

Oracle vSphere Plug-In 3.5

User's Guide

for Oracle Flash Storage Systems



FLASH STORAGE
SYSTEMS

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Preface

Oracle Resources

Table 1: Oracle resources

For help with...	Contact...
Support	http://www.oracle.com/support (www.oracle.com/support)
Training	https://education.oracle.com (https://education.oracle.com)
Documentation	<ul style="list-style-type: none">• Oracle Help Center: (http://www.oracle.com/goto/FSSStorage/docs)• From Oracle FS System Manager (GUI): Help > Documentation• From Oracle FS System HTTP access: (http://system-name-ip/documentation.php where system-name-ip is the name or the public IP address of your system)
Documentation feedback	http://www.oracle.com/goto/docfeedback (http://www.oracle.com/goto/docfeedback)
Contact Oracle	http://www.oracle.com/us/corporate/contact/index.html (http://www.oracle.com/us/corporate/contact/index.html)

Typographical Conventions

Table 2 : Typography to mark certain content

Convention	Meaning
<i>italics</i>	<p>Within normal text, words in italics indicate one of the following items:</p> <ul style="list-style-type: none"> • Hypertext, as in a URL • A reference to a book title • New terms and emphasized words • Command variables
monospace	<p>Indicates one of the following, depending on the context:</p> <ul style="list-style-type: none"> • The name of a file or the path to the file • <i>Output</i> displayed by the system on the command line
monospace (bold)	<i>Input</i> provided by an administrator on the command line.
>	Indicates a menu item or a navigation path in Oracle FS System Manager (GUI). For example, “Click SAN > Storage > LUNS > Action > Clone” means to click the Clone link on the SAN page in the GUI.
...	Indicates that one or more steps have been omitted from the path or menu structure. The ellipsis is used within an expression of a navigation path or within a cascading menu structure. For example, in the SAN > Storage > LUNS > ... > Clone menu structure, the ... implies that one or more menu items have been omitted.

Command Syntax Conventions

Table 3 : Typography to mark command syntax

Typographic symbol	Meaning
[]	Square brackets. Delimits an optional command parameter or a set of optional command parameters.
{ }	Braces. Delimits a set of command parameters, one of which must be selected.
	Vertical bar. Separates mutually exclusive parameters.
...	Ellipsis. Indicates that the immediately preceding parameter or group of parameters can be repeated.
monospace	Indicates the name of a command or the name of a command option (sometimes called a <i>flag</i> or <i>switch</i>).
<i>italic</i>	Indicates a variable for which you need to supply a value.

Command parameters that are not enclosed within square brackets ([]) are required.

- 👉 **Important:** The above symbols (and font styling) are based on the POSIX.1-2008 specification. These symbols are used in the command syntax only to clarify how to use the command parameters. *Do not enter these symbols on the command line.*

Oracle FS Systems vSphere Plug-In Overview

Virtualization Plug-In Integration Overview

The Oracle vSphere Plug-In for Oracle Flash Storage Systems integrates access to your Oracle FS System with VMware vSphere and VMware vCenter Server. You can view, provision, and manage your Oracle FS System in the vSphere Client.

Virtualization technology permits you to easily create and deploy many virtual machines (VMs) in your datacenter infrastructure. However, managing those VMs and the storage environment to which they connect can be difficult.

To perform those tasks, you often must drill down to objects and make note of values in multiple pages. Then, you have to switch back and forth between the virtualization application interface and the storage application interface to locate the associated storage objects. Many environments contain a number of different storage products, so you could be switching between multiple storage application interfaces.

The Oracle vSphere Plug-In for Oracle Flash Storage Systems makes it easy to view and manage your storage without leaving the vSphere Client. The plug-in provides an additional tab in the vSphere Client to view Oracle FS System storage and additional menus to manage your Oracle FS System.

The Oracle FS System tab enables you to view details of your Oracle FS System, and context menus make it possible to provision and manage Oracle FS System storage objects. These features enable you to more easily map your datacenters and VMs to your physical storage and perform common storage management tasks.

VMware vSphere Environment Overview

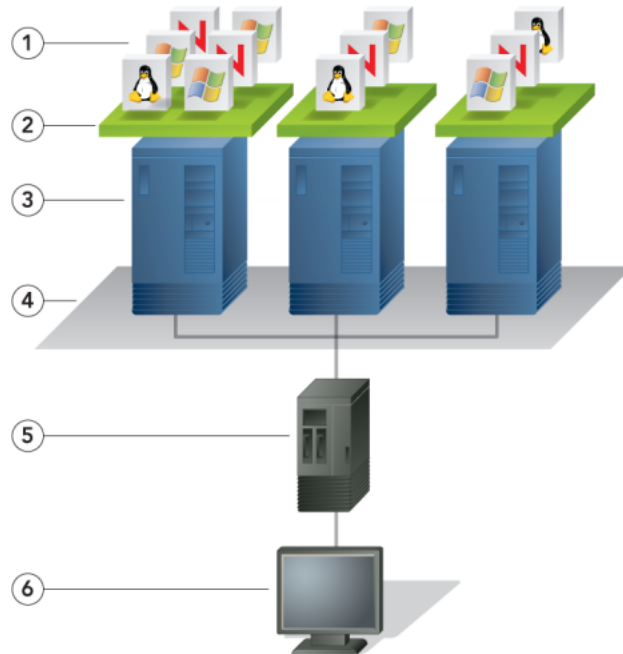
The VMware vSphere environment makes it possible to manage disparate physical infrastructure in a datacenter as virtual pools of resources (processors, memory, storage, and networking).

The vSphere environment is made up of a number of software component layers and VMware applications as shown in the illustration. There are many VMware applications you can add to the vSphere environment to provide virtual machine (VM) and disk migration, load balancing, fault tolerance, high availability, backups, and distributed networking.

Each physical host in a vSphere environment runs the VMware ESX hypervisor software to execute a number of VMs. The hypervisor software provides a layer

in the physical host upon which the VMs are created. Each VM can run a different operating system and can contain one or more applications. The resources from the physical hardware in the vSphere environment are aggregated into pools of functional resources. These functional resources can be allocated (or assigned) to specific VMs and applications as needed. The following figure illustrates the VMware vSphere environment.

Figure 1: VMware vSphere environment



Legend	1 VMs	4 Datacenter
	2 Virtualization layer	5 vCenter Server
	3 Host running ESX	6 vSphere Client

The ESX hosts use their network connections to access storage and to enable remote management. While it is possible to use a vCenter Server to administer a single ESX host, it is more typical for a vCenter Server to be used to administer a set of ESX hosts and their VMs.

For information about vCenter Server and vSphere, refer to the [VMware Documentation](http://www.vmware.com/support/pubs/) (<http://www.vmware.com/support/pubs/>).

VMware vSphere Product Overview

The VMware vSphere environment is composed of vSphere, ESX, and vCenter Server products. The Oracle vSphere Plug-In for Oracle Flash Storage Systems allows management integration with those products.

The Oracle vSphere Plug-In for Oracle Flash Storage Systems interacts with the following vSphere products:

VMware ESX and VMware ESXi A virtualization layer run on physical servers that abstracts the physical processor, the memory, the storage, and the other resources into logical resources that are then presented as multiple VMs. The physical machine becomes the host for the VMs. The physical machine is thereafter referred to as a VM host or ESX host.

Note: Two versions of ESX are available, ESX and ESXi. Throughout this document, the term ESX applies to both ESX and ESXi.

VMware vCenter Server A single Windows service that performs administrative functions for the ESX hosts that are connected on a network. The vCenter Server directs the actions on the VMs and the VM hosts (ESX hosts).

Here are characteristics of vCenter Server:

- The vCenter Server is installed to run automatically.
- The vCenter Server runs continuously in the background, performing its monitoring and managing activities.
- The vCenter Server runs even when no vSphere Clients are connected, and even if nobody is logged on to the computer where the vCenter Server resides
- The vCenter Server must have network access to all the hosts it manages and be available for network access from any machine where the vSphere Client is run.
- Multiple vCenter Server systems can be joined together using Linked Mode to allow them to be managed using a single vSphere Client connection.

VMware vSphere Client The interface to vCenter Server, ESX hosts, and the VMs. The vSphere Client is installed on a Windows machine with network access to the vCenter Server system installation. While all vCenter Server activities are performed by a vCenter Server system, the administrator uses the vSphere Client to monitor, manage, and control the server.

A single vCenter Server system can support multiple, simultaneously-connected vSphere Clients.

For more information about vCenter Server and vSphere, refer to the [VMware Documentation](http://www.vmware.com/support/pubs/) (<http://www.vmware.com/support/pubs/>).

Oracle FS System vSphere Plug-In Overview

The Oracle vSphere Plug-In for Oracle Flash Storage Systems permits you to access your Oracle FS System storage and other storage through the vSphere Client.

Installing the Oracle vSphere Plug-In for Oracle Flash Storage Systems adds an Oracle FS tab and additional menus to the vSphere Client as shown in the following illustration.

Figure 2: Oracle FS System elements in the vSphere Client



The windows used for Oracle FS System LUN creation and modification are similar to those of the Oracle FS System management application, Oracle FS System Manager.

The installer for the Oracle vSphere Plug-In for Oracle Flash Storage Systems includes all software dependencies. No other software is required besides the VMware vCenter Server and the vSphere Client.

The Oracle vSphere Plug-In for Oracle Flash Storage Systems gives you access to the following functionality through the vSphere Client:

- View underlying data storage for hosts, virtual machines (VMs) and datastores
- Create datastores on existing or new Oracle FS System LUNs
- View, create, modify, and delete LUNs
- View SAN hosts, Host Groups, Volume Groups, and Storage Domains
- Create snapshots of datastores on Oracle FS System storage, and recover data from snapshots

System Requirements

Make sure your environment meets the necessary hardware, software, and management networking requirements before you install and use the Oracle vSphere Plug-In for Oracle Flash Storage Systems with the VMware vCenter Server and vSphere Client.

Check the *Oracle vSphere Plug-In for Oracle Flash Storage Systems Release Notes* for updated system requirement information.

License Requirements

User licenses for VMware vCenter Server and vSphere are required.

You received the VMware software licenses when you purchased the software from VMware. No additional Oracle FS System licenses are required to use the Oracle vSphere Plug-In for Oracle Flash Storage Systems.

Hardware Requirements

The VMware vSphere and VMware vCenter Server must meet specific hardware requirements.

The server on which vCenter Server is installed must be either a physical machine or a virtual machine with access to a supported database. The vSphere Client machines must also meet specific hardware requirements.

The vCenter Server and vSphere Client hardware requirements can be found on the [VMware Documentation](http://www.vmware.com/support/pubs/) website (<http://www.vmware.com/support/pubs/>).

The Oracle vSphere Plug-In for Oracle Flash Storage Systems must be installed on a Windows 2008 or 2012 server.

Software Requirements

The VMware vSphere and VMware vCenter Server support the use of various software and operating system versions, and the Oracle vSphere Plug-In for Oracle Flash Storage Systems has specific Oracle FS System software requirements. To use the Oracle vSphere Plug-In for Oracle Flash Storage Systems with the vSphere Client and vCenter Server, ensure that the Oracle FS System, VMware products, and operating systems in your environment meet these requirements.

Required Oracle FS System Software Release 6: version 6.1 or higher.

Required Windows Operating System The Oracle vSphere Plug-In for Oracle Flash Storage Systems must be installed on a Windows 2008 or 2012 server.

Required VMware Software The following is a list of required software:

- VMware ESX and ESXi versions 5.0 and higher
- VMware vCenter Server versions 5.1 and 5.5
- VMware vSphere Client versions 5.1 and 5.5

VMware Operating Systems The Oracle vSphere Plug-In for Oracle Flash Storage Systems works with any of the Windows operating systems supported by the vCenter Server software, but must be installed on a Windows 2008 or 2012 server. Refer to the [VMware Documentation](http://www.vmware.com/support/pubs/) (<http://www.vmware.com/support/pubs/>) for the required operating system version.

Management Networking Requirements

The host on which the Oracle vSphere Plug-In for Oracle Flash Storage Systems software is installed requires a secure TCP/IP connection for communication with the Pilot of the Oracle FS System.

To connect the control path, the network configuration must allow the vCenter Server host on which the plug-in is running to connect to TCP port 8083 on the Pilot Ethernet management interface. The plug-in communicates over HTTPS over port 8083 with the WebCLI service running on the Pilot.

You can configure all other necessary ports during the TCP port assignment phase of the Oracle vSphere Plug-In for Oracle Flash Storage Systems installation.

