




# Dell Storage vSphere Web Client Plugin

Version 4.0

Administrator's Guide



# Notes, Cautions, and Warnings

-  **NOTE:** A NOTE indicates important information that helps you make better use of your computer.
-  **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.
-  **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

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# Preface

The *Dell Storage vSphere Web Client Plugin Administrator's Guide* provides instructions for installing, configuring, and using the Dell Storage vSphere Web Client Plugin, which provides management of Dell storage with the VMware vSphere Web Client.


## Revision History

Document Number: 680-054-006

Revision	Date	Description
A	June 2016	Dell Storage vSphere Web Client Plugin version 4.0 general release

## Audience

The intended audience of this guide is information technology professionals who have intermediate to expert knowledge of both Dell Storage Centers and Enterprise Manager. This guide also assumes administrative working knowledge of VMware vSphere Web Client, VMware vCenter, VMware ESXi, and FluidFS.

 **NOTE:** Throughout this document, Dell Storage Manager (2016 and later) and Enterprise Manager (2015 and earlier) are synonymous.

## Related Publications

In addition to this guide, the following documentation is available for client applications used with Dell storage products:

- *Dell Storage vSphere Web Client Plugin Release Notes*  
Describes new enhancements and known issues for the Dell Storage vSphere Web Client Plugin.
- *Compellent Integration Tools for VMware Administrator's Guide*  
Provides instructions for deploying CITV and configuring the Dell Storage vSphere Web Client Plugin.
- *Compellent Integration Tools for VMware Release Notes*  
Describes the new features and enhancements in the latest version of CITV.
- *Dell Compellent Best Practices with VMware vSphere 5.x*  
Provides configuration examples, tips, recommended settings, and other storage guidelines a user can follow while integrating VMware vSphere with the Dell Storage Center. This document answers many frequently asked questions with regard to how VMware interacts with Dell Storage Center features, such as Dynamic Capacity, Data Progression, and Remote Instant Replay.
- *Storage Center System Manager Administrator's Guide*  
Describes the Storage Center System Manager software that manages an individual Storage Center.
- *Dell Storage Manager Administrator's Guide*

Provides configuration and management instructions for Dell Storage Manage 2016 R1. Alternatively, see the *Enterprise Manager Administrator's Guide* if you are using Enterprise Manager 2015 R3.

- *Dell FluidFS Administrator's Guide*  
Describes the Dell Fluid File System (FluidFS) and how to manage network-attached storage (NAS).

## Contacting Dell

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services might not be available in your area.

To contact Dell for sales, technical support, or customer service issues, go to [www.dell.com/support](http://www.dell.com/support).


- For customized support, type your system service tag on the support page and click **Submit**.
- For general support, browse the product list on the support page and select your product.

# Getting Started

The Dell Storage vSphere Web Client Plugin provides storage administrators the ability to manage Dell Storage Centers and Dell Fluid File System (FluidFS) clusters with the VMware vSphere Web Client.

## Introduction to the vSphere Web Client Plugin

The Dell Storage vSphere Web Client Plugin provides management of Dell storage.

 **NOTE:** Unless stated otherwise, all procedures in this guide are executed in the VMware vSphere Web Client.

### Key Features


The Dell Storage vSphere Web Client Plugin provides these functions:

- Adding and removing VMFS storage (datastores and Raw Device Mappings) on Storage Centers
- Adding and removing NFS datastores on FluidFS clusters
- Provisioning virtual machines on Dell storage
- Configuring VMware ESXi hosts on Dell storage
- Creating and managing Storage Center Replays for VMFS datastores
- Creating and managing FluidFS cluster snapshots for NFS datastores
- Replicating VMFS datastores between Storage Centers
- Adding and managing Live Volumes
- Recovering VMFS datastores and VMs from VMFS datastore Replays

In addition, the vSphere Web Client Plugin provides numerous informational displays available on tabs within the VMware vSphere Web Client inventory views.

### Status of vSphere Web Client Plugin Tasks

If the status of a task performed with the Dell Storage vSphere Web Client Plugin does not appear in the

**Recent Tasks** pane, click  **Refresh** to update the pane, or click **More Tasks** to display the **Task Console** page.

### Requirements for the vSphere Web Client Plugin

The Dell Storage vSphere Web Client Plugin has software requirements and Storage Center requirements for replication.

#### Hardware and Software Requirements

The *Dell Storage vSphere Web Client Plugin Release Notes* list the minimum hardware and software requirements for installation of the Dell Storage vSphere Web Client Plugin.

## Replication Requirements for VMFS Datastores


To replicate data from one Storage Center to another, make sure that the following requirements are met:

- Storage Center: Both the source and destination Storage Centers must be configured in Enterprise Manager (Dell Storage Manager). They must be configured for the Enterprise Manager user credentials supplied to the vSphere Web Client Plugin in [Configuring the Dell Storage vSphere Web Client Plugin](#).
- QoS Definition: A Quality of Service (QoS) definition must be set up on the source Storage Center for replication. See the *Dell Storage Manager Administrator's Guide* for instructions on creating QoS definitions.

If you are using iSCSI connections for replications:

- The destination Storage Center must be defined as an iSCSI Remote System on the source Storage Center.
- The source Storage Center must be defined as an iSCSI Remote Connection on the destination Storage Center.

See the *Dell Storage Manager Administrator's Guide* for instructions on configuring iSCSI connections between Storage Centers.

 **NOTE:** References made to the *Dell Storage Manager Administrator's Guide* also apply to the *Enterprise Manager Administrator's Guide*.


## Configuring the Dell Storage vSphere Web Client Plugin

Configure the Dell Storage vSphere Web Client Plugin to communicate with an Enterprise Manager server.

### Prerequisites

Install the Compellent Integration Tools for VMware (CITV) and register the Dell Storage vSphere Web Client Plugin with a vCenter server as described in the *Compellent Integration Tools for VMware Administrator's Guide*.

### Steps

1. Log in to the vSphere Web Client.
2. Click  **Go Home**. The **Home** page opens.
3. Click the **Home** tab. A **Dell Storage** icon appears below the **Administration** heading on the **Home** tab.
4. Click **Dell Storage**. The **Dell Storage** page opens and the **Getting Started** tab is displayed by default.

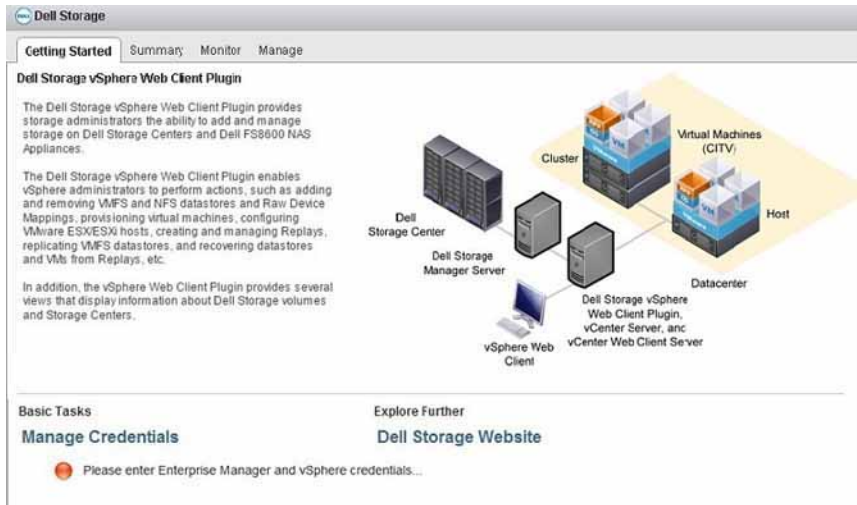


Figure 1. Dell Storage Getting Started Page

- Under the **Basic Tasks** heading, click **Manage Credentials**.

