical disk.
- **Volume Group:** The volume group that the physical disk belongs to.
- **Server:** The servers that have access to the physical disk.
- **Status:** The status of the physical disk (whether or not the disk is online).
- **Shareable:** Whether the physical disk is shareable or not.
- **Description:** A description entered for the physical disk when it was created or edited.
- **VM(s):** Virtual machines using the physical disk.

Alongside each physical disk entry in the table, there is an arrow that allows you to expand the view for each entry. This exposes further information:

- **Name:** The user-specified alias for the physical disk. The name can be changed without changing the name of the physical disk on the storage array.
- **User Friendly Name:** The name of the physical disk on the storage array. The name was specified when the disk was created and cannot be changed.
- **SAN Server:** The SAN server that the physical disk belongs to.
- **Thin Provision:** Whether or not thin provisioning is supported by the physical disk.
- **Type:** The type of storage that the physical disk is a part of (for example, iSCSI or Fibre Channel).
- **Reserved by Server(s):** Whether or not the physical disk is unavailable for use by Oracle VM Manager.
- **Storage Targets:** The endpoint provided by the storage server through which the server may direct commands to the physical disk. The storage target provides access to the physical disk.
- **Server Pool:** The server pool that the physical disk belongs to.
- **Repository:** The repository that the physical disk belongs to.
- **VM(s):** Virtual machines using the physical disk.
- **ID:** The UUID for the physical disk. The UUID is a universally unique identifier that Oracle VM Manager assigns to the physical disk.
- **Page83 ID:** The unique SCSI identifier for the physical disk.
- **Access Groups:** The access groups that the physical disk belongs to.

- **Extra Information:** Information that is passed to and from the Oracle VM Storage Connect plug-in for use internally by the plug-in.
- **Absolute Path:** The absolute path to the location of the disk.

The management functions you can perform on the disk are available as icons in the perspective toolbar. Some management options are only available to SAN server disks that use a non-generic [Storage Connect](#) plug-in.

Table 6.25 Physical Disks Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create Physical Disk...		Displays the Create Physical Disk dialog box. Use this option to create a new physical disk in the selected volume group of the storage array of your choice. This option is not supported for storage arrays using a generic Oracle VM Storage Connect plug-in.
Edit Physical Disk...		Displays the Edit Physical Disk dialog box. Use this option to change the name, size, provisioning and share ability of the selected physical disk.
Delete Physical Disk		Displays the Delete Confirmation dialog box. Use this option to delete the selected physical disk.
Clone Physical Disk		Displays the Clone Physical Disk dialog box. Use this option to clone a physical disk to another physical disk or to a disk image on a file server.
Refresh Physical Disk		Refreshes the physical disks on a storage array. Use this option to rescan the physical disks after making changes to the configuration of a storage array. This updates the storage information known to Oracle VM Manager.
Display Servers using Physical Disk...		Displays the Servers using Physical Disk dialog box. Use this option to view which servers are using a selected physical disk.
Display Selected Physical Disk Events...		Display the Events dialog box which contains the job event associated with the selected physical disks.
Help		Displays context sensitive help.

6.8.3.1 Create Physical Disk (not supported on Generic)

On SAN Servers that are not using a generic Oracle VM Storage Connect plug-in, it is frequently possible to create a new physical disk.

To create a physical disk on a SAN Server:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list.
2. Click on the **+ Create Physical Disk** option in the toolbar.
3. The **Create Physical Disk** dialog is displayed. Enter or select the following:
 - **Volume Group:** A volume group that you want the physical disk to belong to.
 - **Name:** A name for the physical disk.

- **Size (GiB):** The size of the physical disk, in [GiB](#).
 - **Extra Information:** Optional information that is passed to and from the Oracle VM Storage Connect plug-in for use internally by the plug-in.
 - **Description:** An optional description of the physical disk.
 - **Shareable:** Whether or not the physical disk is shareable.
 - **Thin Provision:** Whether or not thin provisioning is to be supported by the physical disk.
4. When you have finished editing the parameters to define the new physical disk, click **OK** to save the changes, or **Cancel** to exit out of the dialog without saving any changes.

6.8.3.2 Edit Physical Disk

It is possible to edit the configuration for a physical disk either available on a SAN server or as local or shared storage. The steps and options to do so are described below.

To edit Physical Disk configuration:

1. On the **Storage** tab, expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to edit in the table presented in the management pane.

To edit the physical disk configuration for a physical disk used by a particular server, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to edit in the table presented in the management pane.

2. Click on the  **Edit Physical Disk** icon in the toolbar.
3. A dialog opens to allow you to reconfigure the Physical Disk. The dialog has the following options:
 - **ID:** A non-editable field containing the physical disk's UUID as it is stored within Oracle VM Manager.
 - **Name:** A field to change the name of the physical disk within Oracle VM Manager.
 - **Current Size(GiB):** A non-editable field containing the physical disk's current size, in [GiB](#).
 - **New Size(GiB):** A field to change the size, in GiB, of the physical disk. The size of the physical disk can only be increased in size.
 - **Description:** A text field allowing a description of the physical disk.
 - **Shareable:** A check box that determines whether or not the disk can be shared.
 - **Thin Provision:** A non-editable field describing whether or not thin provisioning is supported by the disk.
4. When you have finished editing the physical disk, click **OK** to save the changes, or **Cancel** to exit out of the dialog without saving any changes.

6.8.3.3 Delete Physical Disk

It is possible to delete an existing physical disk if it is no longer used in your Oracle VM environment and the Oracle VM Storage Connect plug-in that you are using supports this operation. Two types of physical disks are used in an Oracle VM environment:

- Local physical disk - A physical disk installed locally on a specific Oracle VM Server.
- SAN Server physical disk - A physical disk that is made available to the SAN Server during the discovery process.

Each physical disk type can be deleted using the Oracle VM Manager Web Interface.

To delete a registered physical disk that is no longer used:

1. There are two options available that you can use to delete a physical disk from your Oracle VM environment:
 - a. To delete a local physical disk:

Expand the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, and select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you want to delete in the table presented in the management pane.
 - b. To delete a SAN Server physical disk:

Use the instructions in step a or alternatively, expand the **Storage** tab, expand the **SAN Servers** folder in the navigation tree, and select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to delete in the table presented in the management pane.
2. Click on the  **Delete Physical Disk** icon in the toolbar.
3. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the physical disk.

6.8.3.4 Clone Physical Disk

It is possible to clone a physical disk. The steps and options to do so are described below.

To clone a Physical Disk:

1. On the **Storage** tab, expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to clone in the table presented in the management pane.

To clone a physical disk used by a particular server, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to clone in the table presented in the management pane.
2. Click on the  **Clone Physical Disk** icon in the toolbar.
3. A dialog opens to allow you to clone the Physical Disk. The dialog has the following options:
 - **Name:** A field to set the name of the physical disk clone that you are going to create within Oracle VM Manager.
 - **Clone Target Type:** A drop-down menu allowing you to select the type of storage to be used for the physical disk clone:
 - **Physical Disk:** Copies the data from one physical disk to another.
 - **Repository:** Copies the data from the physical disk into a virtual disk image in an existing repository.

- **Clone Target:** A searchable field to allow you to select the target location where the clone is to be stored.
 - **Clone Type:** A drop-down menu allowing you to select the type of clone to create:
 - **Sparse Copy:** Copies only the written data from the physical disk to the target clone.
 - **Non-sparse Copy:** Performs a block copy of the physical disk to the target clone.
4. When you have finished setting the clone parameters for the physical disk, click OK to begin the clone job, or Cancel to exit out of the dialog without saving any changes.

6.8.3.5 Refresh Physical Disk

When changes are made to the physical disks on a SAN server or Oracle VM Server, it is useful to refresh the configuration of your physical disks to make Oracle VM Manager aware of the changes.

To refresh physical disks:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk or disks that you wish to refresh in the table presented in the management pane.

To refresh physical disks used by a particular server, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to refresh in the table presented in the management pane.

2. Click on the  **Refresh Physical Disk** option in the toolbar.
3. The selected physical disks are refreshed and their configurations are updated within Oracle VM Manager.



Note

If you encounter an error, when refreshing a physical disk with a repository located on it, similar to the following:

```
OVMAPI_7281E Cannot perform operation on file system...
```

You may need to ensure that the repository is under the ownership of the Oracle VM Manager instance that you are using. See [Section 4.3.1.2, “Edit Repository”](#) for more information.

6.8.3.6 Display Servers Using a Physical Disk

It is possible to display the Oracle VM Servers that are using a physical disk available on a SAN server. The steps and options to do so are described below.

To display a list of Oracle VM Servers using a Physical Disk on a SAN server:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to view in the table presented in the management pane.
2. Click on the  **Display Servers using Physical Disk** icon in the toolbar.

3. A dialog opens to display the Oracle VM Servers that are configured to use the Physical Disk. The dialog provides the following information in tabular format:
 - **Name:** The name of the Oracle VM Server.
 - **Description:** The configured description for the Oracle VM Server.
 - **Status:** The running status of the Oracle VM Server.
 - **Utilization (%):** The percentage of the disk that is utilized by the Oracle VM Server.
 - **Maintenance Mode:** Whether or not the Oracle VM Server is in maintenance mode.
 - **Owned:** Whether or not the current instance of Oracle VM Manager has ownership of the Oracle VM Server.
4. When you have finished viewing the list of servers with access to the physical disk, click Close to exit out of the dialog.

6.8.3.7 Display Events

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...** perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.26 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...**  .
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.

2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

6.8.4 Access Groups Perspective

The Access Groups perspective lists the different Access Groups configured in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the access group.
- **Event Severity:** The event level severity associated with the access group.
- **SAN Server:** The SAN server that the access group applies to.
- **Description:** A description entered for the access group when it was created or edited.

This perspective includes a toolbar that consists of the following options:

Table 6.27 Access Groups Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create Access Group...		Displays the Create an Access Group dialog box. Use this option to create a new access group. This option is only available for non-generic storage arrays.
Edit Access Group...		Displays the Edit Access Group dialog box. Use this option to edit access group settings such as name, description and the storage initiators that have access to the SAN Server.
Delete Access Group		Displays the Delete Confirmation dialog box. Use this option to delete the selected access group. This option is only available for non-generic storage arrays. This option is only available for non-generic storage arrays.
Display Selected Access Group Events...		Display the Events dialog box which contains the job event associated with the selected access groups.
Help		Displays context sensitive help.

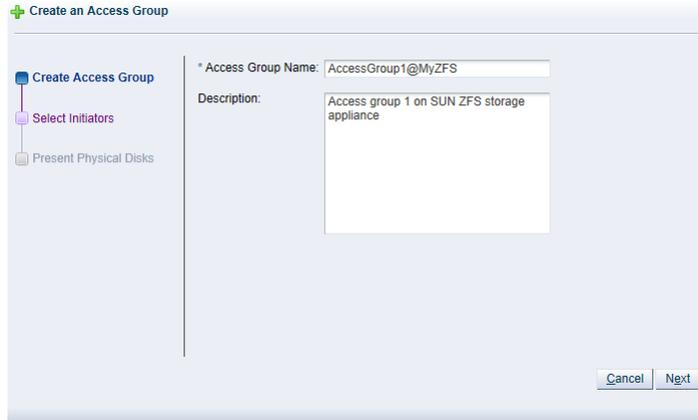
6.8.4.1 Create Access Group

Except for generic storage arrays, it is possible to create multiple access groups in order to arrange and restrict physical disk access according to your requirements. The generic iSCSI storage arrays have a single access group available by default, where you can simply add or remove storage initiators from your Oracle VM Servers.

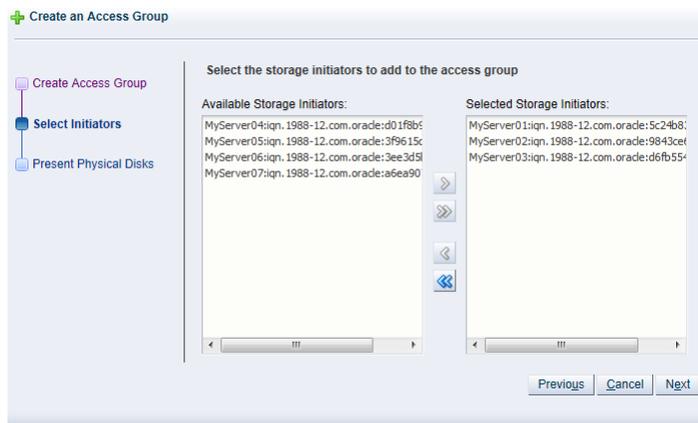
Generic fibre channel storage has no access groups and is always listed under the **Unmanaged Fibre Channel Storage Array** folder.

To configure an access group for a non-generic iSCSI storage array:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Access Groups** option in the **Perspective** drop-down list.
2. Click **Create Access Group** + to start the **Create an Access Group** wizard.
3. The **Create Access Group** step is displayed in the wizard. Enter a name for your new access group and optionally provide a description. Click **Next**.



4. The **Select Initiators** step is displayed in the wizard. It contains the available storage initiators for this type of storage on the Oracle VM Servers in your environment. Use the arrow buttons to move the required initiators from the **Available Storage Initiators** box to the **Selected Storage Initiators** box. Click **Next**.