Install the Plug-In

Installation Process Overview

Install the Oracle vSphere Plug-In for Oracle Flash Storage Systems with the application installer, which you can download from the Oracle Technology Network.

Install the plug-in onto the same host that contains the vCenter Server. Oracle recommends that you install the plug-in in the default folder.

After the plug-in is installed, you can view the Oracle FS System tab in the vSphere Client by navigating to Home > Inventory > Datastores and Datastore Clusters > Oracle FS. You can also verify the plug-in was installed by navigating to Plugs-in > Manage Plug-ins.

Related Links

[Download the Oracle FS System vSphere Plug-In Software](#)

[Install the Oracle FS System vSphere Plug-In](#)

[Update the Oracle FS System vSphere Plug-In](#)

[Verify the Oracle FS vSphere Plug-In Version](#)

[\(Optional\) Remove the Oracle FS System vSphere Plug-In](#)

Download the Oracle FS System vSphere Plug-In Software

The software and documentation are distributed as a single zip archive that is available for download from the Oracle Technology Network (OTN).

Prerequisite: Join the [Oracle Technology Network](http://www.oracle.com/technetwork/community/join/why-join/index.html) (<http://www.oracle.com/technetwork/community/join/why-join/index.html>) to gain access to software and documentation downloads.

The software and documentation comes in a single archive package.

- 1 On the OTN, open the [Oracle Flash Storage and Pillar Axiom Downloads](http://www.oracle.com/technetwork/server-storage/san-storage/downloads/index.html) page (<http://www.oracle.com/technetwork/server-storage/san-storage/downloads/index.html>) in a web browser.
- 2 From Oracle FS System Downloads, select Accept License Agreement.
- 3 Locate and select the name of the software package to download for your operating system version.
- 4 Open the software archive and extract the contents to your workstation.

The software archive contains a readme text file listing the contents of the archive, the installation executable file, and documentation.

After you download the software, you can install the software.

Related Links

[Installation Process Overview](#)

Port Assignments

You can change the default port assignments during the Oracle vSphere Plug-In for Oracle Flash Storage Systems installation.

The ports shown in the following table are used for all communications between the plug-in, the vCenter Server, and the Oracle FS System. These ports permit the vCenter Server and the vSphere Client to connect to and communicate with the plug-in.

If any of the port numbers are in use by other software, you can change them.

The following table summarizes the default port assignments.

Table 4: Default port numbers

Port type	Port Number	Description
Shutdown Port	8006	The server on which the plug-in is installed uses this port to listen for a shutdown command. Proper configuration of this port is required for the installation to succeed.
HTTP Port	8084	The port on which the plug-in listens for HTTP requests from vSphere Client to plug-in.
HTTPS Port	8446	The port on which the plug-in listens for HTTPS requests from vSphere Client to plug-in.
HTTPS WebCLI Port	8083	<p>The port on which the plug-in communicates with the Oracle FS System WebCLI service running on the Pilot. This port cannot be changed.</p> <p>Use the following CLI command to verify that this service is enabled:</p> <pre>\$ fscli webcli -list</pre> <p>If necessary, use the following CLI command to enable the service:</p> <pre>\$ fscli webcli -enable</pre>

Install the Oracle FS System vSphere Plug-In

Install the Oracle vSphere Plug-In for Oracle Flash Storage Systems on your vCenter Server host.

- Prerequisites:
- Obtain the following information about the Windows server upon which the vCenter Server is installed before you perform the installation. You cannot complete the installation without this information. Contact your IT department for this information if necessary.
 - vCenter Server DNS name or its IP address
 - vCenter Server username and password for the plug-in to authenticate with the vCenter Server
 - Shutdown Port, HTTP Port, and HTTPS Port numbers available for the plug-in to use
 - Remove any existing version below 3.x of the Oracle vSphere Plug-In for Oracle Flash Storage Systems before installing a newer version.

- 1 Log in to the vCenter Server upon which you want to install the plug-in.
- 2 Extract the contents of the downloaded software archive to the vCenter Server.
- 3 Double-click the executable file you extracted.
- 4 When the setup wizard appears, click Next and follow the instructions for the license agreement.
- 5 Configure the plug-in to work with the vCenter Server. Provide the following information, and then click Next.
 - Fully-qualified name or IP address of the vCenter Server
 - Username and password for the vCenter Server
 - Port numbers for the Shutdown Port, HTTP Port, and HTTPS Port fields
 - A new password for the keystore used to facilitate HTTPS communication between the vSphere Client and the plug-in
- 6 Follow the instructions to accept the default installation location and run the installation process.
- 7 When the installation completes, click Finish.
- 8 Restart the vSphere Client from which you intend to manage your Oracle FS System.

When you launch the vSphere Client, the Oracle FS tab and context menus appear in the vSphere Client.

After you install the plug-in, create the recommended administrator accounts. Refer to the *Oracle FS System Oracle Flash Storage System Administrator's Guide* for details about administrator accounts.

Related Links

[Oracle FS System vSphere Plug-In Registration](#)
[Installation Process Overview](#)

Update the Oracle FS System vSphere Plug-In

When a new version of the Oracle vSphere Plug-In for Oracle Flash Storage Systems software is available, you can update your version of the plug-in software.

- Prerequisites:
- Obtain the following information about the Windows server upon which the vCenter Server is installed before you perform the installation. You cannot complete the installation without this information. Contact your IT department for this information if necessary.
 - vCenter Server DNS name or its IP address
 - vCenter Server username and password for the plug-in to authenticate with the vCenter Server
 - Shutdown Port, HTTP Port, and HTTPS Port numbers available for the plug-in to use
 - Remove any existing version below 3.x of the Oracle vSphere Plug-In for Oracle Flash Storage Systems before installing a newer version.

- 1 Follow the instructions to remove the previous version of the plug-in software.

Note: If you are updating from a previous 3.x or higher version of the plug-in, you can install the update over the previous version. Follow the instructions for verifying the version of the plug-in to determine the version you are using.

- 2 Follow the instructions to download the update installation package from the Oracle Technology Network and extract the contents to the host containing the vCenter Server.
- 3 Follow the instructions to install the update version of the plug-in software on the host containing the vCenter Server.
- 4 Restart the vSphere Client from which you intend to manage your Oracle FS System storage.

When you launch the vSphere Client, the Oracle FS System tab and context menus appear in the vSphere Client.

Related Links

[Installation Process Overview](#)

(Optional) Remove the Oracle FS System vSphere Plug-In

You can uninstall the Oracle vSphere Plug-In for Oracle Flash Storage Systems software from the host running the vSphere Client if you no longer need it.

Prerequisite: Close the vSphere Client before you remove the plug-in software.

Uninstalling the plug-in removes the software.

- 1 From the Windows Start menu, navigate to **Settings** > Control Panel > Add or Remove Programs.
- 2 From the Add or Remove Programs dialog, select the Oracle vSphere Plug-In for Oracle Flash Storage Systems software program, and click **Remove**. The plug-in functionality is removed from the vSphere Client, but the plug-in remains in the Plug-In Manager list.

To remove the plug-in from the Plug-In Manager, you need to remove it from the vCenter Server. Go to the [VMware Knowledge Base](http://kb.vmware.com) (<http://kb.vmware.com>) and search for Article 1025360.

Related Links

[Installation Process Overview](#)

Configure the Environment

Oracle FS System vSphere Plug-In Registration

During the Oracle vSphere Plug-In for Oracle Flash Storage Systems installation, the plug-in registers with the vCenter Server. No separate registration action is required.

Related Links

[Install the Oracle FS System vSphere Plug-In](#)

Connection Between Oracle FS Systems and vSphere Overview

An Oracle FS System must be connected to the vSphere environment for you to be able to view and manage storage systems.

Besides the physical connection of the Oracle FS System to the vSphere environment, the vSphere software only becomes aware that an Oracle FS System is connected under the following circumstances:

- An Oracle FS System LUN is mapped to that ESX host.
- You manually add an Oracle FS System.

Note: If you change the IP address of an Oracle FS System, reboot the ESX host to which the associated LUNs are mapped. Otherwise, the Oracle FS System fails to authenticate.

Any Oracle FS System that is connected to the vSphere environment is listed in the Oracle FS System tab for hosts. You connect an Oracle FS System to the vSphere environment in the Select Oracle FS System page that appears when you right-click an ESX host in the vSphere inventory tree and select a management task from the Manage Oracle FS Storage context menu.

Related Links

[Add an Oracle FS System to vSphere](#)

Administrator Accounts

Oracle recommends creating a unique Administrator 2 account as the operator account for the Oracle vSphere Plug-In for Oracle Flash Storage Systems.

You can create multiple administrator accounts in an Oracle FS System. Additional accounts are not necessary, but are useful as good practice.

Someone with Administrator 1 privileges needs to create the plug-in operator account. The administrator who creates the operator account provides the name and password for the account to the operator account holder. Oracle recommends that you do not use the Primary Administrator account as the plug-in operator account for security reasons, as the Primary Administrator account has a number of privileges that are not required by the vSphere plug-in operator account.

Note: All account passwords on the Oracle FS System have a maximum expiration of 180 days. After 180 days, the password must be changed according to the password rules documented on the Oracle FS System.

You can create additional accounts for other operators. Oracle recommends assigning Administrator 2 privileges to any additional operator accounts.

Refer to the *Oracle FS System Oracle Flash Storage System Administrator's Guide* for details about administrator accounts.

Credentials Overview

You provide administrator login credentials to access an Oracle FS System in the vSphere Client.

You can enable access to an Oracle FS System by providing Oracle FS System credentials when you select one of the following:

- The Oracle FS System tab for an ESX host
- Any management task in the context menu displayed for a host or datacenter
- Any management task in the context menu displayed for a datastore

Enable Oracle FS System Access

You can enable access to an Oracle FS System by providing Oracle FS System credentials when you select an Oracle FS System in the Oracle FS System tab for an ESX host.

Prerequisite: Administrator credentials to enable access to the Oracle FS System.

- 1 From the vSphere menu bar, select Inventory > Host and Clusters.
- 2 In the vSphere Inventory pane, select the host that contains the Oracle FS System you want to access.
- 3 Click the Oracle FS System tab.
- 4 In the Oracle FS System tab, select the Oracle FS tab.
Any Oracle FS System associated with the selected host appears in the Oracle FS tab.

- 5 Right-click the Oracle FS System you want to access and select Authenticate.
- 6 In the Authenticate dialog, enter the administrator credentials in the Login Name and Password fields, and click OK.
If the credentials are authenticated, the success dialog displays. If the credentials are not authenticated, you are again prompted for credentials. Make certain that you have the correct credentials for the selected Oracle FS System.

Note: All account passwords on the Oracle FS System have a maximum expiration of 180 days. After 180 days, the password must be changed according to the password rules documented on the Oracle FS System.

Enable Oracle FS System Access From a Host or Datacenter

You can enable access to an Oracle FS System by providing Oracle FS System credentials when you select a management task from the context menu displayed for a host or datacenter.

Prerequisite: Administrator credentials to enable access to the Oracle FS System.

Any Oracle FS System can be associated with datacenters or hosts. When you select a management task from the context menu for a host or datacenter, you are prompted to select an Oracle FS System and to provide credentials to enable access to that Oracle FS System.

- 1 In the vSphere inventory tree, right-click the datacenter or ESX host with which the Oracle FS System is associated.
- 2 Select a Manage Oracle FS System Storage task from the context menu. For example, click Manage Oracle FS System Storage > Manage LUNs. A dialog shows the Oracle FS System associated with the host or datacenter.
- 3 In the dialog that shows the associated Oracle FS System, right-click the Oracle FS System with which you want to work, and select Authenticate.
- 4 In the Authenticate dialog, enter the administrator credentials in the Login Name and Password fields, and click OK.
If the credentials are authenticated, the management task dialog displays. If the credentials are not authenticated, you are again prompted for credentials. Make certain that you have the correct credentials for the Oracle FS System.
- 5 When access is enabled, select the Oracle FS System and click Next.

Enable Oracle FS System Access From a Datastore

You can enable access to an Oracle FS System by providing Oracle FS System credentials when you select a datastore.

Prerequisite: Administrator credentials to enable access to the Oracle FS System.

Any Oracle FS System can be associated with datastores. When you select a management task from the context menu for a datastore associated with an Oracle FS System, you will be prompted for login credentials for that Oracle FS System.

- 1 In the vSphere inventory tree, right-click the datastore with which the Oracle FS System is associated.
- 2 Select a Manage Oracle FS Storage task from the context menu. For example, click Manage Oracle FS Storage > Volume Properties. The Oracle FS System Authentication dialog prompts you for credentials for the Oracle FS System associated with the host or datacenter.
- 3 Enter the administrator credentials in the Login Name and Password fields, and click Next. If the credentials are authenticated, the management task dialog displays. If the credentials are not authenticated, you are again prompted for credentials. Make certain that you have the correct credentials for the Oracle FS System.