Figure 2. Connection Manager Credentials Dialog Box

- Type the password of the vCenter user in the **vCenter Password** field.  
The **vCenter User** field displays the user that was used to log in to the vSphere Web Client. To configure the vSphere Web Client Plugin for a different vCenter user, log out of the vSphere Web Client and log back in with that user.  
**NOTE:** The vSphere Web Client Plugin uses the vCenter user credentials to continue running tasks after the vSphere Web Client Plugin is closed.
- Type the host name or IP address of the Enterprise Manager server in the **Enterprise Manager Server** field.
- Type the port number for the Enterprise Manager in the **Enterprise Manager Port** field.
- Type the user name and password of an Enterprise Manager user with administrator privileges in the **Enterprise Manager User** and **Enterprise Manager Password** fields.

The Enterprise Manager user credentials control which Storage Centers and FluidFS clusters can be managed in the vSphere Web Client Plugin.

To add a Storage Center or FluidFS cluster to the vSphere Web Client Plugin, log in to the Enterprise Manager client using the same user credentials. Add the Storage Center or FluidFS cluster to manage. See the *Dell Storage Manager Administrator's Guide* for instructions on adding a Storage Center to Enterprise Manager. See the *Dell FluidFS Administrator's Guide* for instructions on adding a FluidFS cluster to Enterprise Manager.

10. Click **Submit**. The plugin validates the vCenter and Enterprise Manager credentials. If the credentials are correct, the vSphere Web Client Plugin retrieves Storage Center information from the Enterprise Manager server.

 **NOTE:**

The more Storage Centers and volumes managed by the Enterprise Manager user, the longer it takes to display the **Dell Storage** page.

If the credentials are incorrect, a **Connection Manager** error dialog box opens.

## Managing the vSphere Web Client Plugin

The following sections describe how to manage vCenter and Enterprise Manager credentials, display Storage Center and FluidFS cluster information, and disable or enable the vSphere Web Client Plugin.


### Changing vCenter and Enterprise Manager Credentials

If the credentials change for the Enterprise Manager user defined in the vSphere Web Client Plugin, the credentials must be updated on the **Manage** tab of the **Dell Storage** page.

#### Prerequisites

Data Collector must be installed and running before you can configure the vSphere Web Client Plugin. See the *Dell Enterprise Manager Installation Guide* for information about installing Data Collector.

#### Steps

1. Log in to the vSphere Web Client.
2. Click  **Go Home**. The **Home** page opens.
3. Click the **Home** tab. A **Dell Storage** icon appears below the **Administration** heading on the **Home** tab.
4. Click **Dell Storage**. The **Dell Storage** page opens and the **Getting Started** tab is displayed by default.

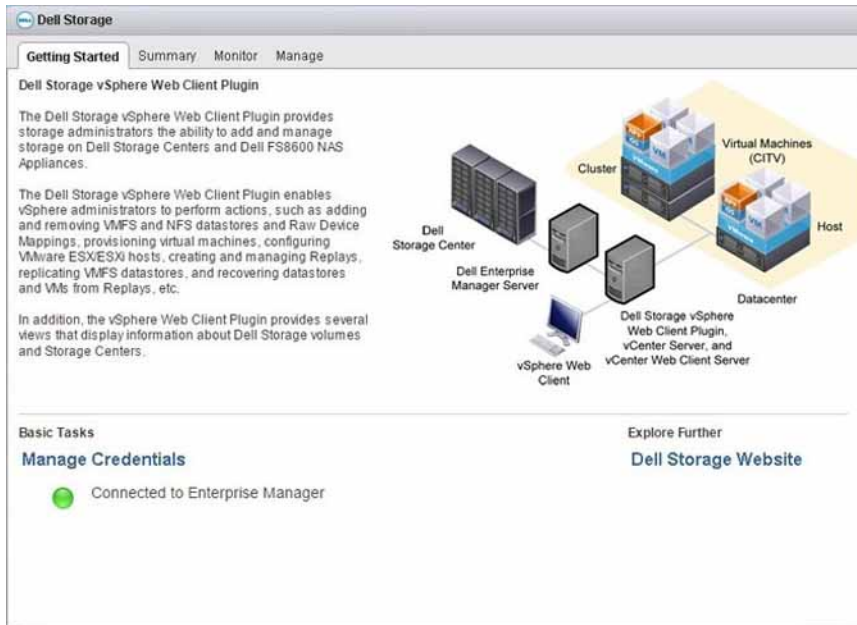


Figure 3. Getting Started Page Showing Connection to Enterprise Manager

**NOTE:** The more Storage Centers and volumes managed by the Enterprise Manager user, the longer it takes to display the Dell Storage page.

- Under the **Basic Tasks** heading, click **Manage Credentials**. The **Manage** tab is displayed.



Figure 4. Connection Manager Credentials Dialog Box

- Click **Edit**. The **Connection Manager** dialog box opens.

**Figure 5. Connection Manager Dialog Box**


7. Modify the vCenter and Enterprise Manager credentials as needed and click **Submit**.  
To delete the vCenter and Enterprise Manger credentials, click **Delete**.

## Displaying Storage Center and FluidFS Information

The **Summary** tab on the Dell Storage page displays summary information for Storage Center and FluidFS clusters. The **Monitor** tab displays performance and usage charts for Storage Center and FluidFS clusters.

### Display Dell Storage Summary Information

Display Storage Center controller and FluidFS information and storage type information on the **Summary** tab.

1. Log in to the vSphere Web Client.
2. Click  **Go Home**. The **Home** page opens.
3. In the Administration pane, click **Dell Storage**. The **Dell Storage** page opens.
4. Click the **Summary** tab.
5. Select the Storage Center or FluidFS cluster to display.

### Storage Center Summary Information

[Figure 6. Storage Center Summary Information](#) shows summary information for a Storage Center.