Note

You can also use the **Storage Initiators** perspective in the **Servers and VMs** tab to view and configure storage initiators on an individual Oracle VM Server. See [Section 3.5.7.1, “View Access Groups for Selected Initiator”](#) for more information on using this method.



Important

If you have both iSCSI and Fibre Channel storage array types in your environment, you must ensure that the storage initiators that you are adding

for the access group, match the storage type that you are defining this access group for. See [What are Access Groups?](#) in the *Oracle VM Concepts Guide* for more information on Access Groups.

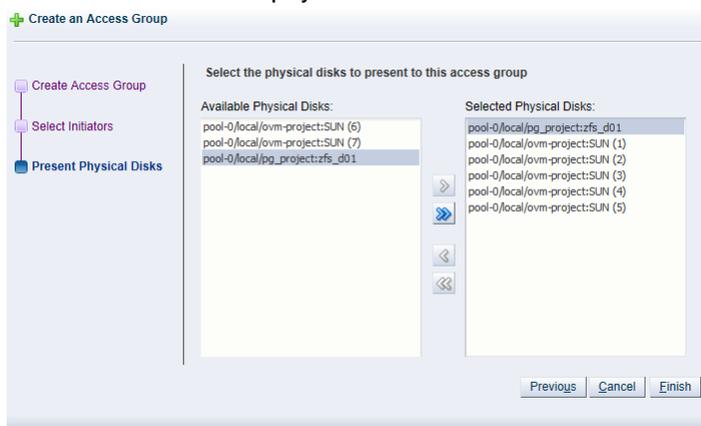
- The **Present Physical Disks** step is displayed in the wizard. It contains the available storage elements on the storage array you are registering.



Note

If this is the first time you are configuring access to this storage array, the list of available physical disks may be empty. You may have to edit the access group afterwards to select physical disks.

Use the arrow buttons to move the required disks from the **Available Physical Disks** box to the **Selected Physical Disks** box. These disks are presented to the Oracle VM Servers that have the iSCSI initiator that belongs to the access group. Click **Finish** to create the new access group with the selected initiators and physical disks.



The new access group now appears in the **Access Groups** table. If you change the **Perspective** of the management pane to **Physical Disks**, the list of presented physical disks appear in the table.

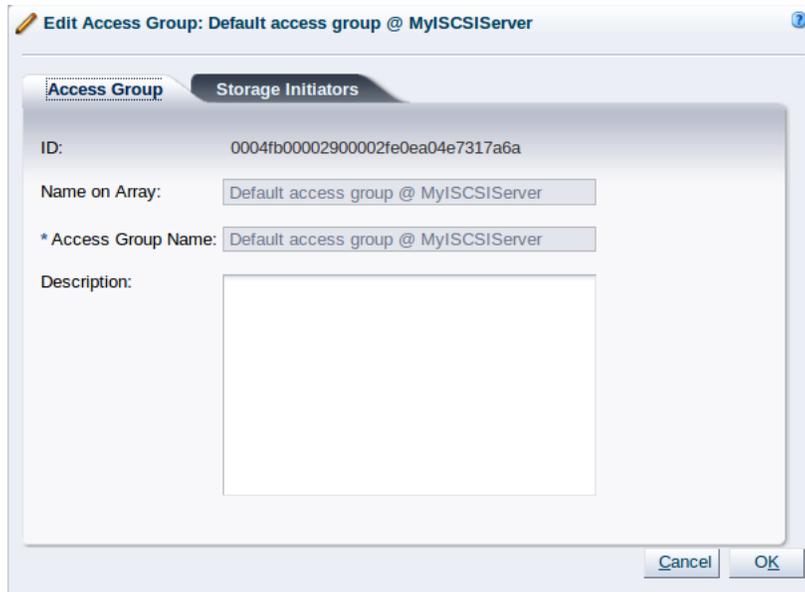
After configuring the access group it is advisable to refresh the SAN server to make sure that the current storage layout and access rules are in effect. The selected physical disks in your non-generic storage array are now available to the Oracle VM Servers in this access group.

6.8.4.2 Edit Access Group

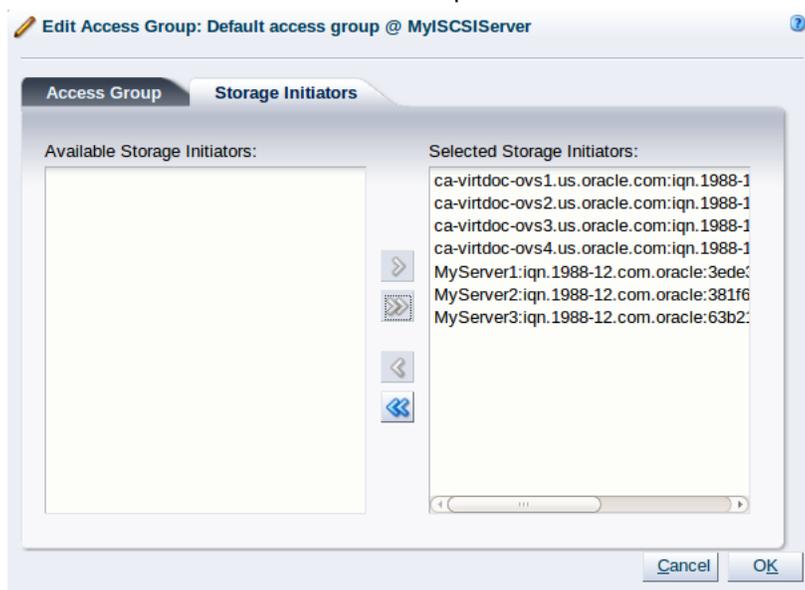
It is possible to edit an existing Access Group for a SAN Server. This option is also possible for a generic iSCSI storage array, although you are only able to edit the default access group that is created when you discover the SAN Server, since it is not possible to create additional access groups for generic Oracle VM Storage Connect plug-ins.

To edit the access group for an iSCSI storage array:

- Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Access Groups** option in the **Perspective** drop-down list.
- Select the access group that you wish to edit (a default access group is always present) and click **Edit Access Group** . The **Edit Access Group** dialog box is displayed.
- In the **Access Group** tab, you can edit the **Name on Array** and **Access Group Name** for storage arrays that use a non-generic Oracle VM Storage Connect plug-in. When you have a generic plug-in, these items are greyed out. You can also provide or edit a description for the access group.



4. Select the **Storage Initiators** tab. It contains the available storage initiators for this type of storage on the Oracle VM Servers in your environment.
5. Use the arrow buttons to move the required initiators to the **Selected Storage Initiators** box.



Note

You can also use the **Storage Initiators** perspective in the **Servers and VMs** tab to view and configure storage initiators on an individual Oracle VM Server. See [Section 3.5.7.1, “View Access Groups for Selected Initiator”](#) for more information on using this method.



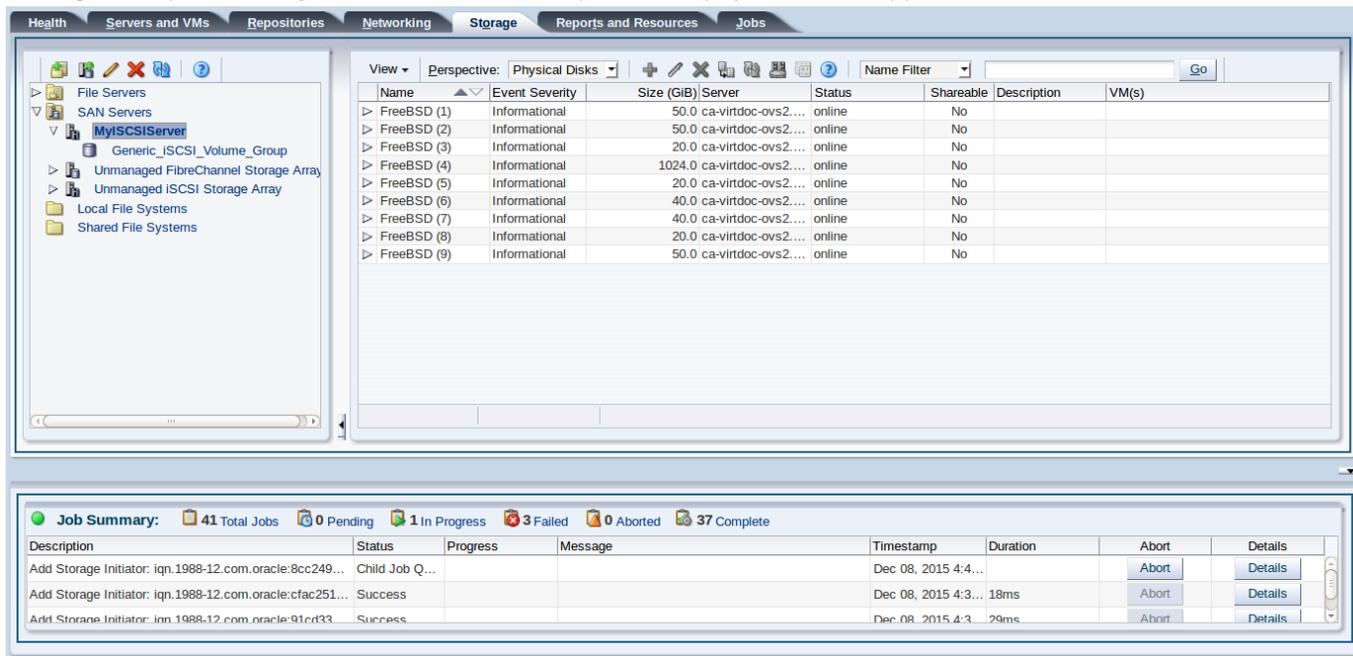
Important

If you have both iSCSI and Fibre Channel storage array types in your environment, you must ensure that the storage initiators that you are adding

for the access group, match the storage type that you are defining this access group for. See [What are Access Groups?](#) in the *Oracle VM Concepts Guide* for more information on Access Groups.

For a generic storage array you cannot select which physical disks are added; all disks are automatically presented to the selected Oracle VM Servers.

6. Click **OK** to save your changes to the default access group. If you change the **Perspective** of the management pane to **Physical Disks**, the list of presented physical disks appears in the table.



7. After configuring the access group it is advisable to refresh the storage array to make sure that the current storage layout and access rules are in effect.

The Oracle VM Servers in this access group now have the necessary permissions to use the physical disks of the storage array; they can be deployed either as disks for virtual machines (VMs) or for storage repositories. To create storage repositories on your physical disks, see [Chapter 4, Repositories Tab](#).

6.8.4.3 Delete Access Group

Except for generic storage arrays, it is possible to delete additional access groups that you may have defined apart from the default access group.

To delete one or more access groups:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Access Groups** option in the **Perspective** drop-down list. Select the access group or groups, that you wish to delete, from the items listed in the management pane.
2. Click on the **Delete Access Group** icon in the toolbar.
3. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the access group.

6.8.4.4 Present/Unpresent Physical Disks

6.8.4.5 Display Events

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.28 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 🗑️.
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

6.8.5 Volume Groups Perspective

The Volume Groups perspective lists the different Volume Groups configured for each SAN Server in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the volume group.

- **Size (GiB):** A grouping that consists of the following columns:
 - **Free:** The size of the volume, in [GiB](#), that is currently free.
 - **Used:** The size of the volume, in GiB, that is currently in use.
 - **Total:** The total size, in GiB, of the volume.
- **Description:** A description entered for the volume group when it was created or edited.

This perspective includes a toolbar that consists of the following options:

Table 6.29 Volume Groups Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Edit Volume Group...		Displays the Edit Volume Group dialog box. Use this option to edit volume group settings such as name and description.
Help		Displays context sensitive help.

6.8.5.1 Edit Volume Group

It is possible to edit the configuration for a Volume Group available on a SAN server. The steps and options to do so are described below.

To edit Volume Group configuration on a SAN server:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Volume Groups** option in the **Perspective** drop-down list. Select the volume group that you wish to edit in the table presented in the management pane.
2. Click on the  **Edit Volume Group** icon in the toolbar.
3. A dialog opens to allow you to reconfigure the Volume Group. The dialog has the following options:
 - **ID:** A non-editable field containing the volume group's UUID as it is stored within Oracle VM Manager.
 - **Name:** A field to change the name of the volume group within Oracle VM Manager.
 - **Description:** A text field allowing a description of the volume group.
4. When you have finished editing the volume group, click OK to save the changes, or Cancel to exit out of the dialog without saving any changes.

6.9 Unmanaged iSCSI Storage Array Item

An **Unmanaged iSCSI Storage Array** navigation item is listed underneath the [Section 6.5, "SAN Servers Folder"](#) when it has been expanded. The structure of the navigation provided in the navigation tree is discussed in more detail in [Section 6.2, "Summary"](#).

Clicking on a **Unmanaged iSCSI Storage Array** navigation item in the navigation tree allows you to access different perspectives in the management pane. Each perspective provides its own view of any unmanaged iSCSI storage arrays within Oracle VM Manager. Most of the perspectives also include separate perspective toolbars that enable you to perform various configuration or management tasks specific to the view currently displayed within the management pane. The **Unmanaged iSCSI Storage Array** navigation item offers the following perspectives within the management pane:

- [Info Perspective](#)

- [Events Perspective](#)
- [Physical Disks Perspective](#)
- [Access Groups Perspective](#)
- [Volume Groups Perspective](#)

6.9.1 Info Perspective

The Info perspective is common to many elements within the Oracle VM Manager Web Interface. This perspective always shows the individually configured parameters for an item that is currently selected in the navigation tree. Some of these configured parameters may be automatically populated through a discovery process, while others may have been configured manually during the creation of the object that is selected.