Add an Oracle FS System to vSphere

If an Oracle FS System that you need is not connected to the vSphere environment, you can manually add one.

Prerequisite: Administrator credentials to enable access to the Oracle FS System.

Oracle recommends creating a unique Administrator 2 account as the operator account for the Oracle vSphere Plug-In for Oracle Flash Storage Systems.

- 1 From the vSphere menu bar, select Inventory > Hosts and Clusters.
- 2 In the vSphere inventory tree, right-click the ESX host you want to associate with the new Oracle FS System.
- 3 Select a Manage Oracle FS Storage task from the context menu. For example, click Manage Oracle FS Storage > Manage LUNs. A dialog shows the Oracle FS System associated with the host.
- 4 In the dialog that shows the associated Oracle FS System, right-click and select Add Oracle FS System.
- 5 In the Add Oracle FS System dialog, enter the following information:
 - IP Address

- Login Name
 - Password
- 6 Click OK.
The new Oracle FS System appears in the list of associated Oracle FS Systems.

Related Links

[Connection Between Oracle FS Systems and vSphere Overview](#)

User Preferences Overview

You can change the details that display in an Oracle FS System tab by setting the user preferences for the tab.

To modify the details to determine the appearance of items in the display tables:

- Set which details to display.
For example, if block size is not displayed, you can choose to show or hide the Block Size column.
- Sort the details in ascending or descending order.
For example, if Oracle FS System and non-Oracle FS System LUNs are mixed together in the Vendor Name column, you can change the sort order of the column to list the Oracle FS System LUNs first and then the non-Oracle FS System LUNs second.
- Set the column width so that the system automatically resizes the column to fit its contents.
For example, if the length of a line exceeds the column width, you can increase the width of the column to display the entire line.
- Change the position of the column headings by dragging and dropping the headings to different locations.
For example, if you want to see the capacity of a datastore displayed before the datastore name, you can drag the Capacity column heading to the first position in the table.

You can save user preferences (with the exception of sort order) so that your changes remain the next time you login, or you can revert to the default settings.

Related Links

[Modify and Save User Preferences](#)

Modify and Save User Preferences

You can set user preferences to modify the appearance of an Oracle FS System tab.

The details that appear in the Oracle FS System tab can be modified to suit your needs. You can determine which details to display in the tables, the order of columns in the tables, and the order of items in each table column.

- 1 Select a host, a virtual machine (VM), or a datastore in the vSphere Inventory pane.
- 2 Click the Oracle FS System tab.
- 3 Choose from the following options to modify the details that are displayed:
 - Click and drag a column heading to move the column to a new location.
 - Click the up or down arrow beside a column heading to change the sort order of items in the column.
 - Right-click an item in the displayed table and select Show/Hide Columns to choose which columns to display.

The changes occur after you make each modification.

- 4 Click OK to save the changes.
- 5 To save the changes permanently, click Save Preferences. The settings are saved and persist until further changes are made.
- 6 (Optional) If you want to revert back to the default display settings, click Default Preferences.

Related Links

[User Preferences Overview](#)

Verify the Oracle FS vSphere Plug-In Version

You can verify the version of the Oracle vSphere Plug-In for Oracle Flash Storage Systems software in the vSphere Plug-In Manager.

The vSphere Client has a built-in feature called Plug-In Manager. The Plug-In Manager displays the plug-ins that are installed in that instance of the vSphere Client. You can view information about each plug-in, including the plug-in name, vendor, version, status, progress, and errors. Checking the status and errors information is helpful if you encounter connection problems.

- 1 From the vSphere menu bar, click Plug-ins > Manage Plug-ins.
- 2 From the Plug in Manager dialog, select the Oracle vSphere Plug-In for Oracle Flash Storage Systems to view information.
- 3 Check the version displayed.

Related Links

[Installation Process Overview](#)

Enable or Disable the Oracle FS vSphere Plug-In

You can disable or enable the Oracle vSphere Plug-In for Oracle Flash Storage Systems software in the vSphere Plug-In Manager.

The vSphere Client has a built-in feature called Plug-In Manager that displays the vSphere plug-ins that are installed in that instance of the vSphere Client. You can view information about each plug-in, including the plug-in name, vendor, version, status, progress, and errors. Checking the status and errors information is helpful if you encounter connection problems. You can also enable and disable the plug-in when performing troubleshooting.

- 1 From the vSphere menu bar, select Plug-ins > Manage Plug-ins.
- 2 From the Plug-in Manager dialog, select the Oracle vSphere Plug-In for Oracle Flash Storage Systems.
- 3 Right click and then, from the context menu, select Enable or Disable, depending upon the plug-in status.

The plug-in is disabled or enabled. You can verify the status in the Plug-in Manager panel.

Access Oracle FS System Storage

Log In to the vSphere Client

The vSphere Client is the interface to the vCenter Server, ESX hosts, virtual machines (VMs), and datastores. You log in to the vCenter Server with the vSphere Client.

Prerequisite: The vSphere Client software package must already be installed on your client workstation.

When you launch the vSphere Client and log in, you are using the vSphere Client to log in to the vCenter Server.

- 1 Launch the vSphere Client application.
The VMware vSphere Client login dialog appears.
- 2 In the IP Address / Name field, enter either the IP address or name of the host upon which the vCenter Server is installed.
- 3 Enter the login credentials for the vCenter Server.
- 4 Click Login.
The vSphere Client opens to the vSphere Hosts & Clusters view, or the last page you visited when you last logged off.

Related Links

[Accessing Oracle FS Storage in vSphere vSphere Plug-In Certificate Description](#)

Log Out of the vSphere Client

The Oracle vSphere Plug-In for Oracle Flash Storage Systems has no specific log off operation. When you exit the vSphere Client application, you log out from the plug-in.

When you have completed working with the Oracle FS System in the vSphere Client, Oracle recommends that you exit the application. Otherwise, an unauthorized user might gain access to the Oracle FS System from your workstation.

In the vSphere Client menu, select File > Exit.
The vSphere Client closes.

Related Links

[Accessing Oracle FS Storage in vSphere](#)
[vSphere Plug-In Certificate Description](#)

Accessing Oracle FS Storage in vSphere

The Oracle FS System tab in the vSphere Client provides a view of storage utilization in your Oracle FS System. The Manage Oracle FS System Storage context menus in the vSphere Client provide access to storage management functions for your Oracle FS System.

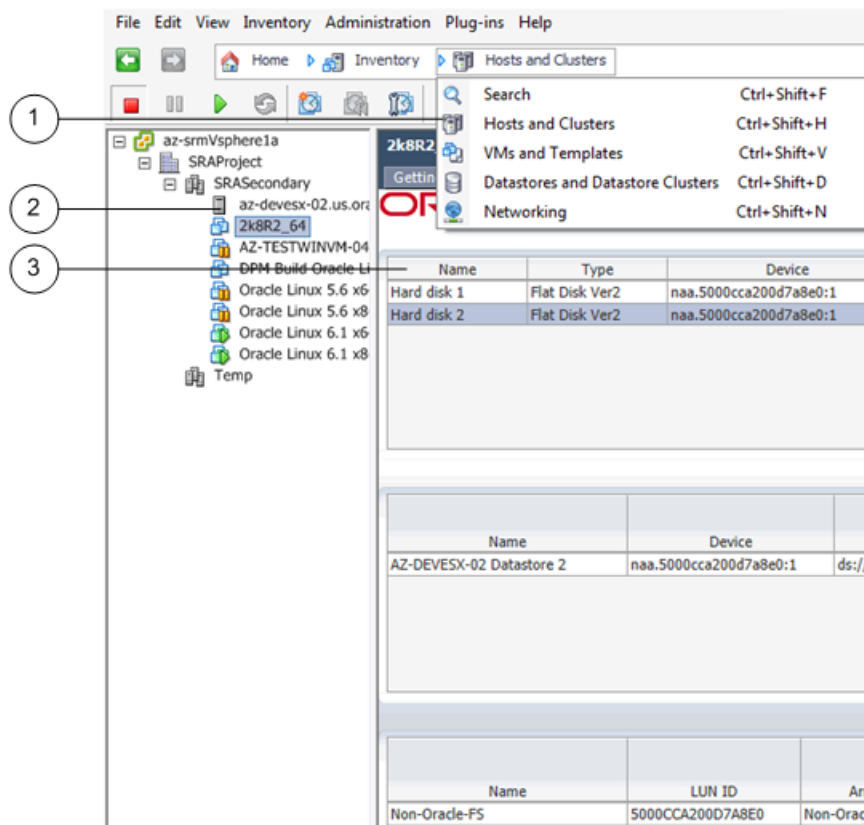
You can view your Oracle FS System without any special account privileges, however, to modify storage objects, you need to have the appropriate administrator level privileges. In order to modify storage resources, use an Administrator 2 account on the Oracle FS System.

The Oracle FS System tab is visible when you select a host, virtual machine, or datastore in the Inventory pane for one of the following vSphere Client Inventory views:

- Hosts and Clusters
- VMs and Templates
- Datastores

The following figure illustrates the vSphere inventory views:

Figure 3: vSphere inventory views



Legend	1 Inventory views drop-down list
	2 Host selected in the Inventory pane
	3 Oracle FS System tab displayed in the content pane

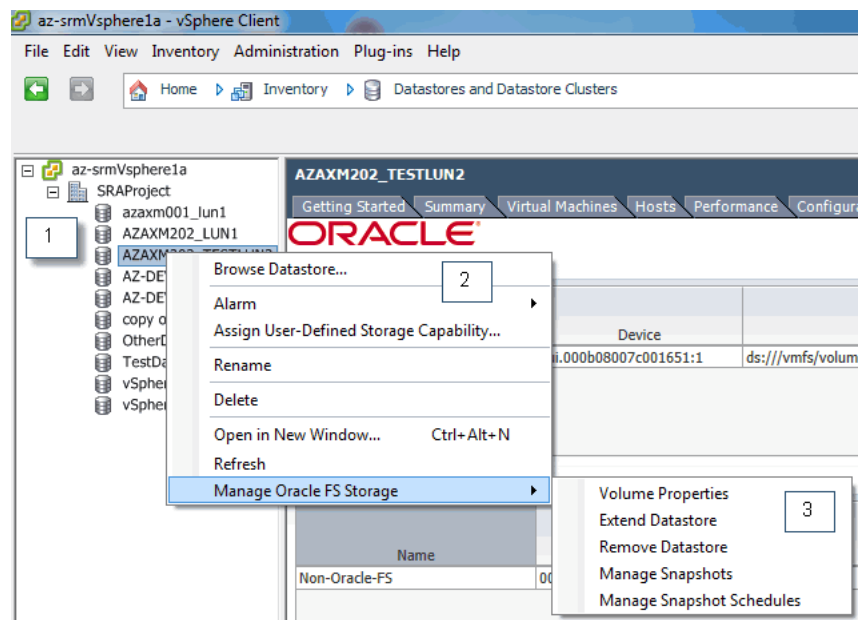
To view your storage in relation to different storage objects, select the appropriate Inventory view for that object.

- When you select a host in the Inventory pane, the Oracle FS System tab displays detailed information about the datastore, LUNs, and Oracle FS System associated with that host.
- When you select a virtual machine (VM) in the Inventory pane, the Oracle FS System tab displays detailed information about the datastores and LUNs associated with that VM.
- When you select a datastore in the Inventory pane, the Oracle FS System tab displays detailed information about the LUNs associated with that datastore.

You can manage storage objects in your Oracle FS System by selecting management functions from one of the available context menus.

The following figure illustrates the vSphere Client context menu for datastores:

Figure 4: vSphere Client context menu for datastores



Legend	1 Datastore selected in the Inventory pane
	2 Context menu
	3 Management functions

The management function menu items that are available when you right-click a datacenter, host, or datastore in the inventory pane are listed in the following table.

Table 5: Manage Storage context menus

Datacenter	Host	Datastore
Manage LUNs	Manage LUNs	Volume Properties
Manage Volume Groups	Manage Volume Groups	Extend Datastore
Manage Storage Domains	Manage Storage Domains	Remove Datastore
Manage Host Groups	Manage Host Groups	Manage Snapshots
Create Datastore		Manage Snapshot Schedules
Manage Snapshot Schedules		

The first time you open the Oracle FS System tab or click a Manage Oracle FS System Storage management task, an “untrusted certificate” warning appears. To avoid this warning, install the certificate for the plug-in in a trusted certificate store. See the instructions for installing the certificate.