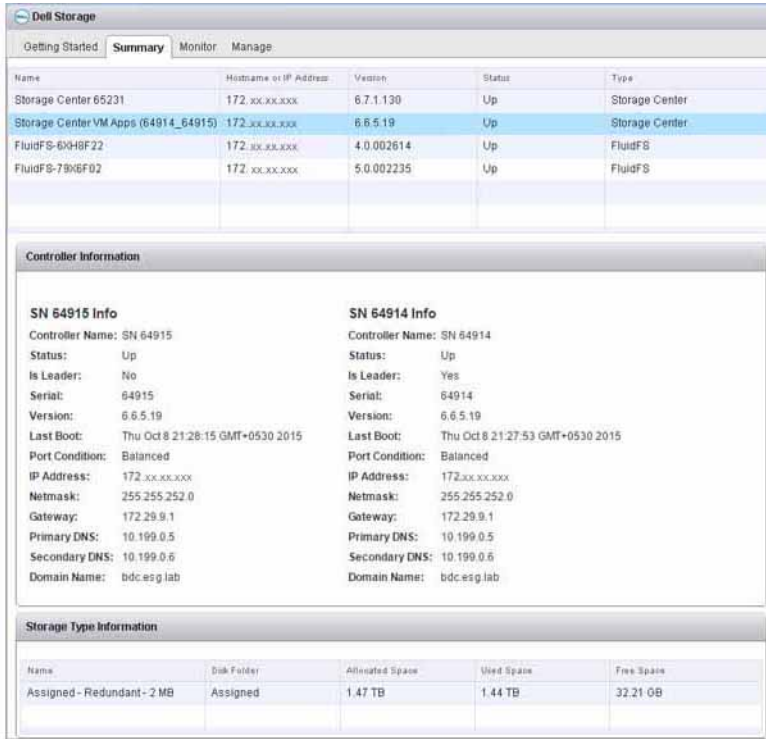


Figure 6. Storage Center Summary Information

Label	Description
Controller Information	Displays network and status information about the Storage Center controllers
Storage Type Information	Displays the Storage Types defined on the Storage Center

### FluidFS Summary Information

[Figure 7. FluidFS Summary Information Page](#) shows summary information for a FluidFS cluster.

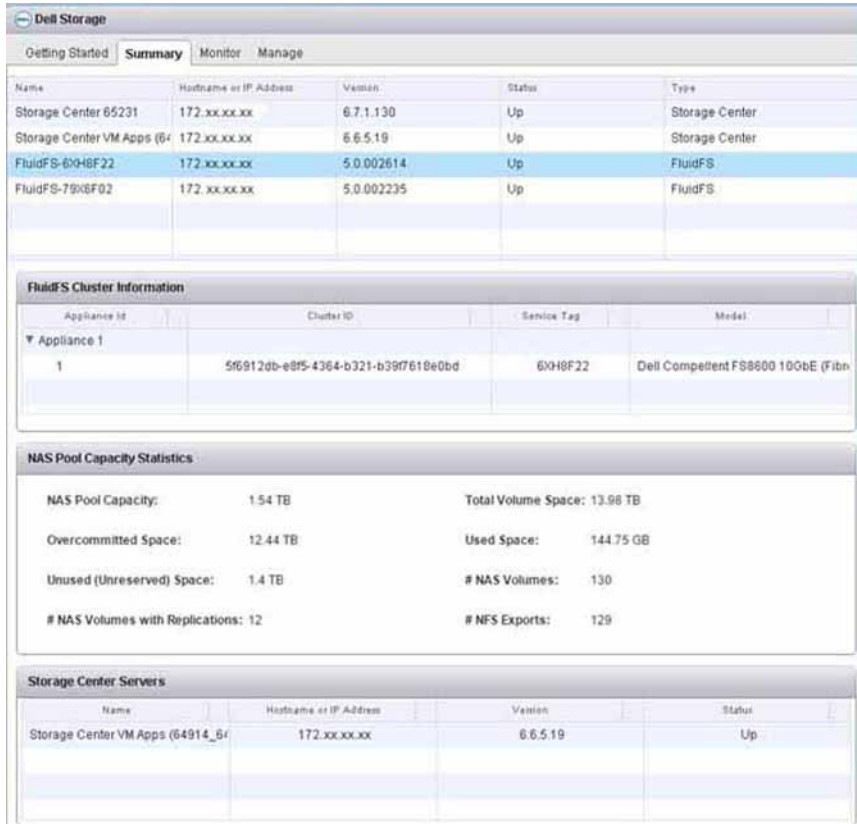



Figure 7. FluidFS Summary Information Page

Label	Description
FluidFS Cluster Information	Shows the details of FluidFS appliances and associated controller details
NAS Pool Capacity Statistics	Displays pool capacity and space information about the NAS pool

## Display Dell Storage Monitoring Information

Display performance and usage information for Storage Center and FluidFS clusters on the **Monitor** tab.

1. Log in to the vSphere Web Client.
2. Click  **Go Home**. The **Home** page opens.
3. In the **Administration** pane, click **Dell Storage**. The **Dell Storage** page opens.
4. Click the **Monitor** tab.
5. Select the Storage Center or FluidFS cluster to display.

### Charts

The **Charts** tab displays performance information for Storage Centers and FluidFS clusters.

## Storage Center Charts Information

Figure 8. [Storage Center Charts Information](#) shows a chart for a Storage Center.

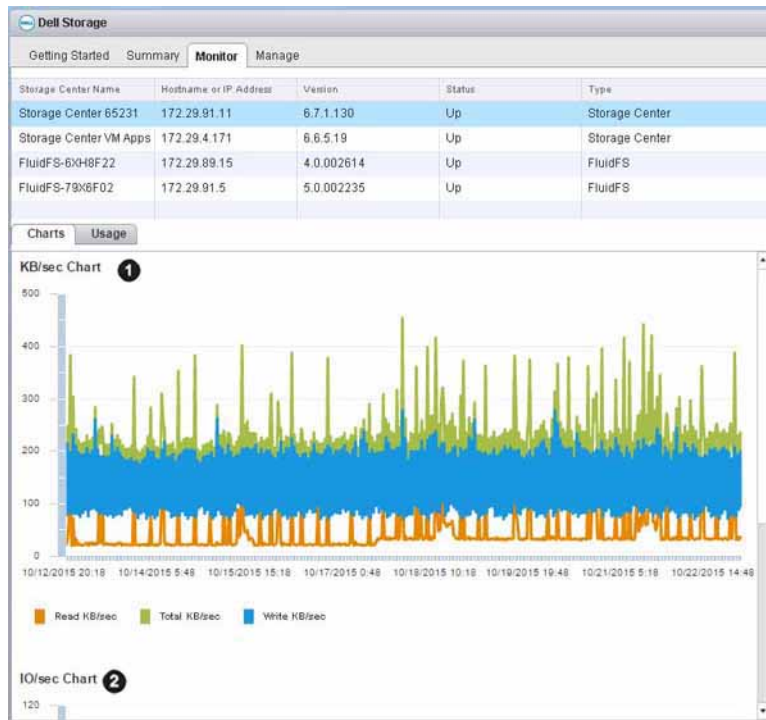


Figure 8. Storage Center Charts Information

Callout	Label	Description
1	KB/sec Chart	<p><b>Read KB/sec</b> – Transfer rate of read operations in kilobytes per second</p> <p><b>Total KB/sec</b> – Combined transfer rate of read and write operations in kilobytes per second</p> <p><b>Write KB/sec</b> – Transfer rate of write operations in kilobytes per second</p>
2	IO/sec Chart	<p><b>Read IO/sec</b> – Transfer rate of read operations in I/O operations per second</p> <p><b>Total IO/sec</b> – Combined transfer rate of read and write operations in I/O operations per second</p> <p><b>Write IO/sec</b> – Transfer rate of write operations in I/O operations per second</p>

## FluidFS Chart Information

Figure 9. [FluidFS Cluster Chart Information](#) shows a chart for a FluidFS cluster.