The Info perspective or dialog contains a perspective toolbar with the following options:

Table 6.30 Info Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Help		Displays context sensitive help.

This perspective usually includes the following information depending on what information is returned by the Oracle VM Storage Connect plug-in:

- **Admin Host:** The configured admin host to access this storage array.
- **Admin Username:** The configured admin username to access this storage array.
- **Storage Name:** The name of the storage array as returned by the Oracle VM Storage Connect plug-in.
- **Storage Type:** The type of storage array as returned by the Oracle VM Storage Connect plug-in.
- **Description:** The configured description for the storage array.
- **SAN Server's Storage Description:** The description returned for the storage array as returned by the Oracle VM Storage Connect plug-in.
- **Status:** The status of the storage array as returned by the Oracle VM Storage Connect plug-in.
- **Validated:** Whether or not the storage array has been validated by Oracle VM Manager. No special storage operations supported by the Oracle VM Storage Connect plug-in may occur until the storage server is validated by Oracle VM Manager.
- **Storage Plug-In:** The name of the Oracle VM Storage Connect plug-in used to access the storage array.
- **Storage Plug-In Version:** The version number of the Oracle VM Storage Connect plug-in used to access the storage array.
- **Plug-in Private Data:** Additional parameters passed to the Oracle VM Storage Connect plug-in.
- **Total Size (GiB):** The total size, in [GiB](#), reported by the Oracle VM Storage Connect plug-in.
- **Free Size (GiB):** The available free space, in GiB, reported by the Oracle VM Storage Connect plug-in.
- **Used Size (GiB):** The amount of used space, in GiB, reported by the Oracle VM Storage Connect plug-in.

Additional fields may be listed to indicate the support status for various storage related functions as reported by the Oracle VM Storage Connect plug-in in use.

6.9.2 Events Perspective

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.31 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is

Toolbar Icon Option	Icon	Description
		always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 📌 to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 📌.
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 📌 to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓, or click **Acknowledge All** 📌 to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.

4. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

6.9.3 Physical Disks Perspective

The Physical Disks perspective lists the different physical disks configured in your environment and running on a SAN storage array. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the physical disk
- **Event Severity:** The event level severity for the physical disk.
- **Size (GiB):** The size, in [GiB](#), of the physical disk.
- **Volume Group:** The volume group that the physical disk belongs to.
- **Server:** The servers that have access to the physical disk.
- **Status:** The status of the physical disk (whether or not the disk is online).
- **Shareable:** Whether the physical disk is shareable or not.
- **Description:** A description entered for the physical disk when it was created or edited.
- **VM(s):** Virtual machines using the physical disk.

Alongside each physical disk entry in the table, there is an arrow that allows you to expand the view for each entry. This exposes further information:

- **Name:** The user-specified alias for the physical disk. The name can be changed without changing the name of the physical disk on the storage array.
- **User Friendly Name:** The name of the physical disk on the storage array. The name was specified when the disk was created and cannot be changed.
- **SAN Server:** The SAN server that the physical disk belongs to.
- **Thin Provision:** Whether or not thin provisioning is supported by the physical disk.
- **Type:** The type of storage that the physical disk is a part of (for example, iSCSI or Fibre Channel).
- **Reserved by Server(s):** Whether or not the physical disk is unavailable for use by Oracle VM Manager.
- **Storage Targets:** The endpoint provided by the storage server through which the server may direct commands to the physical disk. The storage target provides access to the physical disk.
- **Server Pool:** The server pool that the physical disk belongs to.
- **Repository:** The repository that the physical disk belongs to.
- **VM(s):** Virtual machines using the physical disk.
- **ID:** The UUID for the physical disk. The UUID is a universally unique identifier that Oracle VM Manager assigns to the physical disk.
- **Page83 ID:** The unique SCSI identifier for the physical disk.
- **Access Groups:** The access groups that the physical disk belongs to.

- **Extra Information:** Information that is passed to and from the Oracle VM Storage Connect plug-in for use internally by the plug-in.
- **Absolute Path:** The absolute path to the location of the disk.

The management functions you can perform on the disk are available as icons in the perspective toolbar. Some management options are only available to SAN server disks that use a non-generic [Storage Connect](#) plug-in.

Table 6.32 Physical Disks Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create Physical Disk...		Displays the Create Physical Disk dialog box. Use this option to create a new physical disk in the selected volume group of the storage array of your choice. This option is not supported for storage arrays using a generic Oracle VM Storage Connect plug-in.
Edit Physical Disk...		Displays the Edit Physical Disk dialog box. Use this option to change the name, size, provisioning and share ability of the selected physical disk.
Delete Physical Disk		Displays the Delete Confirmation dialog box. Use this option to delete the selected physical disk.
Clone Physical Disk		Displays the Clone Physical Disk dialog box. Use this option to clone a physical disk to another physical disk or to a disk image on a file server.
Refresh Physical Disk		Refreshes the physical disks on a storage array. Use this option to rescan the physical disks after making changes to the configuration of a storage array. This updates the storage information known to Oracle VM Manager.
Display Servers using Physical Disk...		Displays the Servers using Physical Disk dialog box. Use this option to view which servers are using a selected physical disk.
Display Selected Physical Disk Events...		Display the Events dialog box which contains the job event associated with the selected physical disks.
Help		Displays context sensitive help.

6.9.3.1 Create Physical Disk (not supported on Generic)

On SAN Servers that are not using a generic Oracle VM Storage Connect plug-in, it is frequently possible to create a new physical disk.

To create a physical disk on a SAN Server:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list.
2. Click on the **+ Create Physical Disk** option in the toolbar.
3. The **Create Physical Disk** dialog is displayed. Enter or select the following:
 - **Volume Group:** A volume group that you want the physical disk to belong to.
 - **Name:** A name for the physical disk.

- **Size (GiB):** The size of the physical disk, in [GiB](#).
 - **Extra Information:** Optional information that is passed to and from the Oracle VM Storage Connect plug-in for use internally by the plug-in.
 - **Description:** An optional description of the physical disk.
 - **Shareable:** Whether or not the physical disk is shareable.
 - **Thin Provision:** Whether or not thin provisioning is to be supported by the physical disk.
4. When you have finished editing the parameters to define the new physical disk, click **OK** to save the changes, or **Cancel** to exit out of the dialog without saving any changes.

6.9.3.2 Edit Physical Disk

It is possible to edit the configuration for a physical disk either available on a SAN server or as local or shared storage. The steps and options to do so are described below.

To edit Physical Disk configuration:

1. On the **Storage** tab, expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to edit in the table presented in the management pane.

To edit the physical disk configuration for a physical disk used by a particular server, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to edit in the table presented in the management pane.

2. Click on the  **Edit Physical Disk** icon in the toolbar.
3. A dialog opens to allow you to reconfigure the Physical Disk. The dialog has the following options:
 - **ID:** A non-editable field containing the physical disk's UUID as it is stored within Oracle VM Manager.
 - **Name:** A field to change the name of the physical disk within Oracle VM Manager.
 - **Current Size(GiB):** A non-editable field containing the physical disk's current size, in [GiB](#).
 - **New Size(GiB):** A field to change the size, in GiB, of the physical disk. The size of the physical disk can only be increased in size.
 - **Description:** A text field allowing a description of the physical disk.
 - **Shareable:** A check box that determines whether or not the disk can be shared.
 - **Thin Provision:** A non-editable field describing whether or not thin provisioning is supported by the disk.
4. When you have finished editing the physical disk, click **OK** to save the changes, or **Cancel** to exit out of the dialog without saving any changes.

6.9.3.3 Delete Physical Disk

It is possible to delete an existing physical disk if it is no longer used in your Oracle VM environment and the Oracle VM Storage Connect plug-in that you are using supports this operation. Two types of physical disks are used in an Oracle VM environment:

- Local physical disk - A physical disk installed locally on a specific Oracle VM Server.
- SAN Server physical disk - A physical disk that is made available to the SAN Server during the discovery process.

Each physical disk type can be deleted using the Oracle VM Manager Web Interface.

To delete a registered physical disk that is no longer used:

1. There are two options available that you can use to delete a physical disk from your Oracle VM environment:

- a. To delete a local physical disk:

Expand the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, and select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you want to delete in the table presented in the management pane.

- b. To delete a SAN Server physical disk:

Use the instructions in step a or alternatively, expand the **Storage** tab, expand the **SAN Servers** folder in the navigation tree, and select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to delete in the table presented in the management pane.

2. Click on the  **Delete Physical Disk** icon in the toolbar.
3. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the physical disk.

6.9.3.4 Clone Physical Disk

It is possible to clone a physical disk. The steps and options to do so are described below.

To clone a Physical Disk:

1. On the **Storage** tab, expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to clone in the table presented in the management pane.

To clone a physical disk used by a particular server, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to clone in the table presented in the management pane.

2. Click on the  **Clone Physical Disk** icon in the toolbar.
3. A dialog opens to allow you to clone the Physical Disk. The dialog has the following options:
 - **Name:** A field to set the name of the physical disk clone that you are going to create within Oracle VM Manager.
 - **Clone Target Type:** A drop-down menu allowing you to select the type of storage to be used for the physical disk clone:
 - **Physical Disk:** Copies the data from one physical disk to another.
 - **Repository:** Copies the data from the physical disk into a virtual disk image in an existing repository.

- **Clone Target:** A searchable field to allow you to select the target location where the clone is to be stored.
 - **Clone Type:** A drop-down menu allowing you to select the type of clone to create:
 - **Sparse Copy:** Copies only the written data from the physical disk to the target clone.
 - **Non-sparse Copy:** Performs a block copy of the physical disk to the target clone.
4. When you have finished setting the clone parameters for the physical disk, click OK to begin the clone job, or Cancel to exit out of the dialog without saving any changes.

6.9.3.5 Refresh Physical Disk

When changes are made to the physical disks on a SAN server or Oracle VM Server, it is useful to refresh the configuration of your physical disks to make Oracle VM Manager aware of the changes.

To refresh physical disks:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk or disks that you wish to refresh in the table presented in the management pane.

To refresh physical disks used by a particular server, on the **Servers and VMs** tab, expand the **Server Pools** or **Unassigned Servers** folder, to select a particular server in the navigation tree. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to refresh in the table presented in the management pane.

2. Click on the  **Refresh Physical Disk** option in the toolbar.
3. The selected physical disks are refreshed and their configurations are updated within Oracle VM Manager.



Note

If you encounter an error, when refreshing a physical disk with a repository located on it, similar to the following:

```
OVMAPI_7281E Cannot perform operation on file system...
```

You may need to ensure that the repository is under the ownership of the Oracle VM Manager instance that you are using. See [Section 4.3.1.2, “Edit Repository”](#) for more information.

6.9.3.6 Display Servers Using a Physical Disk

It is possible to display the Oracle VM Servers that are using a physical disk available on a SAN server. The steps and options to do so are described below.

To display a list of Oracle VM Servers using a Physical Disk on a SAN server:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Physical Disks** option in the **Perspective** drop-down list. Select the physical disk that you wish to view in the table presented in the management pane.
2. Click on the  **Display Servers using Physical Disk** icon in the toolbar.

3. A dialog opens to display the Oracle VM Servers that are configured to use the Physical Disk. The dialog provides the following information in tabular format:
 - **Name:** The name of the Oracle VM Server.
 - **Description:** The configured description for the Oracle VM Server.
 - **Status:** The running status of the Oracle VM Server.
 - **Utilization (%):** The percentage of the disk that is utilized by the Oracle VM Server.
 - **Maintenance Mode:** Whether or not the Oracle VM Server is in maintenance mode.
 - **Owned:** Whether or not the current instance of Oracle VM Manager has ownership of the Oracle VM Server.
4. When you have finished viewing the list of servers with access to the physical disk, click Close to exit out of the dialog.

6.9.3.7 Display Events

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...** perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.33 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...**  .
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge**  , or click **Acknowledge All**  to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.

2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓ , or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

6.9.4 Access Groups Perspective

The Access Groups perspective lists the different Access Groups configured in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the access group.
- **Event Severity:** The event level severity associated with the access group.
- **SAN Server:** The SAN server that the access group applies to.
- **Description:** A description entered for the access group when it was created or edited.

This perspective includes a toolbar that consists of the following options:

Table 6.34 Access Groups Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create Access Group...		Displays the Create an Access Group dialog box. Use this option to create a new access group. This option is only available for non-generic storage arrays.
Edit Access Group...		Displays the Edit Access Group dialog box. Use this option to edit access group settings such as name, description and the storage initiators that have access to the SAN Server.
Delete Access Group		Displays the Delete Confirmation dialog box. Use this option to delete the selected access group. This option is only available for non-generic storage arrays. This option is only available for non-generic storage arrays.
Display Selected Access Group Events...		Display the Events dialog box which contains the job event associated with the selected access groups.
Help		Displays context sensitive help.