Related Links

[Log In to the vSphere Client](#)

[Log Out of the vSphere Client](#)

[View Oracle FS System Storage in vSphere](#)

[Manage Oracle FS Storage in vSphere](#)

[Install the vSphere Plug-In Certificate](#)

View Oracle FS System Storage in vSphere

The Oracle FS System tab provides a detailed view of hosts, virtual machines (VMs), and datastores that contain Oracle FS System storage content.

The Oracle FS System tab is available only when you select a host, a VM, or a datastore in the vSphere Inventory pane.

- 1 On the vSphere navigation bar, click Inventory.
- 2 From the Inventory drop-down list, select one of the views from the options listed.
The content pane switches to the selected view.
- 3 Select a host, VM, or datastore in the Inventory pane.
The associated Oracle FS System tab appears in the row of tabs above the content pane.

Note: An “untrusted certificate” warning appears the first time you click the Oracle FS System tab. Click Yes to indicate that you trust the certificate for the Oracle vSphere Plug-In for Oracle Flash Storage Systems to work properly.

Related Links

[Accessing Oracle FS Storage in vSphere vSphere Plug-In Certificate Description](#)

Manage Oracle FS Storage in vSphere

The Manage Oracle FS Storage menus enable you to manage Oracle FS System storage content.

Manage Oracle FS Storage menus are available only when you right-click a datacenter, a host, or a datastore in the vSphere Inventory pane.

- 1 On the vSphere navigation bar, click Inventory.
- 2 From the Inventory drop-down list, select one of the views from the options listed.
The Inventory pane displays the objects that are available in the selected view.
- 3 Right-click the name of a datacenter, a host, or a datastore in the Inventory pane.
A context menu containing the Manage Oracle FS Storage menu item appears beside the name.
- 4 Position your cursor over the Manage Oracle FS Storage menu item to display the available management tasks.
The management functions displayed depend on the type of object you right-clicked.
- 5 Select the management function you want to perform.
The appropriate wizard starts and guides you in performing the selected function.

Note: An “untrusted certificate” warning appears the first time you click a Manage Oracle FS Storage management task. Click Yes to indicate that you trust the certificate for the Oracle vSphere Plug-In for Oracle Flash Storage Systems to work properly.

Related Links

[Accessing Oracle FS Storage in vSphere vSphere Plug-In Certificate Description](#)

vSphere Plug-In Certificate Description

During installation, the Oracle FS System vSphere Plug-In generates a self-signed certificate used to secure traffic between the vSphere Client and the vCenter Server.

The Common Name (CN) used for both the *issued to* and *issued by* parts of the certificate will match the vCenter Server name or IP address. Since these portions of the field are generated locally, they will not match the list of trusted issuers used by the browser embedded in the vSphere Client. Therefore, when you view the Oracle FS System tab or select a Manage Oracle FS System Storage Management task, a Security Alert dialog appears indicating the certificate is not trusted.

The certificate must be trusted in order to use the Oracle FS System vSphere Plug-In. When the Security Alert dialog appears, you must click **Yes** to indicate that you trust the certificate. This indicates that you trust the certificate for the current session only. You can install the certificate in a trusted certificate store to keep this dialog from appearing each time you start the vSphere Client to use the plug-in.

Install the vSphere Plug-In Certificate

If you trust the Oracle vSphere Plug-In for Oracle Flash Storage Systems self-signed certificate, install the certificate in a trusted certificate store to keep the “untrusted certificate” warning from appearing whenever you start the plug-in.

The first time you open the Oracle FS System tab or click a Manage Oracle FS System Storage management task, an “untrusted certificate” warning appears. Click **Yes** to indicate that you trust the certificate to use the plug-in in the current session. To keep this warning from appearing whenever you start the plug-in, you need to install the certificate in a trusted certificate store.

- 1 In the Security Alert dialog, click **View Certificate**.
- 2 In the Certificate window, click **Install Certificate**.
The Certificate Import Wizard starts.
- 3 Select the **Place all certificates in the following store** option and click **Browse**.
The Select Certificate Store dialog appears.
- 4 Select **Trusted root certificate authorities > Local Computer**.
- 5 Select the **Show physical stores** option and click **OK**.
- 6 Click **Next** and then **Finish** in the Certificate Import Wizard.
If the import is successful, the message `The import was successful` displays.
- 7 Click **OK**.

View Oracle FS Storage

Viewing Datastores Overview

To view details about the hosts, datacenters, and virtual machines (VMs) associated with datastores in your vSphere environment, view the datastores in the Oracle FS System tab in the vSphere Client.

You can view all of the datastores in a datacenter, a host, or a VM, or you can view details of a specific datastore. You can also view the volume properties of a particular datastore.

Related Links

[View All Datastores in a Datacenter](#)

[View the Datastores Attached to a Host](#)

[View the Datastores Attached to a Disk](#)

View All Datastores in a Datacenter

You can view all of the datastores in a datacenter at one time in the vSphere Client.

- 1 From the vSphere menu bar, select **Inventory > Datastores and Datastore Clusters**.
All of the datastores appear in the Inventory pane, grouped under the datacenter to which the datastores were added.
- 2 To view the datastore content, select the datastore in the Inventory pane, and then under **Basic Tasks** select **Browse this datastore**.
The datastore content displays.

Related Links

[Viewing Datastores Overview](#)

View the Datastores Attached to a Host

You can find details about the datastores used by a particular host by viewing the datastores in the Oracle FS System tab in the vSphere Client.

- 1 From the vSphere menu bar, select **Inventory > Hosts and Clusters**.
- 2 In the vSphere Inventory pane at the left side of the vSphere Client, select the host whose datastores you want to view.
- 3 Click the Oracle FS System tab.

- 4 Select the Datastores tab.
- 5 View the Datastores Detail for information about all datastores attached to the selected host.
- 6 Select a datastore to view the LUN Details for that datastore.
The details for all LUNs in the datastore appear in the LUN Details table at the bottom of the Oracle FS System tab.

Note: If you have not yet enabled access to the Oracle FS System where the LUNs reside, the LUN Details will not include data from the Oracle FS System. To enable access, click the Oracle FS System tab, right-click the Oracle FS System, select Authenticate, and enter your administrator credentials.

Related Links

[Viewing Datastores Overview](#)

View the Datastores Attached to a Disk

You can find details about the datastores associated with a particular disk by viewing the datastore details in the Oracle FS System tab. The Oracle FS System tab appears when you select a virtual machine (VM) in the vSphere Client.

When you select a VM in the Inventory pane, the Oracle FS System tab lists the disks associated with that VM. Select a disk from that list to display details about the datastores associated with that disk.

- 1 From the vSphere menu bar, select Inventory > VMs and Templates.
- 2 In the vSphere inventory tree at the left side of the vSphere Client, select the VM that contains the disk with the datastores you want to view.
- 3 Click the Oracle FS System tab.
- 4 On the Oracle FS System tab, select a disk from those listed in the Virtual Machine section.
The datastores attached to the specified disk appear in the Datastore Detail section of the Oracle FS System tab.

Related Links

[Viewing Datastores Overview](#)

Viewing LUNs Overview

You can view detailed information about all LUNs associated with a host, a virtual machine (VM), or a datastore in the Oracle FS System tab in the vSphere Client.

When you select the LUNs tab in the Oracle FS System tab for a host, a list of all LUNs associated with that host appears. Select a LUN to view details about that LUN in the LUN Details section at the bottom of the Oracle FS System tab.

When you display the Oracle FS System tab for a VM, a list of all disks associated with that VM appears. Select a disk to view detailed information about the LUNs associated with that disk in the LUN Details section at the bottom of the Oracle FS System tab.

When you display the Oracle FS System tab for a datastore, details about all the LUNs associated with that datastore appear in the LUN Details section at the bottom of the Oracle FS System tab.

Related Links

[View LUN Details](#)

[View LUN Details on a VM](#)

[View LUN Details on a Datastore](#)

[View Datastore Volume Properties](#)

View LUN Details

You can view detailed information about a particular LUN in the LUNs tab of the Oracle FS System tab.

When you select a LUN, the details about the LUN display in the LUN Details section at the bottom of the Oracle FS System tab.

- 1 From the vSphere menu bar, select Inventory > Host and Clusters.
- 2 In the vSphere Inventory pane, select the host that contains the LUN you want to view.
- 3 Click the Oracle FS System tab.
- 4 In the Oracle FS System tab, select the LUNs tab.
All the LUNs associated with the selected host appear in the Oracle FS System tab.
- 5 Select the LUN whose detail you want to view.
Details about the selected LUN appear in the LUN Details section.

Note: If you have not yet enabled access to the Oracle FS System where the LUNs reside, the LUN Details will not include data from the Oracle FS System. To enable access, click the Oracle FS System tab, right-click the Oracle FS System, select Authenticate, and enter your administrator credentials.

Related Links

[Viewing LUNs Overview](#)

View LUN Details on a VM

You can view detailed information about a particular LUN in the Oracle FS System tab for virtual machines (VMs).

When you select a VM disk, the details about the datastores and LUNs associated with the selected disk display in the LUN Datastore Details and LUN Details sections of the Oracle FS System tab.

- 1 From the vSphere menu bar, select Inventory > Host and Clusters.
- 2 In the vSphere Inventory pane, select the VM that contains the LUN you want to view.
- 3 Click the Oracle FS System tab.
- 4 In the Virtual Machine section of the Oracle FS System tab, select the VM disk that contains the LUN you want to view.
Details about the LUN appear in the LUN Details section.

Note: If you have not yet enabled access to the Oracle FS System where the LUNs reside, the LUN Details will not include data from the Oracle FS System. To enable access, click the Oracle FS System tab, right-click the Oracle FS System, select Authenticate, and enter your administrator credentials.

Related Links

[Viewing LUNs Overview](#)

View LUN Details on a Datastore

You can view detailed information about a particular LUN in the Oracle FS System tab for datastores.

Details about a LUN display in the LUN Details section at the bottom of the datastore Oracle FS System tab.

- 1 From the vSphere menu bar, select Inventory > Datastores and Datastore Clusters.
- 2 In the vSphere Inventory pane, select the datastore that contains the LUN you want to view.
- 3 Click the Oracle FS System tab.
Details about the LUN in the datastore appear in the LUN Details section.

Note: If you have not yet enabled access to the Oracle FS System where the LUNs reside, the LUN Details will not include data from the Oracle FS System. To enable access, click the Oracle FS System tab, right-click the Oracle FS System, select Authenticate, and enter your administrator credentials.

Related Links

[Viewing LUNs Overview](#)

View Datastore Volume Properties

The Datastore Volume Properties option provides a display of all the property information for a datastore containing Oracle FS System LUNs in one location.

The properties are gathered from and are available in existing vSphere Client dialogs and the LUN Details section of the datastore Oracle FS System tab in the vSphere Client.

- 1 From the vSphere menu bar, select Inventory > Datastores and Datastore Clusters.
- 2 In the vSphere inventory tree, select the datastore with the volumes you want to view.
This datastore must contain LUNs only from a single Oracle FS System.
- 3 Right-click the datastore and select Manage Oracle FS Storage > Volume Properties.
- 4 Enter authentication credentials for the Oracle FS System, and then click Next to access the Oracle FS System.
- 5 Select a LUN to view its properties.
- 6 Close the Volume Properties window when you are finished.

Related Links

[Viewing LUNs Overview](#)

Create Storage Objects

Creating Datastores Overview

You can create a datastore from a new or existing Oracle FS System LUN.

You associate the datastore with the LUN at the time you create the datastore.

The details about datastores in the vSphere environment can be found in the [VMware Documentation](http://www.vmware.com/support/pubs/) (<http://www.vmware.com/support/pubs/>).

Related Links

[Create a Datastore Associated With an Existing LUN](#)

[Create a Datastore Associated With a New LUN](#)

[Extend a Datastore that Uses a LUN](#)

[Remove a Datastore and Delete the Underlying LUNs](#)

[Remove a Datastore and Keep the Underlying LUNs](#)

[Add an Oracle FS System to vSphere](#)

Create a Datastore Associated With an Existing LUN

When you create a datastore, you associate it with a new or existing LUN. Follow these steps to create a datastore associated with an existing LUN.

- Prerequisites:
- An ESX host with which to associate the datastore. The ESX host must already be attached to the datacenter.
 - Administrator credentials to enable access to the Oracle FS System with which the new datastore is associated.

Note: An Administrator 2 account is required in order to be able to create, modify, or delete LUNs on the Oracle FS System.

You create a datastore in the vSphere Client.