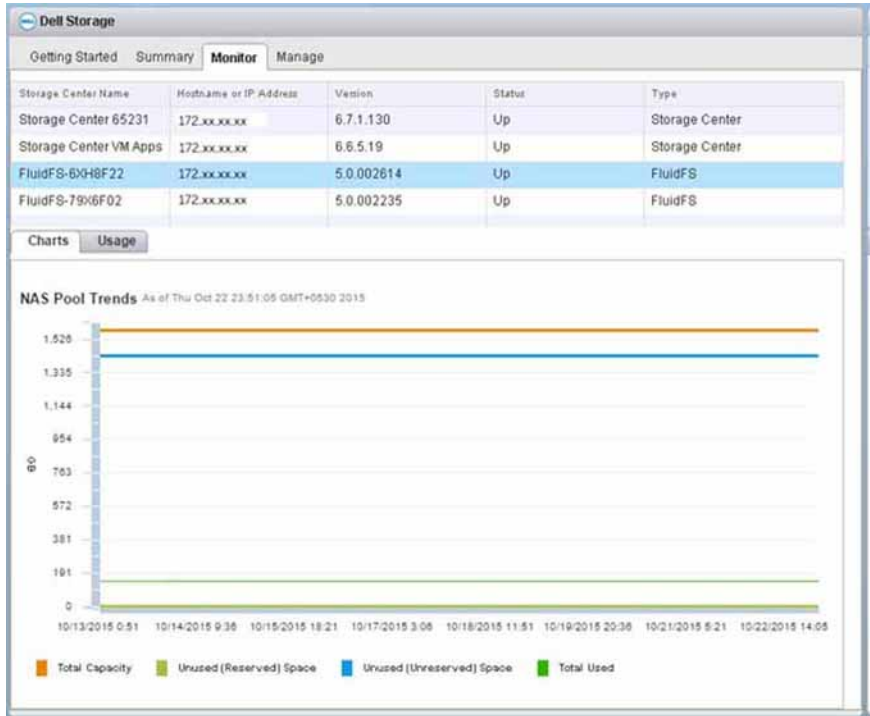


Figure 9. FluidFS Cluster Chart Information

Label	Description
Total Capacity	Total capacity of the NAS pool
Unused (Reserved) Space	Size of the storage that is statically allocated to the NAS volume
Unused (Unreserved) Space	Space allocated for the NAS pool that has not been used
Total Used	Amount of all space that has been used

**Usage**

The **Usage** tab displays disk space information for Storage Centers and FluidFS clusters.

**Storage Center Usage Information**

[Figure 10. Storage Center Usage Information](#) shows the usage information for a Storage Center.

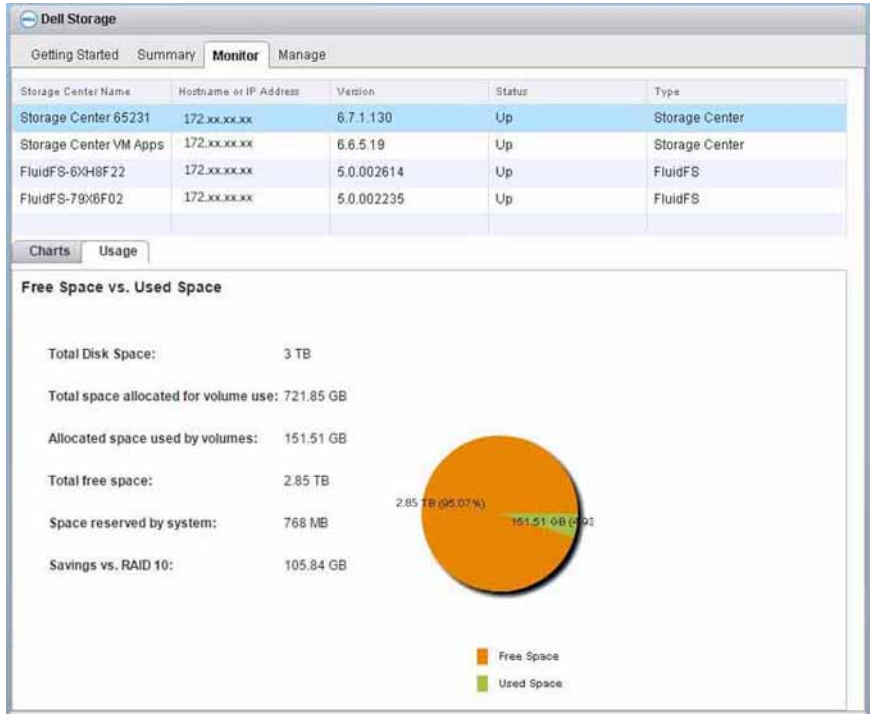


Figure 10. Storage Center Usage Information

Label	Description
Total Disk Space	Total amount of disk space available on the disks of the Storage Center
Total space allocated for volume use	Amount of disk space allocated on the disks of the Storage Center
Allocated space used by volumes	Amount of disk space used by volumes on the Storage Center
Total free space	Amount of disk space available for use by the Storage Center
Space reserved by system	Space consumed by Replays and RAID overhead
Savings vs. RAID 10	Amount of disk space saved by using Dell Dynamic Block Architecture instead of RAID 10 storage

**FluidFS Usage Information**

[Figure 11. FluidFS Cluster Usage Information](#) shows usage information for a FluidFS cluster.



Figure 11. FluidFS Cluster Usage Information

Label	Description
Total Capacity	Total capacity of the NAS pool
Free Space	Amount of free space for the NAS pool
Used Space	Storage space occupied by writes to the NAS volume (user data and snapshots)
Unused (Unreserved) Space	Space allocated for the NAS pool that has not been used
Unused (Reserved) Space	A portion of a thin-provisioned NAS volume that is dedicated to the NAS volume (no other volumes can take the space). The amount of reserved space is specified by the storage administrator. Reserved space is used before unreserved space.

## Disabling and Enabling the vSphere Web Client Plugin

After installing the vSphere Web Client Plugin, enable it by registering the plugin with VMware vCenter. All plugins can also be enabled or disabled using vSphere. The procedures for enabling and disabling plugins vary depending on the version of the vSphere Web Client. For instructions on how to manage plugins, see the vSphere documentation.

## Working With Dell Storage

The Dell Storage vSphere Web Client Plugin communicates with Enterprise Manager and enables the management of Dell storage.

### Introduction to Dell Storage

An administrator can use the Dell Storage vSphere Web Client Plugin to manage Dell storage on a Storage Center or FluidFS cluster.

A Storage Center configures and uses storage based on the following settings.

Storage Term	Description
Storage Tier <i>physical media classes</i>	Storage tiers represent the classification of all physical storage media in the Storage Center. Storage Center automatically populates storage tiers with the available media in the Assigned disk folder: <ul style="list-style-type: none"> <li>• Tier 1: Contains the fastest media appropriate for frequently used, mission-critical data. Tier 1 media is typically the most expensive media.</li> <li>• Tier 2: Contains medium-quality media appropriate for medium-priority data.</li> <li>• Tier 3: Contains slower, inexpensive media appropriate for backup copies, Replays, and low-priority, rarely used data.</li> </ul>
Storage Type <i>RAID level and page size</i>	Within each tier, data can be stored as: <ul style="list-style-type: none"> <li>• Non-redundant: RAID 0 with 2-MB page size</li> <li>• Redundant: RAID 10, RAID 5-5, RAID 5-9 with 512-KB, 2-MB, or 4-MB page size.</li> <li>• Dual redundant: RAID 10 with 2-MB page size</li> <li>• The default (and recommended) setting for storage type is redundant using both RAID 10 and RAID 5-9 with a 2-MB page size.</li> </ul>
Volume <i>a logical unit of storage</i>	On the Storage Center, a volume is a logical unit of storage. When you add a datastore within the vSphere Client, you create and map a new Dell volume as a datastore, or map an existing Dell volume as a datastore. When mapping an existing Dell volume as a datastore, the volume must have been a previously formatted VMFS volume that was used as a datastore and unmapped.
Live Volume <i>keeps applications online and data accessible during planned or unplanned downtime</i>	A Live Volume is a replicating volume that can be mapped and active on a source and destination Storage Center at the same time.
Data Type	Volume data can be either of the following types:

Storage Term	Description
<i>writeable or Replay</i>	<ul style="list-style-type: none"> <li>• Writeable: Data dynamically written to storage</li> <li>• Replay: Point-in-time copy data</li> </ul>
Storage Profiles <i>applied to a volume to determine how data is migrated on the Storage Center</i>	<p>Storage Profiles determine how volume data is stored and migrated on the Storage Center. System-defined Storage Profiles include:</p> <ul style="list-style-type: none"> <li>• Recommended: Available only on Storage Centers with Licensed Data Progression. Use the Recommended profile for most volumes to optimize Data Progression and performance on the Storage Center. The Recommended profile allows the system to automatically progress data between storage types and across all storage tiers based on data type and usage.</li> <li>• High Priority: Use the High Priority profile only for volumes that contain data you want to keep in tier 1 storage. That is, applying the High Priority profile to a volume prevents the volume data from migrating to another tier.</li> <li>• Medium Priority: Use the Medium Priority profile only for volumes that contain data you want to keep in tier 2 storage. That is, applying the Medium Priority profile to a volume prevents the volume data from migrating to another tier.</li> <li>• Low Priority: Use the Low Priority profile only for volumes that contain data you want to keep in tier 3 storage. That is, applying the Low Priority profile to a volume prevents the volume data from migrating to another tier.</li> </ul> <p>You can create and modify Storage Profiles within a Storage Center, if you also have licensed Data Progression software.</p>
Replays and Replay Profiles <i>applied to a volume to determine how often Replays will be taken</i>	A Storage Center Replay is a point-in-time copy of data. As such, a Replay can be exposed and mapped to allow recovery of a datastore or virtual machine. Replay Profiles determine a schedule for volume Replays. System-defined Replay Profiles include commonly used schedules for daily and weekly Replays. Custom Replay profiles can be created to schedule Replays appropriate to the data that you want to back up.
View Volume <i>an Exposed (mapped) Replay</i>	An exposed (mapped) Replay used to recover data from a point-in-time copy of data (Replay)
Data Progression <i>automatically migrating volume data based on the Storage Profile settings</i>	<p>Based on the Storage Profile applied to the volume and the Data Progression licensing, volume data automatically progresses on the Storage Center:</p> <ul style="list-style-type: none"> <li>• On Storage Centers with licensed Data Progression, data can automatically migrate to different Storage Types within a storage tier, and also across storage tiers.</li> </ul>

The following concepts apply to FluidFS.


Storage Term	Description
Fluid File System (FluidFS)	Dell's high-performance, scalable file system software installed on NAS controllers
FluidFS cluster	One to four FS8600 scale-out NAS appliances configured as a FluidFS cluster

Storage Term	Description
NAS pool	The sum of all storage provided by up to two Storage Centers minus space reserved for internal system use
NAS volume	Virtualized volume that consumes storage space in the NAS pool. Administrators can create SMB shares and NFS exports on a NAS volume and share them with authorized users.
NAS volume snapshot	A point-in-time copy of a NAS volume, mounted as an NFS datastore, similar to Replays.
Client VIP	Virtual IP address that clients use to access SMB shares and NFS exports hosted by the FluidFS cluster
NFS export	A directory in a NAS volume that is shared on the network using the Network File System (NFS) protocol

See the *Dell FluidFS Administrator's Guide* for additional FluidFS and NAS concepts.

## Creating and Managing VMFS Datastores and Raw Device Mappings on Storage Centers

The vSphere Web Client Plugin allows you to create and manage Dell volumes that are mapped as VMFS datastores to ESXi hosts or clusters on a Storage Center and volumes that are mapped as Raw Device Mappings (RDMs) to virtual machines.

 **NOTE:** The options that appear when creating and managing datastores and RDMs change depending on the Storage Center user preferences of the Enterprise Manager user defined in the vSphere Web Client Plugin.

The following sections describe how to create and manage datastores:

- [Adding a Datastore](#)
- [Adding Multiple Datastores](#)
- [Adding an RDM to a Virtual Machine](#)
- [Resizing a Datastore or RDM](#)
- [Removing a Datastore or RDM](#)


### Adding a VMFS Datastore

Use the **Add Datastore** wizard to add Dell storage as a VMFS datastore.

When you add a VMFS datastore, you create and/or map a Dell volume on the Storage Center. See [Introduction to Dell Storage](#) for details about Dell volumes.


To add a VMFS datastore, use these options:

- **Create New Dell Volume** – Create and map a new Dell volume as a VMFS datastore.
- **Map Existing Dell Volume** – Select an existing Dell volume to map as a datastore.

 **NOTE:** The existing volume must be a formatted VMFS datastore.

## Adding a Datastore Using a New Dell Volume

A datastore can be created from a new Dell volume using the vSphere Web Client Plugin.

1. Select an object in inventory that can be a parent of a datastore:
  - Datacenter
  - Host
  - Cluster
2. Select **Actions** → **All Dell Storage Actions** → **Add Datastore**.  
The **Add Datastore** wizard starts.
3. Select the default location for the new datastore or specify a new location. Click **Next**.
4. Select the **VMFS** datastore type and click **Next**.  
The vSphere Web Client Plugin loads the Storage Center information. If necessary, select one or more hosts to which to map the new volume, and click **Next**.
5. Select the Storage Center and/or active controller for volume creation, and click **Next**.  
 **NOTE:** The active controller option is not available if the Storage Center user in Enterprise Manager only has volume manager privileges.
6. Select **Create New Dell Volume**, and click **Next**.
7. Select among the following steps that pertain to your environment. The steps that apply depend on the user-preferences settings of the Storage Center user in Enterprise Manager.
  - a. Type the name and size for the new volume, select the volume folder, and click **Next**.
  - b. Select the pagepool to use for creating the volume, and click **Next**.
  - c. Select the storage options for this volume.
    - Select a Storage Profile for the volume. Dell recommends using the Recommended (All Tiers) profile for most volumes.
    - If your storage system contains multiple disk folders, select a Disk Folder from the drop down menu.

Click **Next**.



  - d. Select a Replay Profile for the volume, and click **Next**.
  - e. Specify the LUN for mapping the volume, and click **Next**.
  - f. Select the file system version, and click **Next**.
8. If necessary, select the protocol for mapping, and click **Next**.
9. Type a name for the datastore and select an inventory location in the datastore properties.  
If the file system version is VMFS-3, select the maximum file size and block size for the datastore.
10. (Optional) Select **Create Replication/Live Volume** if you want to replicate the volume data to a second Storage Center and allow both Storage Centers to process I/O requests for the volume. For information, see [Live Volume Operations](#).
11. (Optional) Select **Replication Options** if you want to replicate a datastore. For information, see [Replication Options](#).
12. Click **Next**.  
The **Ready to Complete** page opens.
13. Click **Finish**.