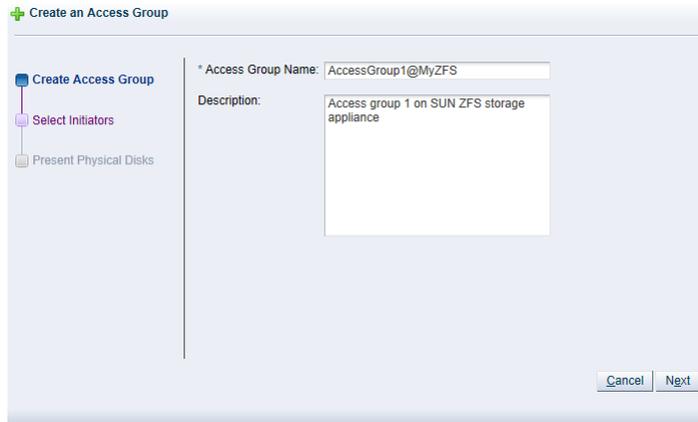
6.9.4.1 Create Access Group

Except for generic storage arrays, it is possible to create multiple access groups in order to arrange and restrict physical disk access according to your requirements. The generic iSCSI storage arrays have a single access group available by default, where you can simply add or remove storage initiators from your Oracle VM Servers.

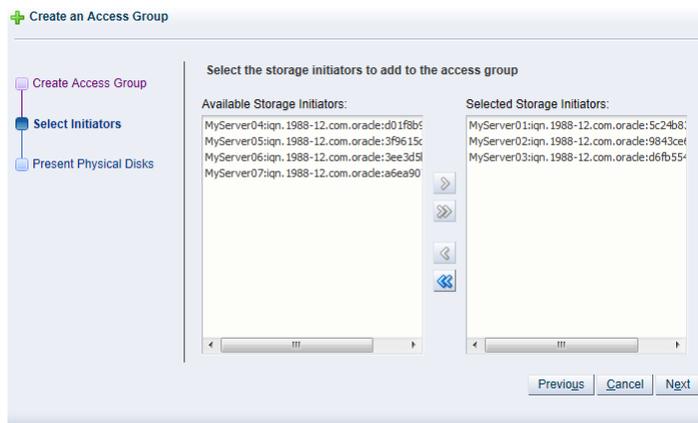
Generic fibre channel storage has no access groups and is always listed under the **Unmanaged Fibre Channel Storage Array** folder.

To configure an access group for a non-generic iSCSI storage array:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Access Groups** option in the **Perspective** drop-down list.
2. Click **Create Access Group** + to start the **Create an Access Group** wizard.
3. The **Create Access Group** step is displayed in the wizard. Enter a name for your new access group and optionally provide a description. Click **Next**.



4. The **Select Initiators** step is displayed in the wizard. It contains the available storage initiators for this type of storage on the Oracle VM Servers in your environment. Use the arrow buttons to move the required initiators from the **Available Storage Initiators** box to the **Selected Storage Initiators** box. Click **Next**.



Note

You can also use the **Storage Initiators** perspective in the **Servers and VMs** tab to view and configure storage initiators on an individual Oracle VM Server. See [Section 3.5.7.1, “View Access Groups for Selected Initiator”](#) for more information on using this method.



Important

If you have both iSCSI and Fibre Channel storage array types in your environment, you must ensure that the storage initiators that you are adding

for the access group, match the storage type that you are defining this access group for. See [What are Access Groups?](#) in the *Oracle VM Concepts Guide* for more information on Access Groups.

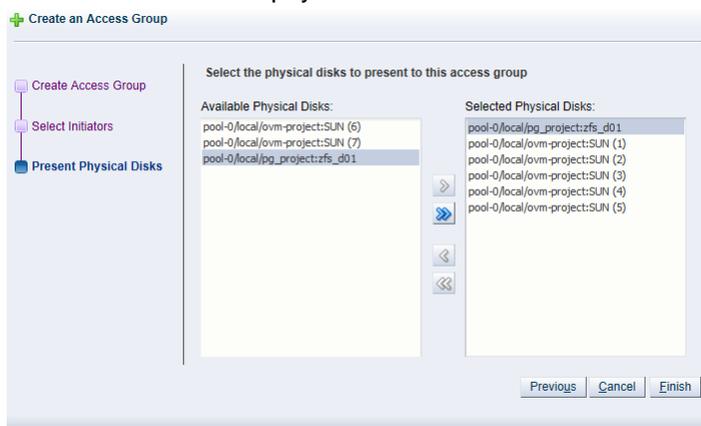
- The **Present Physical Disks** step is displayed in the wizard. It contains the available storage elements on the storage array you are registering.



Note

If this is the first time you are configuring access to this storage array, the list of available physical disks may be empty. You may have to edit the access group afterwards to select physical disks.

Use the arrow buttons to move the required disks from the **Available Physical Disks** box to the **Selected Physical Disks** box. These disks are presented to the Oracle VM Servers that have the iSCSI initiator that belongs to the access group. Click **Finish** to create the new access group with the selected initiators and physical disks.



The new access group now appears in the **Access Groups** table. If you change the **Perspective** of the management pane to **Physical Disks**, the list of presented physical disks appear in the table.

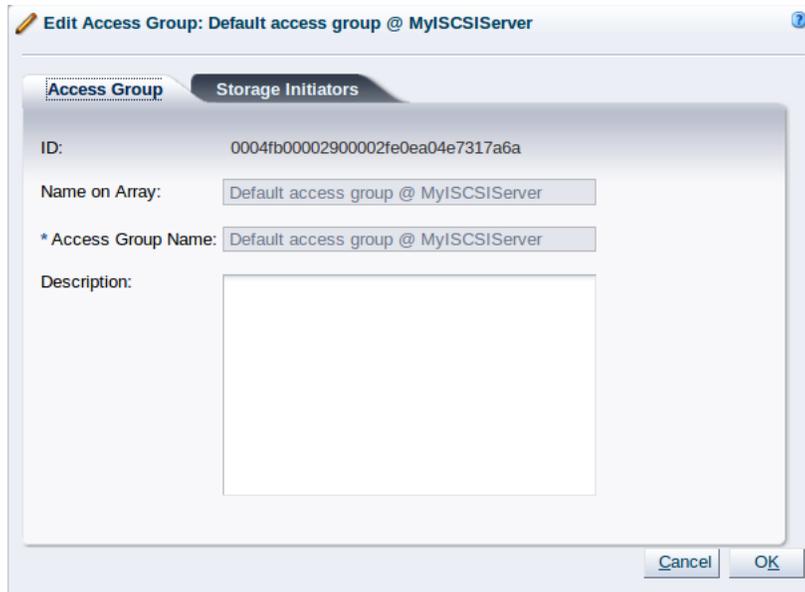
After configuring the access group it is advisable to refresh the SAN server to make sure that the current storage layout and access rules are in effect. The selected physical disks in your non-generic storage array are now available to the Oracle VM Servers in this access group.

6.9.4.2 Edit Access Group

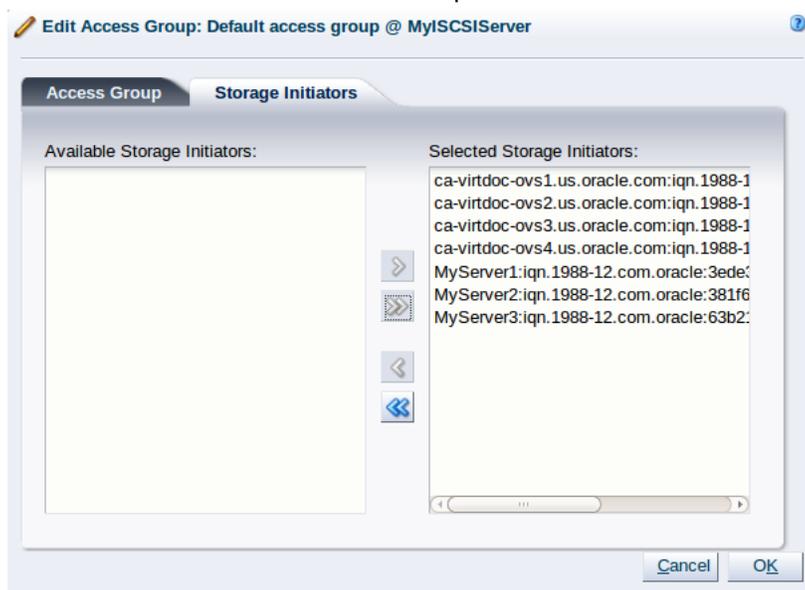
It is possible to edit an existing Access Group for a SAN Server. This option is also possible for a generic iSCSI storage array, although you are only able to edit the default access group that is created when you discover the SAN Server, since it is not possible to create additional access groups for generic Oracle VM Storage Connect plug-ins.

To edit the access group for an iSCSI storage array:

- Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Access Groups** option in the **Perspective** drop-down list.
- Select the access group that you wish to edit (a default access group is always present) and click **Edit Access Group** . The **Edit Access Group** dialog box is displayed.
- In the **Access Group** tab, you can edit the **Name on Array** and **Access Group Name** for storage arrays that use a non-generic Oracle VM Storage Connect plug-in. When you have a generic plug-in, these items are greyed out. You can also provide or edit a description for the access group.



4. Select the **Storage Initiators** tab. It contains the available storage initiators for this type of storage on the Oracle VM Servers in your environment.
5. Use the arrow buttons to move the required initiators to the **Selected Storage Initiators** box.



Note

You can also use the **Storage Initiators** perspective in the **Servers and VMs** tab to view and configure storage initiators on an individual Oracle VM Server. See [Section 3.5.7.1, “View Access Groups for Selected Initiator”](#) for more information on using this method.



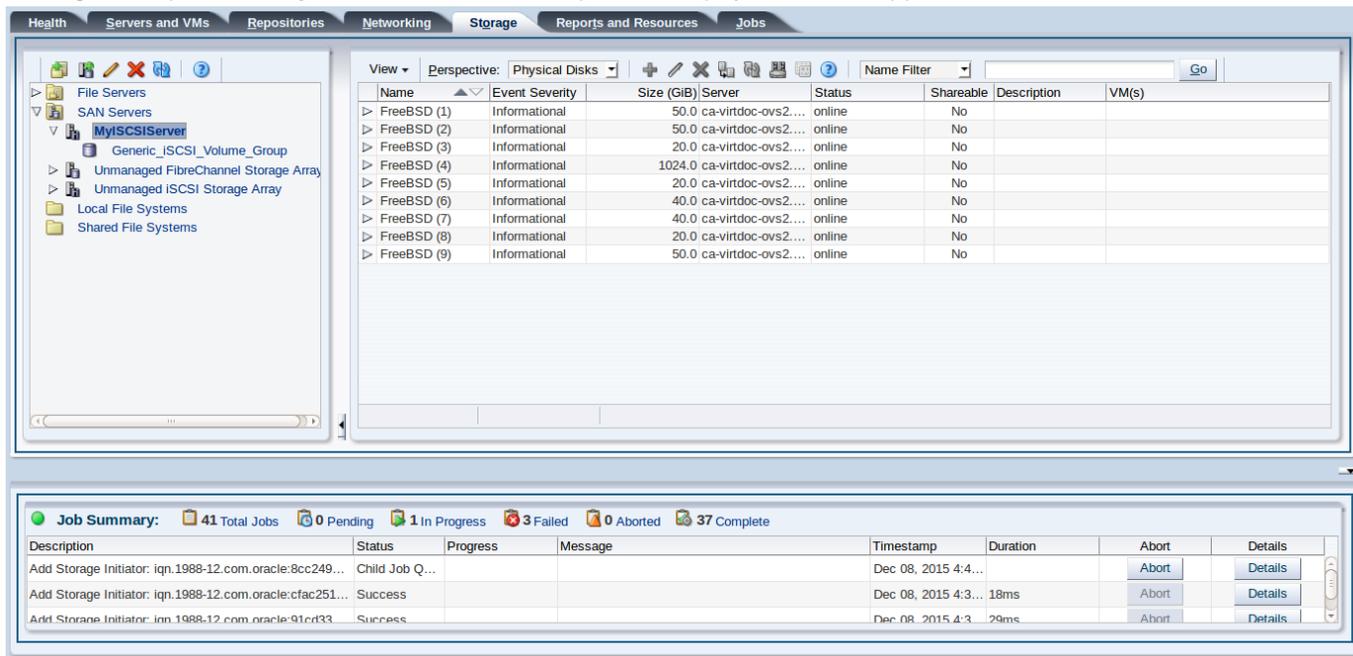
Important

If you have both iSCSI and Fibre Channel storage array types in your environment, you must ensure that the storage initiators that you are adding

for the access group, match the storage type that you are defining this access group for. See [What are Access Groups?](#) in the *Oracle VM Concepts Guide* for more information on Access Groups.

For a generic storage array you cannot select which physical disks are added; all disks are automatically presented to the selected Oracle VM Servers.

6. Click **OK** to save your changes to the default access group. If you change the **Perspective** of the management pane to **Physical Disks**, the list of presented physical disks appears in the table.



7. After configuring the access group it is advisable to refresh the storage array to make sure that the current storage layout and access rules are in effect.

The Oracle VM Servers in this access group now have the necessary permissions to use the physical disks of the storage array; they can be deployed either as disks for virtual machines (VMs) or for storage repositories. To create storage repositories on your physical disks, see [Chapter 4, Repositories Tab](#).