- 1 On the vSphere Client navigation bar, select Inventory > Datastores and Datastore Clusters.
- 2 In the vSphere inventory tree, right-click the datacenter in which you want to create a datastore.

- 3 From the context menu, select Manage Oracle FS Storage > Create Datastore.
- 4 From the Select Oracle FS System page, select the Oracle FS System from which you want to associate the LUN with the new datastore.
This is the Oracle FS System containing the LUN upon which you create the new datastore.
- 5 Authenticate your login credentials to the Oracle FS System if you have not yet done so, and click Next.
The Select Host page appears and shows the selected datacenter and the nested ESX hosts contained therein.
- 6 From the Select Host page, select the ESX host with which you want to associate the new datastore you are creating and click Next.
The Add Storage dialog appears and shows the LUNs that are already associated with the host you selected.
- 7 From the Add Storage dialog, select a LUN and click Next.
- 8 In the Modify SAN LUN page, verify the Quality of Service, Mapping, and Data Protection settings, and click Next.
- 9 In the Create Datastore page, provide a datastore name.
A datastore is constrained to a single datacenter. The datastore is uniquely named within the datacenter.
- 10 From the Maximum File and Block Size drop-down list, select the desired maximum file size.
- 11 Click OK.

Related Links

[Creating Datastores Overview](#)

[Administrator Accounts](#)

Create a Datastore Associated With a New LUN

When you create a datastore, you associate it with a new or existing LUN. Follow these steps to create a datastore associated with a new LUN.

- Prerequisites:
- An ESX host with which to associate the datastore. The ESX host must already be attached to the datacenter.
 - Administrator credentials to enable access to the Oracle FS System with which the new datastore is associated.

Note: An Administrator 2 account is required in order to be able to create, modify, or delete LUNs on the Oracle FS System.

You create a datastore in the vSphere Client.

- 1 On the vSphere Client navigation bar, select Inventory > Datastores and Datastore Clusters.
- 2 In the vSphere inventory tree, right-click the datacenter in which you want to create a new datastore.
- 3 From the context menu, select Manage Oracle FS Storage > Create Datastore.
- 4 From the Select Oracle FS page, select the Oracle FS System from which you want to associate the new LUN with the new datastore.
This is the Oracle FS System in which you create the new LUN upon which you will create the new datastore. If the Oracle FS System you want to use is not listed, you may need to add it to the vSphere environment.
- 5 Authenticate your login credentials to the Oracle FS System if you have not yet done so, and click Next.
The Select Host dialog appears and shows the selected datacenter and the nested ESX hosts contained therein.
- 6 From the Select Host dialog, select the ESX host with which you want to associate the new datastore, and then click Next.
- 7 From the Add Storage dialog, click Create LUN.
- 8 In the Create SAN LUN page, configure the Quality of Service, Mapping, and Data Protection settings, and click Next.
Important: Be sure to map the LUN to the ESX host with which you associate the datastore.
- 9 In the Create Datastore page, enter a datastore name.
A datastore is constrained to a single datacenter. The datastore is uniquely named within the datacenter.
- 10 From the Maximum File and Block Size drop-down list, select the desired maximum file size.
- 11 Click OK.

Related Links

[Creating Datastores Overview](#)

[Administrator Accounts](#)

Creating LUNs Overview

You can create Oracle FS System LUNs by using the Oracle vSphere Plug-In for Oracle Flash Storage Systems in the vSphere Client.

After you create an Oracle FS System LUN, you associate the datastore with an ESX host. Then you can create a datastore on the LUN and either create a virtual machine (VM) on the datastore or create a new virtual disk that you associate with a VM. You can assign an Oracle FS System LUN directly to the VM as a raw device mapping (RDM).

When you create a LUN, you configure the following attributes:

- **LUN Quality of Service (QoS):** QoS attributes permit you to set different priorities for different applications, users, or data flows, or to guarantee a certain level of performance to a data flow on the LUN.

You can also assign the LUN to a volume group or Storage Domain. When you assign a LUN to a volume group, the LUN becomes part of a group of logical volumes that function as one administrative unit. When you assign a LUN to a Storage Domain, the LUN becomes part of a specific collection of Drive Enclosures. After the LUN is assigned, the LUN becomes available for assignment as part of the resources of volume group or Storage Domain.

- **LUN Mapping:** Mapping a LUN to a host makes the LUN visible to that host. The LUN must be visible for the host to access it. You can then use existing vSphere commands and wizards to create new VMs and datastores that access the LUN through mapping.
- **LUN Data Protection:** This attribute determines how much capacity to allocate for the creation of clones of this LUN.

Note: You cannot create a LUN you intend to use as a Boot LUN with the Oracle vSphere Plug-In for Oracle Flash Storage Systems software.

Refer to the *Oracle FS System Oracle Flash Storage System Administrator's Guide* for information.

Related Links

[Create LUN: Manage LUNs Wizard](#)

[Create LUN: Define Quality of Service](#)

[Create LUN: Define Mapping to Specific Hosts](#)

[Create LUN: Define Mapping to All Hosts](#)

[Create LUN: Define Data Protection](#)

Manage LUNs Wizard Description

You use the Manage LUNs wizard when you create or modify a LUN.

The Manage LUNs page displays all the existing LUNs on the selected Oracle FS System, along with the options to create, modify, and delete LUNs. The Create SAN LUN page displays when you click Create LUN on the Manage LUNs page.

The Create SAN LUN page includes tabs for Quality of Service (QoS) settings, mapping, and setting up data protection for the LUN you are creating.

Related Links

- [Create LUN: Manage LUNs Wizard](#)
- [Create LUN: Define Quality of Service](#)
- [Create LUN: Define Mapping to Specific Hosts](#)
- [Create LUN: Define Mapping to All Hosts](#)
- [Create LUN: Define Data Protection](#)
- [Modify LUN: Manage LUNs Wizard](#)
- [Modify LUN: Quality of Service](#)
- [Modify LUN: Mapped to Specific Hosts](#)
- [Modify LUN: Mapped to All Hosts](#)
- [Delete Oracle FS System LUNs](#)
- [Modify LUN: Data Protection](#)

Create LUN: Manage LUNs Wizard

Run the Manage LUNs wizard to begin creating the LUN.

- Prerequisites:
- Administrator credentials to enable access to the Oracle FS System where the LUN will be created.
 - Add the Oracle FS System where the LUN will be created to the vSphere environment.

The Manage LUNs wizard guides you through the steps necessary to create a LUN on an Oracle FS System using the Oracle vSphere Plug-In for Oracle Flash Storage Systems.

- 1 In the vSphere inventory tree, right-click any ESX host.
This ESX host does not need to be the host to which you want to associate the new LUN. Instead, it provides the access point to create the LUN.
- 2 Click Manage Oracle FS Storage > Manage LUNs.
A dialog appears that shows any Oracle FS System that is connected to the vSphere environment.
- 3 Select the Oracle FS System upon which you want to create the LUN.
- 4 Authenticate your login credentials to the Oracle FS System if you have not yet done so.
- 5 Click Next.
- 6 In the Manage LUNs page, click Create LUN to create a new LUN.

Related Links

- [Creating LUNs Overview](#)
- [Manage LUNs Wizard Description](#)
- [Administrator Accounts](#)

Create LUN: Define Quality of Service

Specify Quality of Service (QoS) attributes to allocate the storage resources necessary to create the LUN.

You can specify a name, Storage Domain, volume group, Storage Profile, and Storage Class attributes for the LUN, as well as priority level, redundancy, capacity, and other QoS attributes, in the Quality of Service tab.

- 1 Select Single Tier or Auto Tier.
Only select the Auto Tier option if the Storage Domain has more than one storage class.
- 2 Click the Quality of Service tab.
- 3 Select a Storage Domain for the LUN.
Click the ellipsis button [...] to review the available storage capacity and storage classes for each Storage Domain.
- 4 Enter the LUN Name.
- 5 (Optional) Select the volume group to which you want the new LUN to belong.
- 6 From the **Storage Profile** drop-down list, select an existing profile or select Custom to create Storage Profile.
 - If you select an existing Storage Profile, the system updates the QoS attributes as defined by the selected profile. Some fields are grayed out (unavailable) which indicates you cannot change those fields as the fields were defined by the storage profile.
 - If you select Custom, select a Storage Class and then select either Basic or Advanced:

Basic	Complete these fields: Typical Access, I/O Bias, Redundancy, and Priority Level.
Advanced	Complete these fields: RAID Level, Read Ahead, and Priority Level.
- 7 Select a value for Background Copy Priority.
- 8 Adjust the values in the Capacity and Allocated Logical Capacity fields as necessary.
- 9 Click OK to create the LUN.

Clicking OK saves the LUN with the QoS settings and any attributes you set in the Mapping and Data Protection tabs.

After you have defined the QoS attributes for the LUN, you define mappings to the LUN, to either specific hosts or all hosts, in the Mapping tab.

For detailed information or definitions about the displayed data, review the *Oracle Flash Storage System Administrator's Guide*.

Related Links

[Creating LUNs Overview](#)

[Manage LUNs Wizard Description](#)

[Administrator Accounts](#)

Create LUN: Define Mapping to Specific Hosts

Map the LUN to one or more SAN hosts to allow only those specific hosts to access the LUN.

When you need to restrict access to a LUN, such as when the LUN contains sensitive data, map access to the LUN to a specific host or group of hosts.

Important: If the mapping you create does not make the LUN visible to the ESX host you selected, the newly created LUN will not become visible under the selected host on the Oracle FS tab.

- 1 Click the Mapping tab.
- 2 Select the appropriate Access Protocol: Fibre Channel (FC), iSCSI, or both. This selection determines the protocols that will be permitted for accessing the LUN.

Important: When you select both FC and iSCSI protocols, the system uses FC optimized and non-optimized paths as a preference over iSCSI paths. Also, the system does not mix load balancing between protocols. See the release notes for your version to see whether iSCSI is supported.

- 3 Click the Only selected hosts option.
- 4 Select a Controller in the LUN Controller Assignment section. Two storage Controller fields appear. For new LUNs, the Current Controller field is not available. From the Assigned Controller drop-down list, select a Controller or select auto assign.

If you select auto assign, the system determines the Controller. You can modify the value or select a new value after the LUN has been created.

- 5 To create a host mapping, click Create and select values for the LUN mapping fields:
 - Host Name: Select the ESX host to associate to the LUN.
 - LUN Number: Select the number to assign to the LUN for the selected host and click OK. This number must be unique for that particular host. It does not need to be unique across all hosts.
 - (Optional) Limit available LUN numbers to LUN numbers not in use by ESX hosts: In the Create LUN Mapping dialog, the LUN numbers listed are LUN numbers available for the selected Oracle FS System host. Select this option to further restrict this list to only those LUN numbers not in use by that host as an ESX host in the vSphere environment. Selecting this option initiates a scan of the vSphere environment that might take several seconds to complete.

- 6 (Optional) Click OK and Continue to select additional hosts to map to the LUN.
- 7 In the Ports Masked for this LUN table, indicate which ports you want masked by selecting Yes or No in the Masked column.
- 8 (Optional) Click OK to create the LUN now.

Clicking OK saves the LUN with the LUN-to-host mapping and any attributes you set in the Quality of Service and Data Protection tabs.

After you have defined the host mappings for a LUN, you must next define Data Protection settings for the LUN.

For detailed information or definitions about the displayed data, review the *Oracle Flash Storage System Administrator's Guide*.

Related Links

[Creating LUNs Overview](#)

[Manage LUNs Wizard Description](#)

[Administrator Accounts](#)

Create LUN: Define Mapping to All Hosts

Map the LUN to a unique LUN number to allow all SAN hosts to access the LUN.

When you need to provide unrestricted access to a LUN, such as when the LUN contains general-purpose data to which all hosts need access, map the LUN to a unique LUN number.

- 1 Click the Mapping tab.
- 2 Select the appropriate Access Protocol: Fibre Channel (FC), iSCSI, or both. This selection determines the protocols used to access the LUN.

Important: When you select both FC and iSCSI protocols, the system uses FC optimized and non-optimized paths as a preference over iSCSI paths. Also, the system does not mix load balancing between protocols.

- 3 Select All hosts may access this LUN using LUN number.
- 4 Select a number for the LUN from the drop-down list to the right of the previous option.
- 5 Select a Controller in the LUN Controller Assignment section. Two storage Controller fields appear. For new LUNs, the Current Controller field is not available. From the Assigned Controller drop-down list, select a Controller or select auto assign.

If you select auto assign, the system determines the Controller. You can modify the value or select a new value after the LUN has been created.

- 6 In the Ports Masked for this LUN table, indicate which ports you want masked by selecting Yes or No in the Masked column.
- 7 (Optional) Click OK to create the LUN now.