## Related Links

[Add Storage](#)  
[Datastore Properties](#)  
[File System Version](#)  
[Hosts and Clusters](#)  
[Mapping LUN](#)  
[Pagepool Selection](#)  
[Protocol Selection](#)  
[Replay Profile](#)  
[Storage Center](#)  
[Storage Profile](#)  
[Volume](#)

## Map an Existing Dell Volume as a Datastore

An existing Dell volume can be mapped as a datastore using the vSphere Web Client Plugin.

1. Select an object in inventory that can be a parent of a datastore:
  - Datacenter
  - Host
  - Cluster
2. Select **Actions** → **All Dell Storage Actions** → **Add Datastore**.  
The **Add Datastore** wizard starts.
3. If necessary, select one or more hosts to which to map the new volume, and click **Next**.
4. Select the Storage Center and/or active controller that contains the volume to be mapped, and click **Next**.  
 **NOTE:** The active controller option is not available if the Storage Center user in Enterprise Manager only has volume manager privileges.
5. Select **Map Existing Dell Volume**, and click **Next**.
  - a. Find and select an existing Dell volume to map as a datastore, and click **Next**.  
 **NOTE:** The Dell volume must be a VMFS volume.
  - b. Specify the LUN for mapping the volume, and click **Next**.
6. If necessary, select the protocol for mapping, and click **Next**.
7. Specify the name for the datastore. The Dell volume name is used by default.
  - To change the name of the datastore, clear the **Keep existing datastore name** check box and type a new name in the **Datastore name** field.
  - To rename the Dell volume to match the new datastore name, select the **Rename volume to match datastore name** checkbox.
8. (Optional) Select **Create Replication/Live Volume** if you want to replicate the volume data to a second Storage Center and allow both Storage Centers to process I/O requests for the volume. For information, see [Live Volume Operations](#).
9. Click **Next**.  
The **Ready to Complete** page opens.
10. Click **Finish**.

## Related Links

- [Add Storage](#)
- [Datastore Properties](#)
- [Hosts and Clusters](#)
- [Mapping LUN](#)
- [Protocol Selection](#)
- [Select Volume](#)
- [Storage Center](#)





## Adding Multiple Datastores

Use the **Add Multiple Datastore** wizard to add Dell storage as datastores.

### About this task

When you add multiple datastores, you create multiple Dell volumes on the Storage Center. See [Introduction to Dell Storage](#) for details about Dell volumes.

### Steps

1. Select an object in inventory that can be a parent of datastores:
  - Datacenter
  - Host
  - Cluster
2. Select **Actions** → **All Dell Storage Actions** → **Add Multiple Datastores**.  
The **Add Datastores** wizard starts.
  - a. If necessary, select one or more hosts to which to map the new volume, and click **Next**.
  - b. Select the Storage Center and/or active controller for volume creation, and click **Next**.
    -  **NOTE:** The active controller option is not available if the Storage Center user in Enterprise Manager only has volume manager privileges.
  - c. Type the name and size for the new volume, select the volume folder, and click **Next**.
    -  **NOTE:** The following steps might change depending on the user-preferences settings of the Storage Center user in Enterprise Manager.
  - d. If necessary, select the pagepool to use for creating the volume, and click **Next**.
  - e. If necessary, select a Storage Profile for the volume, and click **Next**.
    -  **NOTE:** Dell recommends using the Recommended (All Tiers) profile for most volumes.
  - f. If necessary, select a Replay Profile for the volume, and click **Next**.
  - g. Specify the LUN for mapping the volume, and click **Next**.
    -  **NOTE:** The assignment of LUNs for multiple datastores starts at the specified LUN and increments using the available LUNs.
  - h. If necessary, select the file system version, and click **Next**.
  - i. If necessary, select the protocol for mapping, and click **Next**.
3. Type a name for the datastore and select an inventory location.  
If the file system version is VMFS-3, select the maximum file size and block size for the datastore.
4. Click **Next**.  
The **Create Multiple Datastores** page opens.
5. Type the number of datastores to create, and type the number from which to start the numbering of volume names and datastore names.
6. (Optional) Select a datastore and click **Edit** to open the **Datastore Properties** dialog box, from which you change the volume name, datastore name, and datastore size.

7. Click **Next**.  
The **Ready to Complete** page opens.
8. Click **Finish**.

#### Related Links


[Datastore Properties](#)  
[File System Version](#)  
[Hosts and Clusters](#)  
[Mapping LUN](#)  
[Create Multiple Datastores](#)  
[Pagepool Selection](#)  
[Protocol Selection](#)  
[Replay Profile](#)  
[Storage Center](#)  
[Storage Profile](#)  
[Volume](#)

## Adding an RDM to a Virtual Machine

Use the **Add Dell Storage** wizard to add a Raw Device Mapping (RDM) to a virtual machine.

### Add an RDM Using a New Dell Volume

An RDM can be created and mapped to a virtual machine using the vSphere Web Client Plugin.

1. Select the virtual machine in inventory to which to add an RDM.
2. Select **Actions** → **All Dell Storage Actions** → **Add Raw Device**.  
The **Add Storage** wizard starts.
3. Select **Add New Raw Device Mapping to Virtual Machine** and select a virtual device node.
4. Click **Next**.  
The **Storage Center** page opens.
5. Select the Storage Center and/or active controller for volume creation, and click **Next**.  
 **NOTE:** The active controller option is not available if the Storage Center user in Enterprise Manager only has volume manager privileges.
6. If necessary, select one or more hosts to which to map the new Dell volume, and click **Next**.
7. Select **Create New Dell Volume**, and click **Next**.
8. Select among the following steps that pertain to your environment. The steps that apply depend on the user-preferences settings of the Storage Center user in Enterprise Manager.
  - a. Type the name and size for the new volume, select the volume folder, and click **Next**.
  - b. Select the pagepool to use for creating the volume, and click **Next**.
  - c. Select the storage options for this volume.
    - Select a Storage Profile for the volume. Dell recommends using the Recommended (All Tiers) profile for most volumes.
    - If your storage system contains multiple disk folders, select a Disk Folder from the dropdown menu.

Click **Next**.

  - d. Select a Replay Profile for the volume, and click **Next**.
  - e. Select the LUN for mapping the volume, and click **Next**.


9. If necessary, select the protocol for mapping, and click **Next**.
10. Select the compatibility mode for the raw device, and click **Next**.  
The **Ready to Complete** page opens.
11. Click **Finish**.

#### Related Links

[Add Storage](#)  
[Compatibility Mode](#)  
[Device Configuration](#)  
[Datastore Properties](#)  
[Host Selection](#)  
[Mapping LUN](#)  
[Pagepool Selection](#)  
[Protocol Selection](#)  
[Replay Profile](#)  
[Storage Center](#)  
[Storage Profile](#)  
[Volume](#)

### Add an RDM Using an Existing Dell Volume

An RDM can be created from an existing Dell volume and mapped to a virtual machine using the vSphere Web Client Plugin.