6.9.4.3 Delete Access Group

Except for generic storage arrays, it is possible to delete additional access groups that you may have defined apart from the default access group.

To delete one or more access groups:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Access Groups** option in the **Perspective** drop-down list. Select the access group or groups, that you wish to delete, from the items listed in the management pane.
2. Click on the **Delete Access Group** icon in the toolbar.
3. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the access group.

6.9.4.4 Present/Unpresent Physical Disks

6.9.4.5 Display Events

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.35 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.

Toolbar Icon Option	Icon	Description
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 🗑️.
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** 🗑️ to clear all user acknowledgeable errors.

6.9.5 Volume Groups Perspective

The Volume Groups perspective lists the different Volume Groups configured for each SAN Server in your environment. The following columns are displayed in the management pane:

- **Name:** The name that has been configured for the volume group.
- **Size (GiB):** A grouping that consists of the following columns:
 - **Free:** The size of the volume, in [GiB](#), that is currently free.
 - **Used:** The size of the volume, in GiB, that is currently in use.
 - **Total:** The total size, in GiB, of the volume.
- **Description:** A description entered for the volume group when it was created or edited.

This perspective includes a toolbar that consists of the following options:

Table 6.36 Volume Groups Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Edit Volume Group...		Displays the Edit Volume Group dialog box. Use this option to edit volume group settings such as name and description.
Help		Displays context sensitive help.

6.9.5.1 Edit Volume Group

It is possible to edit the configuration for a Volume Group available on a SAN server. The steps and options to do so are described below.

To edit Volume Group configuration on a SAN server:

1. Expand the **SAN Servers** folder in the navigation tree, select a SAN server item contained within the folder. Select the **Volume Groups** option in the **Perspective** drop-down list. Select the volume group that you wish to edit in the table presented in the management pane.
2. Click on the  **Edit Volume Group** icon in the toolbar.
3. A dialog opens to allow you to reconfigure the Volume Group. The dialog has the following options:
 - **ID:** A non-editable field containing the volume group's UUID as it is stored within Oracle VM Manager.
 - **Name:** A field to change the name of the volume group within Oracle VM Manager.
 - **Description:** A text field allowing a description of the volume group.
4. When you have finished editing the volume group, click OK to save the changes, or Cancel to exit out of the dialog without saving any changes.

6.10 Local File Systems Item

Clicking on the **Local File Systems** navigation item in the navigation tree allows you to view a list of all of the local file systems available within Oracle VM Manager within the management pane. There are no perspectives available for this item.

The following information is displayed within the table in the management pane:

- **Name:** The name that has been configured for the file system.
- **Storage Device:** The storage device mapping where the file system is located.
- **Event Severity:** The event level severity for each file system.
- **Size (GiB):** A grouping that consists of the following columns:
 - **Free:** The size of the file system, in [GiB](#), that is currently free.
 - **Used:** The size of the file system, in GiB, that is currently in use.
 - **Total:** The total size, in GiB, of the file system.
- **Location:** The location of the file system if reported by the Oracle VM Storage Connect plug-in used.
- **Description:** A description entered for the file system when it was created or edited.

This perspective includes a toolbar that consists of the following options:

Table 6.37 File Systems Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Edit File System...		Displays the Edit File System dialog box.
Refresh File System		Refreshes the file systems to update the storage information known to Oracle VM Manager.
Delete File System		Displays the Delete Confirmation dialog box. Use this option to delete the selected file system.
Display Selected File System Events...		Display the Events dialog box which contains the job event associated with the selected file systems.
Help		Displays context sensitive help.

6.10.1 Edit File System

It is possible to edit the configuration for an existing file system. The steps and options to do so are described below.

To edit a local or shared file system:

1. If you need to modify a file system stored on a local disk, select the file system item contained the **Local File Systems** or **Shared File Systems** folder in the navigation pane. Select the file system that you wish to edit in the management pane table.
2. Click on the  **Edit File System** icon in the toolbar.
3. A dialog opens to allow you to reconfigure the file system. You can edit the following parameters:
 - **Name:** The name of the file system in Oracle VM Manager.
 - **Description:** Optional information you would like to add about this file system.
4. When you have finished editing the file system, click OK to save the changes, or Cancel to exit out of the dialog without saving any changes.

6.10.2 Refresh File System

When changes are made to the file systems or disks on local or shared storage, it is useful to refresh the configuration of your file systems to make Oracle VM Manager aware of the changes.

To refresh the file system:

1. Click on either the **Local File Systems** or **Shared File Systems** folder in the navigation tree, depending on which type of file system you wish to refresh. Select the file system that you wish to refresh in the table presented in the management pane.
2. Click on the  **Refresh File System** option in the toolbar.
3. The selected file systems are refreshed and their configurations are updated within Oracle VM Manager.

6.10.3 Delete File System

It is possible to delete the file system on local and shared storage devices, and on a physical disk attached to an Oracle VM Server.

To delete a file system on local or shared storage:

1. Select the **Storage** tab.
2. Click on either the **Local File Systems** or **Shared File Systems** folder in the navigation tree.
3. Select the file system to delete in the table in the management pane.
4. Click the  **Delete File System** icon in the toolbar. If the icon is greyed out it means that the file system is used by a repository and it cannot be deleted. You must first delete the repository. See [Section 4.3.1.3, "Delete Repository"](#).
5. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the file system.

To delete a file system on a physical disk attached to an Oracle VM Server:

1. Select the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Physical Disks** in the **Perspective** drop-down list.
4. Select the physical disk in the table in the management pane.
5. Click on the  **Delete File System** icon in the toolbar. If the icon is greyed out, there is no file system on the disk so it cannot be deleted.
6. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the file system.

6.10.4 Show Events

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.38 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the

navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** ⚙️ to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 🗨️.
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** ⚙️ to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓, or click **Acknowledge All** ⚙️ to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** ⚙️ to clear all user acknowledgeable errors.

6.11 Shared File Systems Item

Clicking on the **Shared File Systems** navigation item in the navigation tree allows you to view a list of all of the shared file systems available within Oracle VM Manager within the management pane. There are no perspectives available for this item.

The following information is displayed within the table in the management pane:

- **Name:** The name that has been configured for the file system.

- **Storage Device:** The storage device mapping where the file system is located.
- **Event Severity:** The event level severity for each file system.
- **Size (GiB):** A grouping that consists of the following columns:
 - **Free:** The size of the file system, in [GiB](#), that is currently free.
 - **Used:** The size of the file system, in GiB, that is currently in use.
 - **Total:** The total size, in GiB, of the file system.
- **Location:** The location of the file system if reported by the Oracle VM Storage Connect plug-in used.
- **Description:** A description entered for the file system when it was created or edited.

This perspective includes a toolbar that consists of the following options:

Table 6.39 File Systems Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Edit File System...		Displays the Edit File System dialog box.
Refresh File System		Refreshes the file systems to update the storage information known to Oracle VM Manager.
Delete File System		Displays the Delete Confirmation dialog box. Use this option to delete the selected file system.
Display Selected File System Events...		Display the Events dialog box which contains the job event associated with the selected file systems.
Help		Displays context sensitive help.

6.11.1 Edit File System

It is possible to edit the configuration for an existing file system. The steps and options to do so are described below.

To edit a local or shared file system:

1. If you need to modify a file system stored on a local disk, select the file system item contained the **Local File Systems** or **Shared File Systems** folder in the navigation pane. Select the file system that you wish to edit in the management pane table.
2. Click on the  **Edit File System** icon in the toolbar.
3. A dialog opens to allow you to reconfigure the file system. You can edit the following parameters:
 - **Name:** The name of the file system in Oracle VM Manager.
 - **Description:** Optional information you would like to add about this file system.
4. When you have finished editing the file system, click OK to save the changes, or Cancel to exit out of the dialog without saving any changes.

6.11.2 Refresh File System

When changes are made to the file systems or disks on local or shared storage, it is useful to refresh the configuration of your file systems to make Oracle VM Manager aware of the changes.

To refresh the file system:

1. Click on either the **Local File Systems** or **Shared File Systems** folder in the navigation tree, depending on which type of file system you wish to refresh. Select the file system that you wish to refresh in the table presented in the management pane.
2. Click on the  **Refresh File System** option in the toolbar.
3. The selected file systems are refreshed and their configurations are updated within Oracle VM Manager.

6.11.3 Delete File System

It is possible to delete the file system on local and shared storage devices, and on a physical disk attached to an Oracle VM Server.

To delete a file system on local or shared storage:

1. Select the **Storage** tab.
2. Click on either the **Local File Systems** or **Shared File Systems** folder in the navigation tree.
3. Select the file system to delete in the table in the management pane.
4. Click the  **Delete File System** icon in the toolbar. If the icon is greyed out it means that the file system is used by a repository and it cannot be deleted. You must first delete the repository. See [Section 4.3.1.3, "Delete Repository"](#).
5. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the file system.

To delete a file system on a physical disk attached to an Oracle VM Server:

1. Select the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Physical Disks** in the **Perspective** drop-down list.
4. Select the physical disk in the table in the management pane.
5. Click on the  **Delete File System** icon in the toolbar. If the icon is greyed out, there is no file system on the disk so it cannot be deleted.
6. The **Delete Confirmation** dialog box is displayed. Click **OK** to delete the file system.

6.11.4 Show Events

The Events perspective is common to many elements within the Oracle VM Manager Web Interface. The Events perspective generally appears as an option within the Perspectives drop-down menu on the management pane of tabs that include a navigation tree. In this case, the Events perspective displays events specific to the item selected in the navigation tree and presents these in the management pane.

The Events perspective may also appear within a dialog that is triggered from a **Display Selected Events...**  perspective toolbar option. In this case, the Events perspective dialog displays events specific to one or more elements selected in the management pane.

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual](#)

[machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them.

Since Oracle VM Manager attempts to resolve issues automatically as much as possible, not all events can be acknowledged by a user within the Oracle VM Manager Web Interface. Therefore, a flag is set for events that are user acknowledgeable. If an event does not have this flag set, you are unable to acknowledge it, since it is handled internally by Oracle VM Manager.

The Events perspective or dialog contains a table with the following columns of information for each event:

- **Severity:** The severity level assigned to the event.
- **Timestamp:** The date and time that the event occurred.
- **Modify Time:** The last recorded date and time that the event was modified.
- **Type:** The type of event according to Oracle VM Manager's event categorization model.
- **Summary:** A summary description of the event.
- **Acknowledged:** Whether an error event has been acknowledged.
- **User Acknowledgeable:** Whether or not an event can be acknowledged by the user.

Event Descriptions

An arrow displays next to each event in the table. Click the arrow to expand and view the **Description** section that provides additional details for the event.

The Events perspective or dialog contains a perspective toolbar with the following options:

Table 6.40 Events Perspective Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Acknowledge		Acknowledge a selected error event to clear the error and return the object to normal operations. Note that this option is only available for user acknowledgeable events.
Acknowledge All		Acknowledge all error events associated with an object to clear the errors and return the object to normal operations. Note that only user acknowledgeable events are cleared. This button is always clickable, even if there are no user acknowledgeable events. Clicking it when there are no user acknowledgeable events results in an error dialog.
Display Count		A drop-down menu that allows you to select the number of events that should be displayed in the management pane, while you are currently in this perspective.

Acknowledging Events/Errors

If an object has an error [event](#) associated with it you must acknowledge the event to clear the error and return the object to normal operations. For example, this can occur if an Oracle VM Server or [virtual machine](#) appear as Stopped (Error) in the status. The object in error is flagged with a red icon in the navigation tree. Oracle VM Servers, virtual machines, repositories and storage objects can have error events associated with them. The following procedures show you how to clear errors and return the object to normal operations.

To acknowledge Oracle VM Server error events:

1. Click the **Servers and VMs** tab.
2. Select the Oracle VM Server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** ⌵ to clear all user acknowledgeable errors.

To acknowledge virtual machine error events:

1. Click the **Servers and VMs** tab.
2. Select the server pool, or Oracle VM Server on which the virtual machine resides in the navigation tree.
3. Select **Virtual Machines** from the **Perspective** drop-down list in the management pane.
4. Select the virtual machine in the management pane table. Click **Display Selected VM Events...** 🗄️.
5. The **Events** dialog box is displayed. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** ⌵ to clear all user acknowledgeable errors. Click **Close**.

To acknowledge storage repository error events:

1. Click the **Repositories** tab.
2. Select the repository in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the error event and click **Acknowledge** ✓, or click **Acknowledge All** ⌵ to clear all errors.

To acknowledge storage error events:

1. Click the **Storage** tab.
2. Select **File Servers**, **SAN Servers**, or a storage server in the navigation tree.
3. Select **Events** from the **Perspective** drop-down list in the management pane.
4. Select the user acknowledgeable error event and click **Acknowledge** ✓, or click **Acknowledge All** ⌵ to clear all user acknowledgeable errors.