Clicking OK saves the LUN with the LUN number mapping and any attributes you set in the Quality of Service and Data Protection tabs.

After you have defined the LUN number mapping for a LUN, you must next define Data Protection settings for the LUN.

Related Links

[Creating LUNs Overview](#)

[Manage LUNs Wizard Description](#)

[Administrator Accounts](#)

Create LUN: Define Data Protection

Allocate capacity for clones of the LUN to ensure protection of the LUN data.

To make sure that enough storage space exists for clones of a LUN, you must allocate a repository for clones when you create the LUN.

To set sufficient capacity, use a value equal to the source LUN capacity multiplied times the number of Clone LUNs multiplied times the maximum rate of change.

- 1 Click the Data Protection tab.
- 2 Select Single Tier or Auto Tier.
- 3 Click Enable Clones.
- 4 Adjust the value in the Maximum Capacity field by clicking the Increment or Decrement arrow or entering a new value in the field.

The default value is the available capacity for Clone LUNs, which corresponds to the LUN capacity you set as the Addressable Logical Capacity for the LUN in the Quality of Service tab.

- 5 If you want to use the same QoS settings for the clone LUN, click the Match Repository QoS to Tier QoS. If you do not want to use the same QoS settings for the clone LUN, then complete the following fields:
 - a) Select the Storage Domain.
 - b) Select the Storage Class.
 - c) Select Basic or Advanced.

Basic	Complete these fields: Typical Access, I/O Bias, Redundancy, and Priority Level.
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Advanced	Complete these fields: RAID Level and Priority Level.
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- 6 Click OK to save the LUN.

Clicking OK saves the LUN with the new capacity allocation and the attributes you set in the Quality of Service and Mapping tabs.

For detailed information or definitions about the displayed data, review the *Oracle Flash Storage System Administrator's Guide*.

Related Links

[Creating LUNs Overview](#)

[Manage LUNs Wizard Description](#)

[Administrator Accounts](#)

Modify Storage Objects

Modifying LUNs Overview

As needs change, you can modify the configuration of a previously created Oracle FS System LUN.

You modify existing LUNs by launching the Manage LUNs Wizard from a datacenter or host in the inventory tree in the vSphere Client.

Refer to the *Oracle FS System Oracle Flash Storage System Administrator's Guide* for information about modifying LUNs.

Related Links

[Modify LUN: Manage LUNs Wizard](#)

[Modify LUN: Quality of Service](#)

[Modify LUN: Mapped to Specific Hosts](#)

[Modify LUN: Mapped to All Hosts](#)

[Delete Oracle FS System LUNs](#)

[Modify LUN: Data Protection](#)

Modify LUN: Manage LUNs Wizard

Run the Manage LUNs wizard to begin modifying the LUN.

- Prerequisites:
- Administrator credentials to enable access to the Oracle FS System where the LUN will be modified.
 - Add the Oracle FS System where the LUN will be modified to the vSphere environment.

The Manage LUNs wizard guides you through the steps necessary to modify a LUN on an Oracle FS System through the Oracle FS System plug-in to the vSphere Client.

- 1 In the vSphere inventory tree, right-click any ESX host.
This ESX host does not need to be the host to which you want to associate the new LUN. Instead, it provides the access point to create the LUN.
- 2 Select Manage Oracle FS Storage > Manage LUNs.
A dialog appears that shows any Oracle FS System that is connected to the vSphere environment.
- 3 Select the Oracle FS System with the LUN you want to modify.

- 4 Authenticate your login credentials to the Oracle FS System if you have not yet done so.
- 5 Click Next.
- 6 In the Manage LUNs page, select a LUN.
- 7 Click Modify LUN.

Related Links

[Administrator Accounts](#)

Modify LUN: Quality of Service

Modify the current Quality of Service (QoS) attributes to change the QoS settings for the LUN.

As requirements for a LUN change, you can modify the name, Storage Domain, volume group, Storage Profile, Storage Class, and other attributes of the LUN in the Quality of Service tab.

- 1 Click the Quality of Service tab.
- 2 Click Single Tier or Auto Tier.
- 3 Modify the necessary volume group, Storage Domain membership settings, and QoS attributes.

Click the ellipsis button [...] beside the Storage Domain, Volume Group, or Storage Profile field for more information about choices for those fields.

Refer to the Capacity by Storage Class table for more information about storage classes.

- 4 Select Basic or Advanced.

Basic Modify these fields: Typical Access, I/O Bias, Redundancy, and Priority Level.

Advanced Modify these fields: RAID Level, Read Ahead, and Priority Level.

- 5 Click OK to save all of your updates, or continue on to the Mapping and Data Protection tabs to make additional updates to the LUN.

Related Links

[Administrator Accounts](#)

Modify LUN: Mapped to Specific Hosts

Remap the LUN to restrict access to one or more specific SAN hosts, or map additional hosts to the LUN.

To restrict access to a LUN, map it to one or more specific SAN hosts. Map additional hosts to extend access to more SAN hosts.

- 1 Click the Mapping tab.
- 2 Select the appropriate Access Protocol: Fibre Channel (FC), iSCSI, or both. This selection determines the protocols that will be permitted for accessing the LUN.
Important: When you select both FC and iSCSI protocols, the system uses FC optimized and non-optimized paths as a preference over iSCSI paths. Also, the system does not mix load balancing between protocols.
- 3 Click the Only selected hosts option.
- 4 In the Ports Masked for this LUN table, you can select Yes or No in the Masked column to determine whether a port should be masked.
- 5 In the LUN Controller Assignment section, two Controller settings appear. The Current Controller field is informational only. From the Assigned Controller drop-down list, select a CU or select auto assign. The system auto-assigns the LUN to an available Controller.
- 6 Click Create to create a new host mapping. Select values for the LUN mapping fields:
 - Host Name: Select the ESX host to associate with the LUN.
 - LUN Number: Select the number to assign to the LUN for the selected host, and click OK. This number must be unique for that particular host. It need not be unique across all hosts.
 - (Optional) Limit available LUN numbers to LUN numbers not in use by ESX hosts: In the Create LUN Mapping dialog, the LUN numbers listed are LUN numbers available for the selected Oracle FS System host. Select this option to further restrict this list to only those LUN numbers not in use by that host as an ESX host in the vSphere environment. Selecting this option initiates a scan of the vSphere environment that might take several seconds to complete.
- 7 (Optional) Click OK and Continue to select additional hosts to map to the LUN.
- 8 Click OK to save all of your updates, or continue on to the Data Protection tab to make additional updates to the LUN.

Related Links

[Administrator Accounts](#)

Modify LUN: Mapped to All Hosts

Remap the LUN to a LUN number to make it available to all SAN hosts, or you can change a previously assigned LUN number.

To provide unrestricted access to a LUN, remap the LUN to a unique LUN number that all SAN hosts can use.

- 1 Click the Mapping tab.
- 2 Select the appropriate Access Protocol: Fibre Channel (FC), iSCSI, or both. This selection determines the protocols that will be permitted for accessing the LUN.
Important: When you select both FC and iSCSI protocols, the system uses FC optimized and non-optimized paths as a preference over iSCSI paths. Also, the system does not mix load balancing between protocols.
- 3 Click the All hosts may access this LUN using LUN number option.
- 4 Modify the number for the LUN from the drop-down list to the right of the previous option.
- 5 In the LUN Controller Assignment section, from the two settings that appear (Current Controller and Assigned Controller), select a Controller or select auto assign.
- 6 Click OK to save all of your updates, or continue on to the Data Protection tab to make additional updates to the LUN.

Related Links

[Administrator Accounts](#)

Modify LUN: Data Protection

Reallocate capacity for clones of the LUN to ensure adequate protection of the LUN data.

To make sure enough storage space exists for clones of a LUN, you can change the capacity allocated as a repository for clones when you modify the LUN.

To set sufficient capacity, use a value equal to the source LUN capacity multiplied times the number of Clone LUNs multiplied times the maximum rate of change.

- 1 Click the Data Protection tab.
- 2 Adjust the value in the Maximum capacity (in GB) to allocate Clone LUNs field by clicking the Increment or Decrement arrow.
- 3 Click OK to save all of your updates to the LUN.

Related Links

[Administrator Accounts](#)

Delete Oracle FS System LUNs

When an Oracle FS System LUN is no longer needed, you can delete it from the vSphere Client.

- Prerequisites:
- Administrator credentials to enable access to the Oracle FS System where the LUN will be deleted.

- Be sure the volume to be deleted is not being accessed.

Deletion of a LUN fails if that LUN or any clones of the LUN are currently part of a datastore.

CAUTION: Deleting a LUN through the Oracle vSphere Plug-In for Oracle Flash Storage Systems permanently removes *all data* on that LUN. *Lost data cannot be retrieved.*

CAUTION: When you delete a LUN that is a parent or source for Clone LUNs, all child clones are deleted as well.

- 1 In the vSphere inventory tree, locate the ESX host with which the LUN is associated.
- 2 Select Manage Oracle FS Storage > Manage LUNs.
A page appears that shows any discovered Oracle FS System that is connected to the vSphere environment.
- 3 Select the Oracle FS System where the LUN resides.
- 4 Authenticate your login credentials to the Oracle FS System if you have not yet done so, and click Next.
- 5 In the Manage LUNs page, select the LUN you want to delete from those listed on the page.
- 6 Click Delete LUN.
The LUN is deleted from the Oracle FS System and no longer appears in the list.

Related Links

[Administrator Accounts](#)

Extend a Datastore that Uses a LUN

With the Oracle vSphere Plug-In for Oracle Flash Storage Systems, you can extend the size of a datastore that utilizes an Oracle FS System LUN without adding extents.

This option differs from the built-in datastore extend feature of vSphere, which allows you to extend a datastore by adding another LUN to the datastore. When you extend a datastore with the Oracle vSphere Plug-In for Oracle Flash Storage Systems option, you extend the underlying LUNs on the Oracle FS System. This option is available only for datastores created on Oracle FS System LUNs.

Note: Oracle recommends that you NOT extend datastores by creating new Oracle FS System LUNs and adding them as extents. Instead, you should extend the capacity of the existing LUN.

- 1 In the vSphere inventory tree, select a datastore to be extended.

Important: This datastore must contain LUNs from a single Oracle FS System.

- 2 Right-click the datastore and select Manage Oracle FS Storage > Extend Datastore.
- 3 Provide authentication credentials for the Oracle FS System if you have not already provided them.
- 4 In the Extend Datastore window, enter a new capacity for the datastore by doing one of the following:
 - To extend the total capacity of the datastore, enter a new capacity in the Total New Capacity (GB) field.
 - To extend the capacity of one or more associated LUNs, select Manually adjust the capacity of underlying LUNs, and then enter a new capacity value for each LUN in the New Capacity (GB) field.
- 5 Click OK.
The size of the datastore is extended.

Related Links

[Creating Datastores Overview](#)

[Administrator Accounts](#)

Remove a Datastore and Delete the Underlying LUNs

When a datastore is no longer needed, you can delete it from its associated host in the vSphere Client. You can choose to delete the underlying LUNs that are associated with the datastore.

- Prerequisites:
- Administrator credentials to enable access to the Oracle FS System to which the LUN and datastore are mapped.
 - Back up any necessary virtual machine (VM) files on the datastore.

When you remove a datastore, you have the option of deleting the underlying LUNs or keeping the underlying LUNs to use in other datastores. Follow these steps if you want to delete the underlying LUNs.

Note: Oracle recommends that you use the Oracle FS System vSphere Plug-In Remove Datastore command, not the native vSphere Client Delete command, to delete datastores associated with Oracle FS System LUNs.

- 1 Select Inventory > Datastores and Datastore Clusters.
- 2 In the vSphere inventory tree, select a datastore to be removed.

Important: This datastore must contain LUNs from a single Oracle FS System.

- 3 Right-click the ESX host, and select Manage Oracle FS Storage > Remove Datastore.

- 4 Provide authentication credentials for the Oracle FS System if you have not already provided them.
- 5 In the Remove Datastore window, select the datastore you want to remove.
- 6 View the details of the LUNs associated with the datastore to confirm you want the LUNs to be deleted as well.
- 7 Select Delete any underlying Oracle FS LUNs to delete the LUNs along with the datastore.
- 8 Click Delete.
The datastore and associated LUNs are deleted.

Note: If you use the Remove Datastore feature to delete any underlying Oracle FS System LUNs, the system must recondition the space from those LUNs before you can allocate it for new LUNs.