1. Select the virtual machine in inventory to which to add an RDM.
2. Select **Actions** → **All Dell Storage Actions** → **Add Raw Device**.  
The **Add Storage** wizard starts.
3. Select **Add New Raw Device Mapping to Virtual Machine** and select a virtual device node.
4. Click **Next**.  
The **Storage Center** page opens.
5. Select the Storage Center and/or active controller for volume creation, and click **Next**.  
 **NOTE:** The active controller option is not available if the Storage Center user in Enterprise Manager only has volume manager privileges.
6. If necessary, select one or more hosts to which to map the new Dell volume, and click **Next**.
7. Select **Map Existing Dell Volume**, and click **Next**.
8. Find and select an existing Dell volume to map as a raw device, and click **Next**.
9. Select the LUN for mapping the volume, and click **Next**.
10. If necessary, select the protocol for mapping, and click **Next**.
11. Select the compatibility mode for the raw device, and click **Next**.  
The **Ready to Complete** page opens.
12. Click **Finish**.

## Related Links

- [Add Storage](#)
- [Compatibility Mode](#)
- [Device Configuration](#)
- [Host Selection](#)
- [Mapping LUN](#)
- [Protocol Selection](#)
- [Storage Center](#)
- [Select Volume](#)
- [Volume](#)

## Map an Existing RDM to Additional Hosts or Clusters

An RDM can be mapped to additional hosts or clusters using the vSphere Web Client Plugin.

1. Select the virtual machine in inventory that has a raw device that you want to map to additional hosts and/or clusters.
2. Select **Actions** → **All Dell Storage Actions** → **Add Raw Device**.  
The **Add Dell Storage** wizard starts.
3. Select **Map Existing Raw Device Mapping to Hosts and Clusters**, and click **Next**.  
The **RDM Selection** page opens.
4. Select the raw device to be mapped to other hosts and/or clusters, and click **Next**.  
The **Host Selection** page opens.
5. Select one or more hosts or clusters to which to map the existing Dell volume, and click **Next**.  
The **Protocol Selection** page opens.
6. Select the protocol for mapping, and click **Next**.  
The **Ready to Complete** page opens.
7. Click **Finish**.

## Related Links

- [Device Configuration](#)
- [Host Selection](#)
- [Protocol Selection](#)
- [Select Raw Device](#)

## Resizing a Datastore or RDM

Use the **Resize Datastore** or **Extend Raw Device Mapping** wizard to increase the capacity of a datastore or RDM.

### Resize a Datastore

The size of a datastore can be changed using the vSphere Web Client Plugin.

1. Select a datastore in inventory.
2. Select **Actions** → **All Dell Storage Actions** → **Resize Datastore**.  
The **Resize Datastore Storage** wizard starts.
3. Type the new size for the datastore in the **Resize to** field and select the unit of measure from the **Storage Size Type** drop-down menu.
4. Click **Next**.

The **Ready to Complete** page opens.

5. Click **Finish**.

#### Related Links

[Resize Datastore](#)

### Extend an RDM

An RDM can be resized (extended) using the vSphere Web Client Plugin.

1. Select a virtual machine in inventory with an RDM to extend.
2. Select **Actions** → **All Dell Storage Actions** → **Extend Raw Device**.  
The **Extend Datastore RDM** wizard starts.
3. Select the RDM to extend.
4. Click **Next**.  
The **Expansion Size** page opens.
5. Type the new size for the RDM in the **Extend to** field and select the unit of measure from the **Storage Size Type** drop-down menu.
6. Click **Next**.  
The **Ready to Complete** page opens.
7. Click **Finish**.

#### Related Links

[Select RDM](#)

[Extend RDM Size](#)

### Removing a Datastore or RDM

Use the **Remove Storage** wizard to remove a datastore or RDM.

#### Remove a VMFS Datastore

A VMFS datastore can be removed using the vSphere Web Client Plugin.

1. Select an object in inventory that can be a parent of a datastore:
  - Datacenter
  - Host
  - Cluster
2. Select a datastore in inventory.
3. Select **Actions** → **All Dell Storage Actions** → **Remove Datastore**.  
The **Remove Datastores** page opens. By default, the VMFS tab is selected.
4. Click to select the datastores to remove. To select all datastores, click **Choose All**.
5. Select a retention option for the datastore.
6. Click **Next**.  
The **Ready to Complete** page opens.
7. Click **Finish**.

#### Related Links

[Volume Retention](#)

## Remove an RDM

An RDM can be removed using the vSphere Web Client Plugin.

1. Select a virtual machine in inventory with an RDM to remove.
2. Select **Actions** → **All Dell Storage Actions** → **Remove Raw Device**.  
The **Remove Storage** wizard starts.
3. Select one or more RDMs to remove.
4. Click **Next**.  
The **Volume Retention** page appears.
5. Select a retention option for the raw devices.
6. Click **Next**.  
The **Ready to Complete** page appears.
7. Click **Finish**.

### Related Links

- [Select Raw Device](#)
- [Volume Retention](#)

## Creating and Managing NFS Datastores

The vSphere Web Client Plugin allows you to create and manage NFS exports on NAS volumes that are mapped as NFS datastores to ESXi hosts or clusters.

You can create NFS datastores as follows:

- Use a new or existing NAS volume and create a new NFS export in the FluidFS cluster.
- Use an existing NFS export in the FluidFS cluster.

The following sections describe how to create and manage NFS datastores:

- [Create a New NFS Datastore](#)
- [Add an NFS Datastore Using an Existing NFS Export](#)
- [Remove NFS Datastores](#)

### Create a New NFS Datastore

An NFS datastore can be created using the vSphere Web Client Plugin.

1. Select an object in inventory that can be a parent of a datastore:
  - Datacenter
  - Host
  - Cluster
2. Select **Actions** → **All Dell Storage Actions** → **Add Datastore**.  
The **Add Datastore** wizard starts and the **Select Type** page opens.
3. Select **NFS**, and click **Next**.
4. Select one or more hosts to which to map the NFS export, and click **Next**.
5. Select the FluidFS cluster for volume creation, and click **Next**.
6. Select **Create a New NFS Datastore**, and click **Next**.

7. Type the name for the new volume, select the volume folder under Inventory Location, and click **Next**.  
The **Datastore Properties** page opens.
8. Type a value for the size. Select from the drop-down menu to specify the unit type.
9. Choose a folder option:
  - **Create a New NAS Volume Folder** – By default, the folder name is derived from the name of the datastore that you entered.
  - **Use Existing NAS Volume Folder** – Browse for a folder to use.
10. Type the FluidFS cluster VIP in the **FluidFS Cluster VIP or DNS Name** field.
11. Click **Next**.  
The **Ready to Complete** page opens.
12. Click **Finish**.

#### Related Links

- [Add Storage - NFS](#)
- [Hosts and Clusters](#)
- [NFS Exports](#)

## Add an NFS Datastore Using an Existing NFS Export

You can create a new NFS datastore by using an existing NFS export in the FluidFS cluster.

1. Select an object in inventory that can be a parent of a datastore:
  - Datacenter
  - Host
  - Cluster
2. Select **Actions** → **All Dell Storage Actions** → **Add Datastore**.  
The **Add Datastore** wizard starts and the **Select Type** page opens.
3. Select **NFS**, and click **Next**.
4. Select one or more hosts to which to map the NFS export, and click **Next**.
5. Select the FluidFS cluster for volume creation, and click **Next**.
6. Select **Map an Existing NFS Export**, and click **Next**.
7. Select an NFS export from the list of available NFS exports.
8. Type a value in the **FluidFS Cluster VIP or DNS Name** field.
9. Click **Next**.  
The **Ready to Complete** page opens.
10. Click **Finish**.