Chapter 7 Reports and Resources Tab

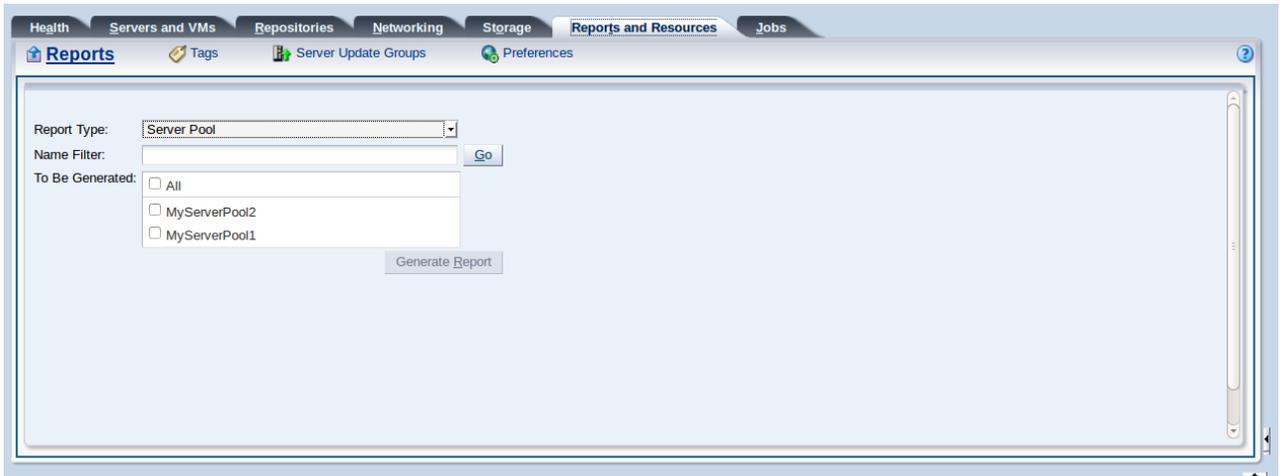
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Use the **Reports and Resources** tab to create reports on objects, manage tags which can be used to identify and group objects within Oracle VM Manager, and to configure server update repositories for software updates of the Oracle VM Servers being managed by Oracle VM Manager. This tab also contains preferences that control certain user interface behaviors.

Figure 7.1, “Reports and Resources tab” shows the **Reports and Resources** tab.

Figure 7.1 Reports and Resources tab



The **Reports and Resources** tab contains the subtabs set out in [Table 7.1, “Reports and Resources Subtabs”](#).

Table 7.1 Reports and Resources Subtabs

Subtab	Description
Reports	Use this tab to generate XML reports on objects. You can generate reports for virtual machines, Oracle VM Servers, server pools and storage.

Subtab	Description
	See Section 7.1, “Reports” for more information on working with object reports.
Tags	Use this tab to manage tags, which can be used within Oracle VM Manager to identify and group objects such as server pools, servers and virtual machines. The panel provides options to add, edit and remove tags within Oracle VM Manager. There is also an option to search for components that have been tagged with a particular tag. See Section 7.2, “Tags” for more information on working with tags.
Server Update Groups	Displays the Server Update Groups sub tab. Use this tab to configure server update repositories for updates of the Oracle VM Servers being managed by Oracle VM Manager. See Section 7.3, “Server Update Groups” for more information on Oracle VM Server update management.
Preferences	Displays the Preferences dialog box. Use this tab to configure user interface behavior such as whether or not to timeout during a file system refresh. See Section 7.4, “Preferences” for more information on the Oracle VM Manager Web Interface preferences.

7.1 Reports

The **Reports** subtab enables you to generate XML reports on objects and their attributes, and their direct subobjects. You can generate reports for virtual machines, Oracle VM Servers, server pools and storage. Each report contains the attributes for each object, and their *direct* subobjects. For example:

- The server pool report includes all server pool attributes, and subobjects such as anti-affinity groups, server update groups and Oracle VM Servers.
- The Oracle VM Server report includes Oracle VM Server attributes, and subobjects such as bond ports, ports, Oracle VM Storage Connect plug-ins, storage, and networks.
- The virtual machine report includes virtual machine attributes, and subobjects such as VNICs, server pool, Oracle VM Server, virtual disks, virtual CDROMs, physical disks.
- The storage reports include storage attributes, and subobjects such as refresh servers, admin servers, files systems, access groups, and Oracle VM Storage Connect plug-ins.

To get information on subobjects, like the virtual machines running on Oracle VM Servers in a server pool, you should generate a report for each level of object, so generate a report for the server pool, and a report for all Oracle VM Servers in the server pool, and a report for all virtual machines on all Oracle VM Servers in the server pool.

To generate an XML report on an object:

1. Select the **Reports and Resources** tab.
2. Select the **Reports** subtab link.
3. Use the **Report Type** field to select the object type for which to generate the report from the options:
 - **Server Pool**

- **Server**
 - **VM**
 - **Storage**
4. Optionally, use the **Name Filter** field to restrict the object list using a name filter. See [Section 1.16, “Name Filters”](#) for information on using name filters.
 5. Use the **To Be Generated** field to select **All** to create a report on all the available objects, or select individual objects.
 6. Click **Export** to generate the report. The report is generated as an XML file and sent to the browser.

You can also run these reports using  **Generate Report** in the management pane toolbar for each object.

You can also create a graphical report on a virtual machine. See [Section 3.5.2.17, “Display VM Hierarchy Viewer”](#) for information on creating a graphical report on a virtual machine. The graphical report shows the same information about a virtual machine as the XML report.

7.2 Tags

The **Tags** subtab provides facilities to add, edit and delete tags. There is also an option to find components that share a common tag. These options can be accessed either using the toolbar at the top of the tab, or by using the context menu that appears when you right-click on an item within the panel.

The way in which tags are used within Oracle VM Manager is discussed in detail in [Section 1.17, “Tags and Tag Filters”](#)



Note

Tag names are case-sensitive. Tag names are unique and cannot be duplicated.

This subtab includes a toolbar that consists of the following options:

Table 7.2 Tags subtab toolbar icon options

Toolbar Icon Option	Icon	Description
Create New Tag...		Displays the Create Tag dialog box. Use this option to create a new tag to identify and group components within Oracle VM Manager.
Edit Tag...		Displays the Edit Tag dialog box. Use this option to change the name or description of an existing tag.
Delete Tag		Displays the Delete Confirmation dialog box. Use this option to delete the selected tag.
Find Components...		Displays the Components Using Tag dialog box. Use this option to search for components that share the same selected tag.
Help		Displays context sensitive help.

7.2.1 Add Tag

To create a tag:

1. On the **Reports and Resources** tab, click on the **Tags** subtab link.
2. Click on the **Create New Tag** icon . A dialog is displayed with the following fields:
 - **Tag Name:** Use this field to name the tag.
 - **Description:** Use this field to provide a description for the tag.
3. Click **OK** to save the changes, or **Cancel** to exit out of the dialog without saving any changes.

7.2.2 Edit Tag

To edit a tag:

1. On the **Reports and Resources** tab, click on the **Tags** subtab link.
2. In the management pane, select the tag that you wish to edit.
3. Click **Edit Tag** . A dialog is displayed with the following fields:
 - **Tag Name:** Use this field to rename a tag.
 - **Description:** Use this field to provide or update the description for a tag.
4. Click **OK** to save the changes, or **Cancel** to exit out of the dialog without saving any changes.

7.2.3 Delete Tag

To delete a tag:

1. On the **Reports and Resources** tab, click on the **Tags** subtab link.
2. In the management pane, select the tag or tags that you wish to delete.
3. Click on the **Delete Tag** icon . A confirmation dialog is displayed before the action can be completed.

7.2.4 Find Components with Matching Tag

To view all components that share a common tag:

1. On the **Reports and Resources** tab, click on the **Tags** subtab link.
2. In the management pane, select the tag that you wish to search.
3. Click on the **Find Components** icon . A dialog is displayed with the following editable fields:
 - **Components using Tag:** Use this drop-down menu to select alternative tags that you have defined to quickly search through different groups of components.
 - **Show Type:** Use this drop-down menu to select the different object types that should be displayed for the selected tag. By default all object types are shown, but you can limit the display to any combination of:
 - **Server Pools**
 - **Servers**

- **Virtual Machines**

A table is shown in the dialog, listing all objects that match the defined criteria. The table provides the following information:

- **Name:** The name of the object that meets the search criteria.
- **Tag(s):** A comma-separated list of the different tags that currently apply to the object.
- **Type:** The object type (for example Server Pool, Server or VM).
- **Parent:** The name of the object's parent, if a parent object exists.

4. Click **Close** to exit out of the dialog.

7.3 Server Update Groups

Updates and upgrades to Oracle VM Servers can be performed using a server update repository. To access patch updates for Oracle VM, you should contact Oracle to purchase an Oracle VM Support contract and gain access to the Unbreakable Linux Network (ULN) which contains updates for Oracle VM. If you have access to ULN you can use this to set up your own server update repository to use when updating your Oracle VM Servers. Setting up a repository is beyond the scope of this documentation, however you can read about setting up a Yum repository for x86-based servers in an OTN article *Yum Repository Setup* at:

<http://www.oracle.com/technetwork/articles/servers-storage-admin/yum-repo-setup-1659167.html>

Make sure you subscribe to the Oracle VM Release 3.4 channel on ULN when you set up your Yum repository. For SPARC-based servers, you should refer to [Upgrading Oracle VM Agent for SPARC](#) in the *Oracle VM Installation and Upgrade Guide* for further information on configuring Oracle Solaris IPS repositories.

There are two server update groups, one for x86-based Oracle VM Servers, and one for SPARC-based Oracle VM Servers. You can create multiple repositories for each server update group, and enable repositories as required. These repositories are available to all Oracle VM Servers of that type, so all x86-based Oracle VM Servers can access all the server update repositories created in the x86 server update group.

To override either of these default repositories and create a repository that is restricted to a particular server pool, see [Section 3.4.6, "Server Update Repositories Perspective"](#). To update an Oracle VM Server, see [Section 3.4.2.10, "Update Server"](#).

If you have one or more server update repositories configured for Oracle VM Server updates, you add and manage these using the **Server Update Groups** subtab.



Important

If you have previously upgraded your Oracle VM Servers from a 3.2 release, you should disable or remove the transitional Yum repository when you successfully complete the Oracle VM Server upgrade process. Disabling or removing the transitional Yum repository is a best practice as it is no longer required after the upgrade process.

The **Server Update Groups** subtab provides facilities to add, edit and delete server update repositories. These options can be accessed using the toolbar at the top of the tab when you click on an item within the navigation tree or management pane table.

This subtab includes a toolbar that consists of the following options:

Table 7.3 Server Update Repository Subtab Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Create New Server Update Repository...		Displays the Create Server Update Repository dialog box. Use this option to create a new server update repository.
Edit Server Update Repository...		Displays the Edit Server Update Repository dialog box. Use this option to edit an existing server update repository.
Delete Server Update Repository		Displays the Delete Confirmation dialog box. Use this option to delete the selected server update repository.
Help		Displays context sensitive help.

7.3.1 Create New Server Update Repository

To create a new server update repository:

1. Click the **Reports and Resources** tab.
2. Click the **Server Update Groups** subtab.
3. In the navigation tree, select **GlobalSparcServerUpdateConfiguration** to create a repository for SPARC-based Oracle VM Servers, or **GlobalX86ServerUpdateConfiguration** for x86-based Oracle VM Servers.
4. Click **Create New Server Update Repository**  to display the **Create Server Update Repository** dialog box. Enter the following information about the repository:
 - **Name:** A name for the repository as stored in Oracle VM Manager.
 - **Repository Name:** The repository name as used by a server to distinguish between different upgrade repositories. This may only contain alphanumeric characters and underscores. No spaces are permitted. For SPARC environments, the repository name must match a valid publisher at the URL where the repository is hosted.
 - **URL:** The URL to access the repository, for example:

```
http://example.com/OVM3/Server/
```



Note

The URL should contain the RPMs and the repodata directory created by the createrepo tool. If you are copying the RPMs from the Oracle VM Server ISO media, or loop mounting the ISO file, make sure to include the [Server](#) directory (which includes the [repodata](#) directory), for example:

```
http://example.com/OVM3/Server/
```

- **Enable:** Whether to enable the repository.
- **Package Signature Type:** The signature type to verify the validity of the repository, either [GPG](#) key, [CA](#) (Certificate Authority). Use [NONE](#) if there is no verification required.
- **Package Signature Key:** The verification signature for the repository, for example, the location of the GPG key:

```
http://example.com/OVM3/RPM-GPG-KEY
```

The GPG key must be available via one of HTTP, FTP, FILE or HTTPS protocols.

The GPG key for Oracle-signed updates from ULN is pre-installed on Oracle VM Server at `/etc/pki/rpm-gpg/RPM-GPG-KEY-oracle`. If you want to use this GPG key, enter:

```
file:///etc/pki/rpm-gpg/RPM-GPG-KEY-oracle
```

The value for this field is required if you select a Package Signature Type other than `NONE`.

- **Description:** An optional description for the repository.

Click **OK**.

The repository is added and ready to use to update Oracle VM Servers for the server update group. Note that if repository creation fails for a particular server, then an event is generated on the affected server. Oracle VM Manager does not attempt to validate the repository before it is added to each server. If the repository is invalid or, in the case of a SPARC repository, the repository name does not match a valid publisher at the URL specified, an error event is generated for the servers affected.

The repository is checked regularly for updates by the Server Upgrade Checker Task recurring job, though there may be a delay between the repository being created and the update notification being displayed in Oracle VM Manager. To change the frequency of the Server Upgrade Checker Task recurring job, see [Section 8.2, “Recurring”](#).