Related Links

[Creating Datastores Overview](#)

[Administrator Accounts](#)

Remove a Datastore and Keep the Underlying LUNs

When a datastore is no longer needed, you can delete it from its associated host in the vSphere Client. You can choose to keep the underlying LUNs that are associated with the datastore.

- Prerequisites:
- Administrator credentials to enable access to the Oracle FS System to which the LUN and datastore are mapped.
 - Back up any necessary virtual machine (VM) files on the datastore.

When you remove a datastore, you have the option of deleting the underlying LUNs or keeping the underlying LUNs to use in other datastores. Follow these steps to keep the underlying LUNs. You can use the LUNs that remain to create another datastore on top of a VM or for assigning to a VM as a raw device mapping (RDM).

- 1 In the vSphere inventory tree, select a datastore to be removed.
Important: This datastore must contain LUNs from a single Oracle FS System.
- 2 Right-click the datastore and select Manage Oracle FS Storage > Remove Datastore.
- 3 Provide authentication credentials for the Oracle FS System if you have not already provided them.
- 4 In the Remove Datastore window, select the datastore you want to remove.

- 5 View the details of the LUNs associated with the datastore to determine whether you want the LUNs to remain.
If you do not delete the underlying LUNs, the datastore data remains on the LUNs.
- 6 View the LUN mapping details to determine which specific hosts to unmap.
If you do not select specific hosts to unmap, the delete command will delete all mappings between LUNs and hosts.
- 7 Click Delete.
The datastore is deleted, and the underlying LUNs are retained.

Related Links

[Creating Datastores Overview](#)

[Administrator Accounts](#)

Manage Storage Objects

Volume Groups Description

Volume groups provide a way to organize related volumes (LUNs) into groups so that the LUNs can be managed together.

Volume groups provide organizational units that you can use to manage collections of LUNs. Related LUNs can be grouped together in a volume group, and volume groups can be nested within other volume groups to provide a hierarchical organization of LUNs and volume groups.

With the Oracle vSphere Plug-In for Oracle Flash Storage Systems, you can create or remove volume groups. You can also manage the assignment of LUNs to volume groups from the vSphere Client.

Create a Volume Group

Volume groups allow you to organize logical volumes (LUNs) into organizational units to facilitate managing related LUNs.

Prerequisite: Administrator credentials to enable access to the Oracle FS System.

You can organize related LUNs into volume groups so that they can be managed together, and you can nest volume groups within parent volume groups to show complex relationships.

- 1 In the vSphere inventory tree, right-click an ESX host or a datacenter.
- 2 Select **Manage Oracle FS Storage > Manage Volume Groups**. A dialog appears that shows any Oracle FS System that is connected to the vSphere environment.
- 3 Select the Oracle FS System for which you want to create the volume group and authenticate your login credentials with the Oracle FS System if you have not yet done so.
- 4 Click **Next**.
- 5 In the **Manage Volume Groups** page, click the **Volume Groups** tab.
- 6 Click **Create**.
- 7 Enter a name for the new volume group in the blank line you just added to the **Volume Group** list.

- 8 (Optional) Select the name of a parent volume group from the drop-down list in the Parent Volume Group Name column if you want to nest this volume group within a parent volume group.
- 9 Enter a value for the Maximum Logical Capacity in GB, or use the Increment and Decrement arrows to change the current value. This value must be equal to or greater than the sum of the capacity of all LUNs to be included in the volume group.
- 10 Click OK to save the new volume group.

After you create the volume group, follow the instructions for modifying a volume group to add volumes to the volume group.

Remove a Volume Group

You can delete a volume group when the volume group is no longer needed.

Prerequisite: Administrator credentials to enable access to the Oracle FS System.

Before you can remove a volume group, you must remove any LUNs included in the volume group in the Volumes tab of the Manage Volume Groups page.

- 1 In the vSphere inventory tree, right-click an ESX host or datacenter.
- 2 Select Manage Oracle FS Storage > Manage Volume Groups. A dialog appears that shows any Oracle FS System that is connected to the vSphere environment.
- 3 Select the Oracle FS System for which you want to remove the volume group and authenticate your login credentials with the Oracle FS System if you have not yet done so.
- 4 Click Next.
- 5 In the Manage Volume Groups page, select the Volume Groups tab.
- 6 Select the volume group in the table and click Remove.
- 7 Click OK to delete the volume group.

Assign Volumes to a Volume Group

You can assign a volume (LUN) to a volume group in the Volumes tab of the Manage Volume Groups page.

Assign a LUN to a volume group, or remove a LUN from a volume group, in the Volumes tab.

- 1 In the vSphere inventory tree, right-click an ESX host or a datacenter.
- 2 Select Manage Oracle FS Storage > Manage Volume Groups. A dialog appears that shows any Oracle FS System that is connected to the vSphere environment.

- 3 Select the Oracle FS System to which you want to assign the volume group and authenticate your login credentials with the Oracle FS System if you have not yet done so.
 - 4 Click Next.
 - 5 In the Volumes tab of the Manage Volume Groups page, select a LUN.
 - 6 In the Volume Groups column, select one of the following from the drop-down list:
 - A new volume group for the LUN
 - <none> to remove the LUN from the volume group
- Note:** You must remove all LUNs from a volume group before you can remove the volume group.
- 7 Click OK.

Host Groups Overview

A host group is a named, logical collection of SAN hosts.

Host groups are useful if you have host clusters, each of which contains many hosts and each host contains a few initiators. If a host cluster is not defined in the Oracle FS System GUI as a host group, when you want to map a LUN to the cluster, you need to map each SAN host to the LUN one at a time. Furthermore if you need to move a host to a different cluster, you must manually update each LUN mapping, also one at a time.

A more efficient method is to define the cluster as a host group, and then assign the SAN hosts to the host group. When you subsequently move a host from one host group to another, all of the initiators associated with that host inherit the LUN mapping associated with that host group.

Host groups have the following properties:

- A host can belong to only one host group.
- You can map an unlimited number of hosts to a host group.
- A host group can have zero or more mappings.
- You can map a LUN to either a host or a host group.
- If a host group has mappings, then all hosts in the host group will have all of the mappings of the host group, but any given host can also have other mappings. No mappings can conflict.
- When assigning a host with mappings to a host group without mappings, you have the option to migrate mappings on the host to the host group, making those mappings available to all hosts in the group, not just the single host.

Related Links[Create a Host Group](#)[Remove a Host Group](#)[Update Host Group Membership](#)**Create a Host Group**

To facilitate mapping a LUN to multiple SAN hosts, you can group the hosts into a host group.

Prerequisite: Administrator credentials to enable access to the Oracle FS System.

If a cluster of SAN hosts or group of associated hosts does not already belong to a host group in the Oracle FS System (GUI), you can use the Oracle vSphere Plug-In for Oracle Flash Storage Systems in the vSphere Client to create a host group.

- 1 In the vSphere inventory tree, right-click an ESX host or a datacenter.
- 2 Click **Manage Oracle FS Storage > Manage Host Groups**.
A dialog appears that shows any Oracle FS System that is connected to the vSphere environment.
- 3 Select the Oracle FS System for which you want to create the host group and authenticate your login credentials with the Oracle FS System if you have not yet done so.
- 4 Click **Next**.
- 5 In the **Manage Host Groups** page, select the **Group** tab.
- 6 Click **Create**.
- 7 Enter a name for the new host group in the blank line you just added to the **Groups** list.
- 8 Click **OK** to complete the host group creation.

Related Links[Administrator Accounts](#)**Remove a Host Group**

You can delete a host group when the host group is no longer needed.

Prerequisite: Administrator credentials to enable access to the Oracle FS System.

When you delete a host group, that host group no longer appears in the Oracle FS System (GUI) or the vSphere Client, but the SAN hosts in the host group remain in the vSphere environment.

- 1 In the vSphere inventory tree, right-click an ESX host or a datacenter.
- 2 Select **Manage Oracle FS Storage > Manage Host Groups**.

A dialog appears that shows any Oracle FS System that is connected to the vSphere environment.

- 3 Select the Oracle FS System for which you want to remove the host group and authenticate your login credentials with the Oracle FS System if you have not yet done so.
- 4 Click Next.
- 5 In the Manage Host Groups page, select the Groups tab.
- 6 Select the host group in the table and click Remove.
- 7 Click OK to delete the host group.

Related Links

[Administrator Accounts](#)

Update Host Group Membership

You can change the collection of SAN hosts in a host group by adding or removing hosts from the host group membership.

Prerequisite: Administrator credentials to enable access to the Oracle FS System.

A SAN host can be a member of only one Oracle FS System host group, but you can modify host group membership by adding or removing hosts from a host group.

- 1 In the vSphere inventory tree, right-click an ESX host or a datacenter.
- 2 Select Manage Oracle FS Storage > Manage Host Groups.
A dialog appears that shows any Oracle FS System that is connected to the vSphere environment.
- 3 Select the Oracle FS System for which you want to update the membership, and authenticate your login credentials to the Oracle FS System if you have not yet done so.
- 4 Click Next.
- 5 In the Manage Host Groups page, select the Hosts tab.
- 6 In the Hosts tab, perform the following steps:
 - Locate the SAN host in the Name column in the table.
 - In the Host Group column, select the group that you want to associate with the SAN host from the Host Group drop-down list.
- 7 Click OK to complete the update of the membership.

Related Links

[Administrator Accounts](#)

Storage Domains Overview

Storage Domains give you the flexibility to store your data into logical groups that meet your storage requirements. Examples of such groups can include geographical location, or departmental function within your organization. You can also group your data by access frequency, or group your data by levels of confidentiality.

A Storage Domain is a virtual storage pool that consists of an assortment of drive groups. Each drive group contains drives of a particular Storage Class and of a particular capacity. The properties of the drive groups that comprise a Storage Domain can differ from one another. A Storage Domain can contain up to 1024 drive groups.

Refer to the *Oracle FS System Oracle Flash Storage System Administrator's Guide* for information.

Related Links

[Create a Storage Domain](#)

[Remove a Storage Domain](#)

[Assign a Drive Enclosure to a Storage Domain](#)

[Assign a Volume to a Storage Domain](#)

Create a Storage Domain

You can create a new Storage Domain in the vSphere Client with the Oracle vSphere Plug-In for Oracle Flash Storage Systems.

Prerequisite: Administrator credentials to enable access to the Oracle FS System.

The plug-in adds the new Storage Domain to the associated Oracle FS System.

- 1 On the vSphere Client navigation bar, select Inventory > Hosts and Clusters.
- 2 In the vSphere inventory tree, right-click an ESX host or datacenter.
- 3 From the context menu, select Manage Oracle FS Storage > Manage Storage Domains.
- 4 Select the Oracle FS System for which you want to create the Storage Domain and authenticate your login credentials with the Oracle FS System if you have not yet done so.
- 5 In the Manage Storage Domains page, in the Storage Domains tab, click Create.
- 6 In the new row that appeared in the table, enter the name for the new Storage Domain, and click OK.
The new Storage Domain is created and appears in the table.

Related Links

[Administrator Accounts](#)

Remove a Storage Domain

You can remove a Storage Domain in the vSphere Client with the Oracle vSphere Plug-In for Oracle Flash Storage Systems.

Prerequisite: Administrator credentials to enable access to the Oracle FS System.

Remove a Storage Domain when the Storage Domain is no longer needed. Removing a Storage Domain in the vSphere Client removes it from the associated Oracle FS System.

- 1 On the vSphere Client navigation bar, select Inventory > Hosts and Clusters.
- 2 In the vSphere inventory tree, right-click an ESX host or datacenter.
- 3 Select the Oracle FS System from which you want to remove the Storage Domain and authenticate your login credentials with the Oracle FS System if you have not yet done so.
- 4 From the context menu, select Manage Oracle FS Storage > Manage Storage Domains.
- 5 In the Manage Storage Domains page, in the Storage Domains tab, click Remove.
- 6 In the Storage Domains table, select the Storage Domain to be deleted and click OK.
The Storage Domain is removed and no longer appears in the table.

Related Links

[Administrator Accounts](#)

Assign a Drive Enclosure to a Storage Domain

You can assign a Drive Enclosure to a Storage Domain in the vSphere Client with the Oracle vSphere Plug-In for Oracle Flash Storage Systems.

Assign a Drive Enclosure to a different Storage Domain on the Manage Storage Domains page.

- 1 On the vSphere Client navigation bar, select Inventory > Hosts and Clusters.
- 2 In the vSphere inventory tree, right-click an ESX host or datacenter.
- 3 Select the Oracle FS System in which you want to assign a drive enclosure to the Storage Domain and authenticate your login credentials with the Oracle FS System if you have not yet done so.
- 4 From the context menu, select Manage Oracle FS Storage > Manage Storage Domains.
- 5 In the Drive Enclosure tab of the Manage Storage Domains page, select a Drive Enclosure.