7.3.2 Edit Server Update Repository

To edit a server update repository:

1. Click the **Tools and Resources** tab.
2. Click the **Server Update Groups** subtab.
3. In the navigation tree, select **GlobalSparcServerUpdateConfiguration** to edit a repository for SPARC-based Oracle VM Servers, or **GlobalX86ServerUpdateConfiguration** for x86-based Oracle VM Servers.
4. Select a repository from the table in the management pane.
5. Click **Edit Server Update Repository**  to display the **Edit Server Update Repository** dialog box. Edit the fields as described in [Section 7.3.1, “Create New Server Update Repository”](#). Click **OK**.

7.3.3 Delete Server Update Repository

To delete a server update repository:

1. Click the **Tools and Resources** tab.
2. Click the **Server Update Groups** subtab.
3. In the navigation tree, select **GlobalSparcServerUpdateConfiguration** to delete a repository for SPARC-based Oracle VM Servers, or **GlobalX86ServerUpdateConfiguration** for x86-based Oracle VM Servers.
4. Select a repository from the table in the management pane.
5. Click **Delete Server Update Repository** .

6. A confirmation dialog is displayed. Click **OK** to delete the repository.

7.4 Preferences

The **Preferences** subtab allows you to change the default values used by Oracle VM Manager. The management pane contains a form that allows you to change different variable values.

The options listed here apply to different functionalities within Oracle VM Manager. These are described below:

- **Refresh Job Timeout Value:** This radio button controls whether or not a timeout value is applied for long running [jobs](#), such as refreshing the list of available file systems. If a timeout value is set, specify the number of seconds to wait before timing out in the field provided.
- **Collect System Statistics:** This radio button controls whether or not to collect statistical information about such items as processor and memory usage on Oracle VM Servers and virtual machines, as well as file system utilization for file systems that host repositories and server pools.

You might choose to disable statistics collection in order to perform static analysis of statistics data or gather statistics data without the dynamic changes that occur when statistics collection is enabled. However, it is recommended that you disable statistics collection for short periods of time only. If you disable statistics collection, Oracle VM Manager:

- Displays messages in the **Health** tab to indicate statistics collection is disabled.
- No longer collects statistics for server and virtual machine CPU and memory utilization.
- Does not display information in the **Status Overview** dashboard.
- Displays only the information that was collected up to the point when statistics collection was disabled. As a result, the statistics information that Oracle VM Manager displays in the **Server and VM Statistics** and **File System Statistics** subtabs becomes old, or stale, soon after statistics collection is disabled.
- Stops using statistics to calculate the most suitable server on which to start virtual machines. In some cases, this scenario could result in virtual machines starting on servers that already have high CPU or memory utilization.
- **Statistics Collection Interval:** This field allows you to specify how frequently statistics are collected for servers. The statistics are used within Oracle VM Manager on the **Health** tab. The value for this field can be between 20 seconds and 31,536,000 seconds (one year). For more information on server statistics see [Section 2.3, "Server and VM Statistics"](#). For more information on file system statistics see [Section 2.4, "File System Statistics"](#).
- **Statistics Collection Hold Time:** This field allows you to specify how long statistics are stored by Oracle VM Manager before they are refreshed. The statistics are used within Oracle VM Manager on the **Health** tab. The value for this field can be between 15 minutes and 4320 minutes (3 days). The default value is 60 minutes. For more information on server statistics see [Section 2.3, "Server and VM Statistics"](#). For more information on file system statistics see [Section 2.4, "File System Statistics"](#).
- **Statistics Archive Interval:** This field allows you to specify how often Oracle VM Manager deletes archived statistics. Oracle VM Manager uses the value from the **Statistics Collection Hold Time** field to calculate how many archived statistics to delete. For example, you set the hold time to 15 minutes and the archive interval to 2 days. In this case, every 2 days Oracle VM Manager deletes archived statistics that are older than 15 minutes from the current time. The value for this field can be between 30 minutes and 525,600 minutes (1 year). The default value is 60 minutes.

- **File System Statistics Collection Interval:** This field allows you to specify how frequently file system statistics are collected from designated servers. These statistics are used to accurately display the total available disk space, the currently used disk space and the remaining disk space for any file system that is mounted on an Oracle VM Server within the environment. The statistics are also used to monitor utilization as described in [Section 2.3, “Server and VM Statistics”](#). The default value for this option is set to 600 seconds. The value for this field can be between 60 seconds and 31,536,000 seconds (one year).
- **DB Backup Interval:** This field allows you to specify how frequently the automated backups of the Oracle VM Manager database are performed. The value is measured in minutes and can be any value between 360 minutes (6 hours) and 43200 minutes (30 days). For more information on database backups, please refer to [Backing up the MySQL Database Repository](#) in the *Oracle VM Administrator's Guide*.
- **Number of DB Backups to Keep:** This field allows you to specify how many of the automated backups of the Oracle VM Manager database are retained before they are rotated. The value can be between 1 and 500. For more information on database backups, please refer to [Backing up the MySQL Database Repository](#) in the *Oracle VM Administrator's Guide*.

The configuration parameters can be changed with instant effect. No restart of Oracle VM Manager is required.



Note

Changes to the [DB Backup Interval](#) of the [Number of DB Backups to Keep](#) options are not automatically reflected in alternative sessions accessing the Oracle VM Manager Web Interface. Equally, if these parameters are changed in an alternative session accessing the Oracle VM Manager Web Interface or via the Oracle VM Manager Command Line Interface, the values displayed in these fields are not automatically updated in real time. The values displayed here can be refreshed by clicking on an alternate tab within the user interface and then returning to the **Reports and Resources** tab.

See [No File Systems Found When Searching a Storage Server](#) in the Oracle VM Administrator's Guide for more information on when these UI preferences should be changed.

Chapter 8 Jobs Tab

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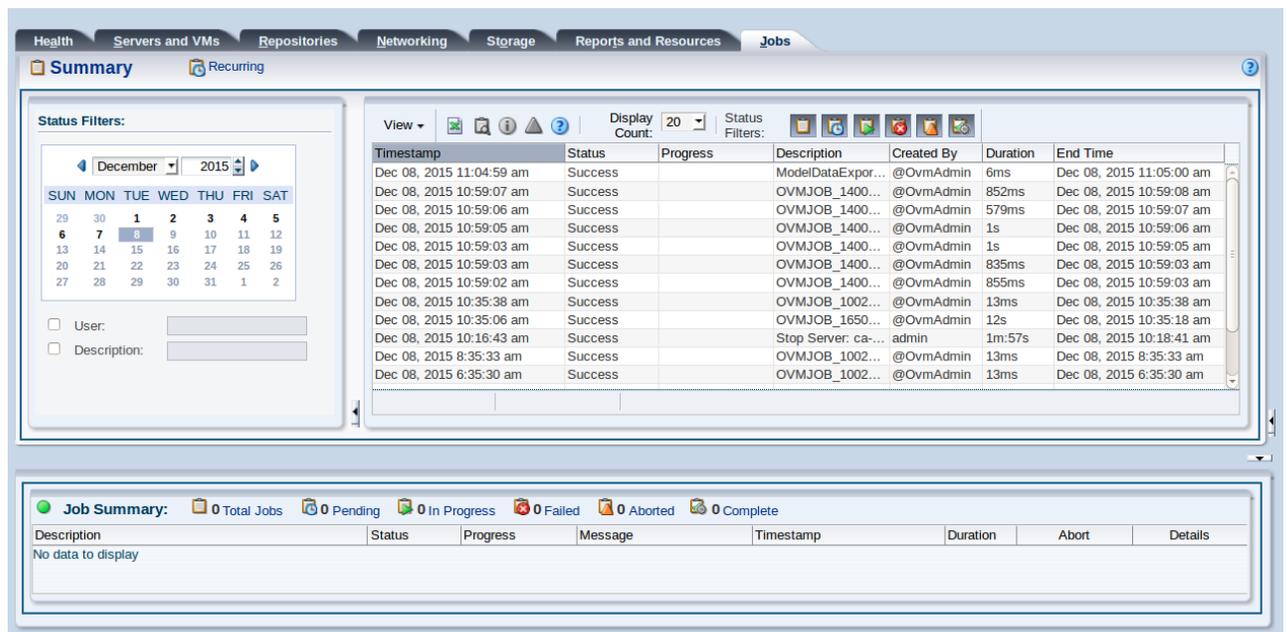
Use the **Jobs** tab for information on current and past tasks, or [jobs](#). A job is a set of one or more operations made in Oracle VM Manager. Jobs are discussed in detail in [Understanding Jobs, Events and Errors](#) in the [Oracle VM Concepts Guide](#).

The **Jobs** tab provides comprehensive information on all completed and in-progress jobs in the virtualization environment. The **Jobs** tab is used to get a global view on jobs, to evaluate information on jobs completed or aborted, or to cancel a job in progress.

The default view on the **Jobs** tab is the **Summary** view.

Figure 8.1, “Jobs tab” shows the Jobs tab.

Figure 8.1 Jobs tab



The **Jobs** tab contains the subtabs set out in [Table 8.1, “Jobs Subtabs”](#).

Table 8.1 Jobs Subtabs

Subtab	Description
Summary	Displays the Summary subtab. Use this tab to get a global view on jobs, to evaluate information on jobs completed or aborted, or to cancel a job in progress. See Section 8.1, “Summary” for more information on the Summary tab.
Recurring	Displays the Recurring subtab. Use this tab to configure recurring jobs, such as the Server Upgrade Checker Task that periodically checks that the Oracle VM Servers have the latest product versions installed. See Section 8.2, “Recurring” for more information on recurring jobs.

8.1 Summary

The **Summary** view provides a listing of all jobs that have been triggered within Oracle VM Manager, whether those jobs were triggered within the UI, from the CLI, the Web Services API or internally by Oracle VM Manager itself. Jobs can be displayed for all users, or just for the administrator.

The Jobs calendar enables you to display the jobs for a particular date. Select a date in the Jobs calendar and the jobs for that date are displayed in the Jobs table.

This subtab includes a toolbar that consists of the following options:

Table 8.2 Summary Subtab Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Export to Excel		Use this option to save a list of the jobs to a spreadsheet file.
Details...		Displays the View Job Properties dialog box. Use this option to view details about the job.
Debug Transcript...		Displays a Message dialog box. Use this option to view a complete log for all of the actions and events surrounding the run status of the job.
Abort Job		Displays the Abort Job dialog box. Use this option to abort a job.
Help		Displays context sensitive help.

8.1.1 Status Filters

The Status Filters toolbar provides a set of icons that can be used to filter jobs according to their status. By default all of the filters are enabled and all of the icons appear to be depressed. By clicking on the filter icons you can enable or disable the filter to expand or limit the jobs listed in the management pane.

The following filter icons appear in the toolbar:

- **Total Jobs:**  Globally enable or disable all of the other filter options in the toolbar
- **Pending:**  Enable or disable the filter for jobs with Pending status
- **In Progress:**  Enable or disable the filter for jobs with In Progress status
- **Failed:**  Enable or disable the filter for jobs with Failed status

- **Aborted:**  Enable or disable the filter for jobs with Aborted status
- **Complete:**  Enable or disable the filter for jobs with Completed status

8.1.2 Export to Excel

To export the job list as a Microsoft Office Excel spreadsheet:

1. Select the **Jobs** tab and then select the **Summary** subtab.
2. Click **Export to Excel**  in the toolbar.
3. The browser Save/Open File dialog opens and allows you to download a spreadsheet containing all of the jobs listed.

8.1.3 Job Details

To view job details:

1. Select the **Jobs** tab and then select the **Summary** subtab.
2. Select a job in the management pane and click **Details...**  in the toolbar. Alternatively, you can select a job in the **Job Summary** pane and click **Details** in the **Details** column.
3. The **View Job Properties: *job_name*** dialog opens displaying detailed information about the job. Depending on the selected job, the dialog contains different tabs:
 - **Job Detail:** This tab is always visible and includes the following fields:
 - **Description:** A description of the selected job.
 - **Message:** An error message describing the reason the job failed. This field is only populated if there is an error associated with the job.
 - **ID:** The ID for the job.
 - **Status:** The running state of the job.
 - **Summary Status:** The status for the job and its child jobs.
 - **Progress Message:** The most recent progress message for this job and any of its child jobs.
 - **Created By:** The user which created the job.
 - **Creation Time:** The date and time that the job was created.
 - **Start Time:** The date and time that the job was started.
 - **End Time:** The date and time that the job ended.
 - **Duration:** The time it has taken to run the job.
 - **Error Type:** The job error type which resulted from the job execution.
 - **Abortable:** Whether or not the job is abortable.
 - **Aborted:** Whether or not the job has been aborted.
 - **Aborted By:** The user which aborted the job.