- 6 In the Storage Domains column, select a new Storage Domain for the Drive Enclosure from the drop-down list.
- 7 Click OK.

Assign a Volume to a Storage Domain

You can assign a volume (LUN) to a Storage Domain on the Manage Storage Domains page.

Assign a LUN to a Storage Domain, or assign it to a different Storage Domain, by selecting the Storage Domain in the Volumes tab.

- 1 On the vSphere Client navigation bar, select Inventory > Hosts and Clusters.
- 2 In the vSphere inventory tree, right-click an ESX host or datacenter.
- 3 Select the Oracle FS System for which you want to assign a volume to the Storage Domain and authenticate your login credentials with the Oracle FS System if you have not yet done so.
- 4 From the context menu, select Manage Oracle FS Storage > Manage Storage Domains.
- 5 In the Volumes tab of the Manage Storage Domains page, select a LUN.
- 6 In the Storage Domains column, select a new Storage Domain for the LUN from the drop-down list.
- 7 Click OK.

Storage Profiles Description

When configuring a logical volume, you can select a collection of predefined properties to apply to that volume. This collection of properties is called a *Storage Profile*.

Either you can use a profile that you previously created in the Oracle FS System Manager (GUI) for the Oracle FS System, or you can select one of the preconfigured profiles.

The vSphere Plug-In interface allows you to see the composition of the available Storage Profiles while creating new storage volumes so that you can make an informed choice when selecting a profile. Unlike the Oracle FS System Manager, the GUI for the vSphere Plug-In does not permit the creation of new Storage Profiles.

Related Links

[Select a Storage Profile](#)

Select a Storage Profile

You can choose an appropriate Storage Profile while creating or modifying a LUN.

You select Storage Profiles in the Create SAN LUN page in the Manage LUNs wizard.

- 1 In the vSphere inventory tree, right-click an ESX host to which the LUN is associated.
- 2 From the context menu, select Manage Oracle FS Storage > Manage LUNs.
A page appears that shows any Oracle FS System that is connected to the vSphere environment.
- 3 Select the Oracle FS System to which the LUN is associated.
- 4 Authenticate your login credentials to the Oracle FS System if you have not yet done so, and click Next.
- 5 In the Manage LUNs page, do one of the following:
 - Click Create LUN to create a new LUN.
 - Select a LUN and click Modify LUN to modify an existing LUN.
- 6 In the Quality of Service tab, click the ellipsis button [...] beside the Storage Profile drop-down list.
A table listing the attributes of the available Storage Profiles appears.
- 7 Select the Storage Profile that has the attributes that best suit your needs from **Storage Profile**.
- 8 Click OK to save the LUN with your settings.

Related Links

[Storage Profiles Description](#)

Manage Datastore Snapshots

Datastore Snapshots Description

The Oracle vSphere Plug-In for Oracle Flash Storage Systems enables you to create a snapshot of an entire datastore, delete a datastore snapshot, and recover data from a datastore snapshot.

To start working with datastore snapshots, use the Manage Snapshots window in the vSphere Client.

Related Links

[*Create a Datastore Snapshot*](#)

[*Delete a Datastore Snapshot*](#)

[*Restore Data From a Datastore Snapshot*](#)

Managing Snapshots Description

Use the Manage Snapshots page when you create, delete, or recover a datastore snapshot.

When you click Create Snapshot on the Manage Snapshots page, you are prompted for a snapshot name. The Manage Snapshots page displays all the existing snapshots on the selected datastore. The Delete Snapshot and Recover Snapshot buttons are activated when you select one of these snapshots.

Available options for managing snapshots:

- Create a new snapshot
- Delete an existing snapshot
- Recover data from an existing snapshot

Related Links

[*Create a Datastore Snapshot*](#)

[*Delete a Datastore Snapshot*](#)

[*Restore Data From a Datastore Snapshot*](#)

Create a Datastore Snapshot

You can create clones of all the LUNs in an entire datastore by creating a snapshot of that datastore in the vSphere Client with the Oracle vSphere Plug-In for Oracle Flash Storage Systems.

When you create a datastore snapshot, you create a Clone LUN of each LUN contributing to that datastore on the Oracle FS System. The plug-in stores the name you provide and the timestamp as metadata.

- 1 In the vSphere inventory tree, select the datastore for which you want to create a snapshot.
This datastore must contain LUNs only from a single Oracle FS System.
- 2 Right-click the datastore and select Manage Oracle FS Storage > Manage Snapshots.
- 3 In the Oracle FS Authentication dialog, enter the authentication credentials for the system with which you want to work (if you have not yet authenticated).
The Manage Snapshots page displays a list of any existing snapshots of the datastore. Expand a snapshot name to display a list of the Clone LUNs included in the snapshot.
- 4 Click Create Snapshot.
- 5 In the Create Snapshot dialog, enter a name for the snapshot, and then click OK.
- 6 Click Done when finished.

Delete a Datastore Snapshot

You can delete a datastore snapshot created with the Oracle vSphere Plug-In for Oracle Flash Storage Systems when the datastore snapshot is no longer needed.

Deleting a snapshot removes it from the inventory of snapshots taken of the datastore.

- 1 In vSphere, select Datastores and Datastore Clusters.
- 2 In the vSphere inventory tree, select the datastore from which you want to delete a snapshot.
This datastore must contain LUNs only from a single Oracle FS System.
- 3 Right-click the datastore and select Manage Oracle FS Storage > Manage Snapshots.
The Manage Snapshots page displays a list of the existing snapshots.
- 4 Provide authentication credentials for the Oracle FS System if you have not already provided them.
- 5 Select the snapshot to be deleted, and click Delete Snapshot.
- 6 Click OK to confirm that you want to delete the snapshot.

Restore Data From a Datastore Snapshot

You can restore data from a datastore snapshot in the vSphere Client with the Oracle vSphere Plug-In for Oracle Flash Storage Systems.

Prerequisite: No Clone LUNs of the snapshot are associated with the datastore to be restored. If any Clone LUNs of the snapshot are detected on the datastore, a warning message displays, instructing you to try with a different datastore.

Restoring data from a datastore snapshot creates a recovery datastore where data from a point of time in the past can be accessed.

- 1 In vSphere, select Datastores and Datastore Clusters.
- 2 In the vSphere inventory tree, select the datastore to which you want to restore data.
This datastore must contain LUNs only from a single Oracle FS System.
- 3 Right-click the datastore and select Manage Oracle FS Storage > Manage Snapshots.
The Manage Snapshots page displays a list of the existing snapshots.
- 4 Provide authentication credentials for the Oracle FS System if you have not already provided them.
- 5 From the listed snapshots, select the snapshot you want to recover and then click Recover Snapshot.
The names of the Clone LUNs in the snapshot appear in the Clone LUN Name column.
- 6 Enter a name for the new datastore where you can access the recovered snapshot in the Datastore Name field.
- 7 Select the Host Name and LUN Number from the drop-down lists.
Note: The LUN numbers listed are those available for the selected Oracle FS System host.
Note: Select the Limit available LUN numbers to those not in use by ESX hosts option to further restrict this list to only those LUN numbers not in use by that host as an ESX host in the vSphere environment.
Selecting this option initiates a scan of the vSphere environment that might take several seconds to complete.
- 8 Click OK to create a datastore containing the data recovered from the snapshot.

Managing Snapshot Schedules Overview

You can create, modify, or delete a snapshot schedule on the Manage Snapshot Schedules page.

The Manage Snapshot Schedules page displays all the existing schedules for taking snapshots of the selected datastore or datacenter. Available options for managing snapshot schedules:

- Create a new schedule
- Modify an existing schedule
- Delete an existing schedule

When you create a snapshot schedule, you have the option of enabling the schedule so that it starts creating snapshots at the start date and time, or you can leave the snapshot schedule disabled and keep it in reserve to enable when you need it.

If a snapshot schedule fails three times, the snapshot schedule is automatically disabled, and an event is logged in the vSphere Client Tasks & Events tab. No error is displayed, so if a snapshot is not created on schedule, you should check the event log.

Related Links

[Create a Snapshot Schedule](#)

[Modify a Snapshot Schedule](#)

[Delete a Snapshot Schedule](#)

Create a Snapshot Schedule

You can create a schedule that controls how often you want to take snapshots of a datastore in the vSphere Client with the Oracle vSphere Plug-In for Oracle Flash Storage Systems.

Create a snapshot schedule to automate snapshot operation at a predictable interval.

- 1 In the vSphere inventory tree, select a datastore containing non-clone Oracle FS System LUNs.
- 2 Right-click the datastore and select Manage Oracle FS Storage > Manage Snapshot Schedules.
The Manage Snapshot Schedules page displays a list of the existing snapshot schedules.
- 3 Provide authentication credentials for the vCenter server, if you have not already provided them.
- 4 Provide authentication credentials for the Oracle FS System, if you have not already provided them.
- 5 Click Create Schedule.
- 6 In the Create Snapshot Schedule dialog, complete or assign a value to the following options:

Schedule Name	Enter a descriptive name for the schedule.
---------------	--

Volume Group	Select the name of the volume group containing the LUNs to be included in the snapshot from the drop-down list.
--------------	---

Enabled	Select the check box to enable the schedule to run. Clear the check box if you want to enable the schedule later.	
Start Date and Time	Enter a date and time, and then select the frequency with which the snapshots are to be created. Valid frequencies:	
	<ul style="list-style-type: none"> • Once: A single snapshot will be created at the scheduled Start Date and Time. • Hourly: Select an interval from the drop-down list. • Daily: Select a day from the drop-down list. • Weekly: Select an interval from the drop-down lists and (optionally) a day of the week. If you do not select a day of the week, the scheduled snapshot will take place on the day of the week of the Start Date and Time. 	
Login credentials	Oracle FS System	Use the credentials provided or clear the Use Current Credentials check box to specify a different Login Name and Password.
	vCenter Server	Use the credentials provided or clear the Use Current Credentials check box to specify a different Login Name and Password.

Important: Be sure to update these credentials in your schedule if the credentials change.

- 7 Click OK to create the snapshot schedule.
If you selected Enabled, the schedule will create snapshots as specified.
- 8 Click Done to leave the Manage Snapshot Schedules page.

Modify a Snapshot Schedule

You can modify an existing snapshot schedule in the vSphere Client with the Oracle vSphere Plug-In for Oracle Flash Storage Systems.

A snapshot schedule controls how often to take snapshots of a datastore. You can modify the frequency at which snapshots are created, or you can enable or disable the snapshot schedule.

- 1 In vSphere, select Datastores and Datastore Clusters.
- 2 In the vSphere inventory tree, select a datastore containing non-clone LUNs from a single Oracle FS System.
This datastore can be the one for which you want to modify a snapshot schedule, or the datacenter containing the datastore for which you want to modify a snapshot schedule.
- 3 Right-click the datastore or datacenter and select Manage Oracle FS Storage > Manage Snapshot Schedules.

The Manage Snapshot Schedules page displays a list of the existing snapshot schedules.

- 4 Provide authentication credentials for the vCenter server, if you have not already provided them.
- 5 Provide authentication credentials for the Oracle FS System, if you have not already provided them.
- 6 From the listed schedules, select the schedule you want to modify and then click Modify Schedule.
- 7 Make any necessary changes to the schedule in the Modify Snapshot Schedule page.
- 8 Click OK to save changes to the schedule.
- 9 Click Done to leave the Manage Snapshot Schedules page.

Delete a Snapshot Schedule

You can delete an existing schedule in the vSphere Client with the Oracle vSphere Plug-In for Oracle Flash Storage Systems.

Delete a snapshot schedule when you no longer need to take snapshots of a datastore at regular intervals.

- 1 In vSphere, select Datastores and Datastore Clusters.
- 2 In the vSphere inventory tree, select a datastore containing non-clone LUNs from a single Oracle FS System.
This datastore can be the one from which you want to delete a snapshot schedule, or the datacenter containing the datastore from which you want to delete a snapshot schedule.
- 3 Right-click the datastore or datacenter and select Manage Oracle FS Storage > Manage Snapshot Schedules.
The Manage Snapshot Schedules page displays a list of the existing snapshot schedules.
- 4 Provide authentication credentials for the vCenter Server, if you have not already provided them.
- 5 Provide authentication credentials for the Oracle FS System, if you have not already provided them.
- 6 From the listed schedules, select the schedule you want to delete and then click Delete Schedule.
- 7 Click OK to confirm that you want to delete the schedule.
- 8 Click Done to leave the Manage Snapshot Schedules page.

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