- **Result ID Name:** The ID of the object that was acted on.
- **Result ID Value:** The value of the object that was acted on.
- **Parent:** This tab is only visible when the selected job is a child job and it has a parent. This tab includes the following fields:
 - **Description:** A description of the selected job.
 - **Message:** An error message describing the reason the job failed. This field is only populated if there is an error associated with the job.
 - **ID:** The ID for the job.
 - **Status:** The running state of the job.
 - **Summary Status:** The status for the job and its child jobs.
 - **Progress Message:** The most recent progress message for this job and any of its child jobs.
 - **Created By:** The user which created the job.
 - **Creation Time:** The date and time that the job was created.
 - **Start Time:** The date and time that the job was started.
 - **End Time:** The date and time that the job ended.
 - **Duration:** The time it has taken to run the job.
 - **Error Type:** The job error type which resulted from the job execution.
 - **Abortable:** Whether or not the job is abortable.
 - **Aborted:** Whether or not the job has been aborted.
 - **Aborted By:** The user which aborted the job.
 - **Result ID Name:** The ID of the object that was created.
 - **Result ID Value:** The value of the object that was created.
- **Child Jobs:** This tab is only visible when the selected job is a parent job that has related child jobs. This tab contains a table with the following columns of information:
 - **Timestamp:** The date and time that the job occurred.
 - **Status:** The running state of the job.
 - **Progress:** The most recent progress message for the job.
 - **Description:** A description of the selected job.
 - **Created By:** The user which created the job.
 - **Duration:** The time it has taken to run the job.

- **End Time:** The date and time that the job ended.
 - **Child Error Summary:** This tab is only visible when the selected job has related child jobs. This tab displays information about any child job errors.
 - **Queued Info:** This tab is always visible and displays information about any queued jobs associated with the selected job.
 - **Job Events:** This tab is always visible and contains a table with the following columns of information per event:
 - **Severity:** The severity level assigned to the event.
 - **Timestamp:** The date and time that the event occurred.
 - **Type:** The type of event according to Oracle VM Manager's event categorization model.
 - **Summary:** A summary description of the event.
 - **Export Summary:** This tab is only visible for a virtual machine export to Oracle Cloud Infrastructure. This tab displays text information about the export operation.
4. Click **Close** to close the dialog.

8.1.4 Debug Transcript

To view the debug transcript

1. Select the **Jobs** tab and then select the **Summary** subtab.
2. Select a job in the management pane.
3. Click **Debug Transcript...** ⓘ in the toolbar.
4. A dialog opens displaying a complete log for all of the actions and events surrounding the run status of the job. If the job failed, log information providing the error details is provided.
5. Click **OK** to close the dialog.

8.1.5 Abort Jobs

There are two ways to abort a job:

- Using the Jobs tab
- Using the Job Summary pane

Both procedures for aborting jobs are listed below.

To abort jobs using the Jobs tab:

1. Select the **Jobs** tab.
2. Select one or more jobs in the **Jobs** table.
3. Click **Abort Job** ⚠ in the toolbar.
4. In the **Abort Job Confirmation** dialog box, click **OK** to abort the jobs.

To abort jobs using the Job Summary pane:

1. Select a job in the **Job Summary** pane.
2. Click **Abort** in the **Abort** column.
3. In the **Abort Job Confirmation** dialog box, click **OK** to abort the job.

8.2 Recurring

Oracle VM Manager periodically performs recurring [jobs](#), such as repositories and file systems refresh, and Yum updates for Oracle VM Servers. Select the Jobs tab and then select the Recurring subtab to view and edit the settings for these jobs. To edit a recurring job, see [Section 8.2.1, “Edit a Recurring Job”](#). Note that some recurring jobs are considered internal and are not listed within Oracle VM Manager.

Recurring jobs are listed in [Table 8.3, “Recurring Jobs”](#).

Table 8.3 Recurring Jobs

Recurring Job	Definition
Refresh Repositories' File Systems Task	<p>As of Oracle VM 3.4, the file system statistics are automatically sent to Oracle VM Manager by each Oracle VM Server periodically along with other statistics used for health monitoring. Previous releases used a less efficient algorithm that required Oracle VM Manager to regularly poll each Oracle VM Server to refresh file system statistics. This recurring task is required for environments that are in the process of an upgrade and where some Oracle VM Servers in the environment are running a previous version of the software. When enabled, the Refresh Repositories' File Systems Task polls any Oracle VM Servers running a previous release of the software and requests current file system statistics. This information is used so that Oracle VM Manager is able to accurately represent the size of any used file systems and the free space available for each of these. This helps to minimize the time that a file system is locked during an operation. The default setting for this job is disabled with an interval of 61 minutes.</p> <p>It is important to understand that this task does not refresh the contents of a repository. If you manually add repository elements to a repository file system without using Oracle VM Manager, this task does not automatically update Oracle VM Manager. Instead, you should refresh the repository manually, as described in Section 4.3.1.5, “Refresh Repository”.</p>
Server Upgrade Checker Task	The Server Upgrade Checker Task periodically checks that all owned Oracle VM Servers known to Oracle VM Manager have the latest product versions installed. This check is performed against the updates available in the Yum repository. The default setting for this job is enabled with an interval of 1464 minutes.

This subtab includes a toolbar that consists of the following options:

Table 8.4 Recurring Subtab Toolbar Icon Options

Toolbar Icon Option	Icon	Description
Edit		Displays the Edit Recurring Job dialog. Use this option to edit a recurring job.
Help		Displays context sensitive help.

8.2.1 Edit a Recurring Job

To edit a recurring job

1. Select the **Jobs** tab and then select the **Recurring** subtab.
2. Select a job in the **Recurring Jobs** table.
3. Click **Edit...**  in the toolbar.
4. The **Edit Recurring Job: *job_name*** dialog box is displayed. Edit the recurring job as required and click **OK**.

Glossary

A

admin server

An Oracle VM Server dedicated to performing administrative functions on storage servers such as creating a new LUN or extending a file system. The server must be capable of logging into a storage array or file server as an admin user. The administrative functions available to the server are defined by the Oracle VM Storage Connect plug-in.

anti-affinity

Specify that specific virtual machines should never run on the same host.

B

bonding

Bonding is a Linux OS feature that provides a method for aggregating several ports into a single bonded interface, to provide load balancing or redundancy. When you discover an Oracle VM Server, the bonded interface is shown as containing a single port.

Network bonding refers to the combination of network interfaces on one host for redundancy and/or increased throughput. Redundancy is the key factor: You want to protect your virtualized environment from loss of service due to failure of a single physical link.

In Oracle VM, there are three modes of network bonding:

- **Active - Backup:** One Network Interface Card (NIC) is active while the other NIC is standby. If the active NIC goes down, the other NIC becomes active.
- **Dynamic Link Aggregation:** All NICs act as one NIC and the network traffic flows through all interfaces concurrently, which results in a higher throughput. With this mode, your network administrator must create LACP (Link Aggregation Control Protocol) bonding on the network switch(es).
- **Load Balanced:** The network traffic is equally balanced over the NICs of the bond. This mode does not require any special configuration on connected network switch(es), However, this mode does not support using VLAN with bridges. If using this mode for your bonded interfaces in any network, you cannot use VLANs if this network is configured with the Virtual Machine network channel.

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.

control domain

A privileged domain that creates and manages other logical domains and services. This term is often used in SPARC environments to refer to domains that behave like dom0. The control domain is named [primary](#).

See Also: [domain](#)

See Also: [dom0](#)

See Also: [domU](#)

D

distributed power management

DPM complements DRS to reduce the Oracle VM Servers in a server pool when there are periods of low resource utilization. It can automatically add capacity as needed when resource utilization ramps up.

See Also: [distributed resource scheduling](#)

distributed resource scheduling

DRS provides real-time monitoring of Oracle VM Server utilization with the goal to rebalance a server pool to provide consistent resources to the running virtual machines. DRS migrates load away from heavily loaded Oracle VM Servers to less heavily loaded Oracle VM Servers.

See Also: [distributed power management](#)

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](#)

domU

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

E

events

Events are used to register status information of "objects" within Oracle VM Manager for future reference or to make problems easier to trace back. Events are often, though not always, related to [jobs](#) that are initiated within Oracle VM Manager. For instance, when a job fails, an event is generated. Events can also be triggered through changes in the environment such as server crashes or storage disconnects. Therefore, events are used to alert you to potential problems that may need your attention.

Events are categorized by severity. Most events will be informational, but they can also be warnings or errors. If an event has an error level severity, you need to acknowledge the error event to clear the error and to perform further operations on the object that generated the error.

See Also: [jobs](#)

G

GiB

Gibibyte (GiB) is a unit of digital information storage used to denote the size of data. One gibibyte is equal to 1024 mebibytes. Gibibyte is closely related to gigabyte, where one gigabyte is equal to 1000 megabytes.

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.

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 WindowsTM operating system to be run, as well as legacy operating systems. Hardware virtualization is only available on Intel® VT or AMD SVM CPUs.

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.

HugePages

HugePages is a feature integrated into the Linux kernel to support memory pages greater than the default. Using very large page sizes can improve system performance on a virtual machine by reducing the amount of system resources required to access page table entries.

J

jobs

Jobs consist of discrete operations that take place through Oracle VM Manager, such as server discovery, presenting a repository and creating a VM. Jobs are assigned a status that is refreshed according to their progress. A history of all jobs in the environment is stored within Oracle VM Manager.

Since jobs are often performed sequentially and sometimes take time to complete, tracking the status of a job allows you to understand what actions the system is currently performing, and which actions are queued to run in sequence after the current job has completed. Jobs also allow you to access system messages that may be useful to debug the failure of an operation.

Most jobs tend to generate events that each have a different severity level.

See Also: [events](#)

L

local storage

Local storage consists of hard disks installed locally in an Oracle VM Server. Local storage is often not appropriate for enterprise production environments, because it sharply constrains the ability of a virtual machine to run anywhere in the server pool in the event of the failure of the Oracle VM server, which owns the local storage, and because the management overhead of this storage is often significant.

M

migrate

The act of moving a virtual machine from one Oracle VM Server to another, or to the Unassigned Virtual Machines folder. Technically, a migration can only be performed on a running virtual machine, however the

Oracle VM Manager Web Interface and Oracle VM Manager Command Line Interface may combine multiple operations to make it appear that you can perform a migration on either a running or a stopped virtual machine.

move

The act of moving an object from one location to another. This may be moving a stopped virtual machine from one Oracle VM Server to another, moving a virtual machine template from one storage repository to another, or moving an ISO file or virtual disk to another storage location. In the case where a live migration is performed on a virtual machine located on a local repository, the migration operation may move the virtual machine across repositories even though the virtual machine is running as part of the migration process.

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

N

non-sparse copy

A clone of the type "non-sparse copy" is a disk image file of a physical disk, taking up the space equivalent to the full specified disk size, including empty blocks.

See Also: [sparse copy](#)

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 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

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. As with the Xen hypervisor, each virtual machine is securely executed on a single computer and runs its own guest Oracle Solaris operating system

P

paravirtualized machine (PVM)

A virtual machine with a kernel that is recompiled to be made aware of the virtual environment. Runs at near native speed, with memory, disk and network access optimized for maximum performance.

Paravirtualized guests use generic, idealized device drivers, which are part of the guest's OS. The I/O operations using these generic device drivers are mapped to the real device drivers in dom0. The generic, abstracted drivers in the guest seldom change and provide excellent guest stability. The dom0 domain, alternatively, can use the native hardware vendor drivers, and the guests can safely migrate to another dom0 with slightly different drivers.

For other resources such as CPU and memory, paravirtualized kernels make special "hypercalls" to the Xen hypervisor. These hypercalls provide better performance by reducing the number of instructions and context switches required to handle an incoming request. By contrast, on an emulated (hardware virtualized) guest, driver requests engage the guest's interrupt handler, increasing the I/O operation overhead.

R

refresh server

An Oracle VM Server dedicated to handling file system refreshes on behalf of a server pool. A refresh server temporarily mounts file systems on an NFS file server during the refresh operation. The server must be granted full data access in order to perform the refresh. For each NFS file server, at least one Oracle VM Server from each server pool accessing the file server must be assigned as a refresh server.

S

server pool

Server pools logically organize one or more Oracle VM Servers into groups where virtual machines can run.

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.

server processor compatibility group

A server processor compatibility group is a group of Oracle VM Servers with compatible processors, or CPUs sharing the same processor family and model number. These groups are created to ensure that a virtual machine running on one Oracle VM Server can safely be migrated and continue to run on another Oracle VM Server. Oracle VM Manager automatically creates processor compatibility groups as it discovers servers that have different processor types.

Using Oracle VM Manager you can create custom compatibility groups to improve your ability to do smooth migrations and to group servers according to your own requirements.

sparse copy

A clone of the type "sparse copy" is a disk image file of a physical disk, taking up only the amount of space actually in use; not the full specified disk size.

See Also: [non-sparse copy](#)

Storage Connect

Oracle VM integrates with all types of storage, referred to as *generic storage*, but also provides advanced storage functionality for storage vendors that provide a plug-in to access their storage. This plug-in is part of Oracle VM's Storage Connect framework.

Oracle VM provides its own Oracle VM Storage Connect plug-in for the Sun ZFS Storage Appliance, and for the Oracle Axiom systems.

T

thin clone

A thin clone is a clone of a virtual disk that takes up only the amount of disk space actually in use; not the full specified disk size.

Thin cloning of virtual disks on OCFS2-based repositories is supported. Thin provisioning of physical disks on generic storage is not supported.

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 disk

A file or set of files, usually on the host file system although it may also be a remote file system, that appears as a physical disk drive to the guest operating system.

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.

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.

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