#### Related Links

- [Add Storage - NFS](#)
- [Hosts and Clusters](#)
- [NFS Exports](#)

## Remove NFS Datastores


An NFS datastore can be removed using the vSphere Web Client Plugin.


1. Select an object in inventory that can be a parent of a datastore:

- Datacenter
  - Host
  - Cluster
2. Select an NFS datastore in inventory and right-click on its name.
  3. Select **Actions** → **All Dell Storage Actions** → **Remove Datastore**.  
The **Remove Datastores** page opens. By default, the VMFS tab is selected.
  4. If necessary, select **NFS** to view the NFS datastores.
  5. Click to select the datastores to remove. To select all datastores, click **Choose All**.
  6. (Optional) Select **Delete NFS Exports for selected datastores**.
  7. (Optional) Select **Delete volumes for selected datastores if possible**.
  8. Click **OK**.

## Configuring, Creating, and Recovering Replays

The Dell Storage vSphere Web Client Plugin allows you to configure Data Instant Replay, create Replays, expire Replays, and recover data from Replays.

 **NOTE:** The options that appear when configuring, creating, and recovering Replays change depending on the volume preferences of the Enterprise Manager user defined in the vSphere Web Client Plugin.

 **NOTE:** Replays apply only to volumes that are mounted as VMFS datastores and not to NFS datastores.

The following sections describe how to configure and manage Replays:

- [Configuring Data Instant Replay](#)
- [Creating a Replay](#)
- [Expiring a Replay](#)
- [Recovering Data From a Replay](#)

### Configuring Data Instant Replay

Configuring Data Instant Replay means assigning a Replay Profile to a datastore (Dell volume) or all volumes associated with a virtual machine to establish a schedule for automatically taking Replays. Only Replay Profiles already defined on the Storage Center are available for selection. For instructions on creating or modifying Replay Profiles, see either the *Storage Center System Manager Administrator's Guide* or the *Dell Storage Manager Administrator's Guide*.

#### Configure Data Instant Replay for a Datastore

Data Instant Replay can be configured for a datastore using the vSphere Web Client Plugin.

1. Select a datastore in inventory.
2. Select **Actions** → **All Dell Storage Actions** → **Replays** → **Configure Data Instant Replay**.  
The **Configure Data Instant Replay** wizard starts.
3. Select one or more Replay Profiles to apply to the datastore.
4. Click **Next**.  
The **Ready to Complete** page opens.
5. Click **Finish**.

## Related Links

[Replay Profile](#)

## Configure Data Instant Replay for RDMs on a Virtual Machine

Data Instant Replay can be configured for an RDM using the vSphere Web Client Plugin.

1. Select a virtual machine in inventory.
2. Select **Actions** → **All Dell Storage Actions** → **Replays** → **Configure Data Instant Replay**.  
The **Configure Data Instant Replay** wizard starts. If the VM has multiple RDMs, the wizard displays a page for each RDM.
3. Select one or more Replay Profiles to apply to the RDM and click **Next**.  
If the VM has multiple RDMs, repeat step 2. When all of the RDMs have been configured, the **Ready to Complete** page opens.
4. Click **Finish**.

## Related Links

[Replay Profile](#)

## Creating a Replay

In addition to scheduled Replays taken automatically based on a Replay Profile, you can also take an immediate (unscheduled) Replay. During Replay creation, you can specify an expiration time for the Replays. Note that if you create a Replay with the **Never Expire** option, the Replay remains on the Storage Center until it is manually expired.

## Take a Replay of a Datastore

A Replay of a datastore can be taken using the vSphere Web Client Plugin.

1. Select the datastore for which you want to take a Replay.
2. Select **Actions** → **All Dell Storage Actions** → **Replays** → **Create Replay**.  
The **Create Replay** wizard starts.
3. Specify a time after which you want the Replay to expire. To set the Replay to never expire, select the **Never Expire** checkbox.
4. Click **Next**.  
The **Ready to Complete** page opens.
5. Click **Finish**.

## Related Links

[Replay Profile](#)

## Take a Replay of RDM Volumes Associated With a Virtual Machine

A Replay of an RDM associated with a virtual machine can be taken using the vSphere Web Client Plugin.

1. Select the virtual machine for which you want to take a Replay.
2. Select **Actions** → **All Dell Storage Actions** → **Replays** → **Create Replay**.  
The **Create Replay** wizard starts.
3. Specify a time after which you want the Replay to expire. To set the Replay to never expire, select the **Never Expire** checkbox.
4. Click **Next**.  
The **Snapshot Options** page opens.

5. To create a temporary VMware snapshot of the virtual machine prior to Replay creation, select the **Create Temporary VMware Snapshot** checkbox.
6. If the **Temporary VMware Snapshot** checkbox is selected, specify whether to include the machine memory and/or quiesce the file systems.
7. Click **Next**.  
The **Ready to Complete** page opens.
8. Click **Finish**.

#### Related Links

[Replay Properties](#)

[Snapshot Options](#)

## Expiring a Replay

When a Replay is created, an expiration time is assigned to the Replay. However, you can override the expiration time by explicitly expiring a Replay. Expiring a Replay removes the Replay from the Storage Center.

### Expire Replays for a Datastore

A Replay of a datastore can be expired using the vSphere Web Client Plugin.

1. Select the datastore for which you want to expire Replays.
2. Select **Actions** → **All Dell Storage Actions** → **Replays** → **Expire Replays**.  
The **Expire Storage Center Replay** wizard starts.
3. Select the Replays that you want to expire.
4. Click **Next**.  
The **Ready to Complete** page opens.
5. Click **Finish**.

#### Related Links

[Replay Selection](#)

### Expire Replays of RDM Volumes Associated With a Virtual Machine

A Replay of an RDM can be expired using the vSphere Web Client Plugin.

1. Select the virtual machine for which you want to expire datastore Replays.
2. Select **Actions** → **All Dell Storage Actions** → **Replays** → **Expire Replays**.  
The **Expire Storage Center Replay** wizard starts.
3. Select the Replays that you want to expire.
4. Click **Next**.  
The **Ready to Complete** page opens.
5. Click **Finish**.

#### Related Links

[Replay Selection](#)

## Recovering Data From a Replay

Use the Storage Center Replay Recovery wizard to recover data from a Storage Center Replay. The wizard allows you to select the Replay from which you want to recover data and then exposes and maps the Replay to allow you to copy data for recovery.


### Recover a Datastore From a Storage Center Replay

A datastore can be recovered using the vSphere Web Client Plugin.

#### Prerequisites

A Replay of the datastore must exist.

#### Steps

1. Select the datastore for which you want to recover data.
2. Select **Actions** → **All Dell Storage Actions** → **Replays** → **Recover VM Data from Replay**.  
The **Storage Center Replay Recovery** wizard starts.
3. Select one or more Replays from which to recover data.  
 **NOTE:** Only one Replay per volume can be selected.
4. Click **Next**.  
The **Host Selection** page opens.
5. Select the host for accessing the recovered datastore.
6. Click **Next**.  
The **Datastore Name** page opens.
7. Specify a name and location for the recovered datastore.
8. Click **Next**.  
The **Mapping LUN** page opens.
9. Select the LUN for mapping the recovered datastore.
10. Click **Next**.  
The **Ready to Complete** page opens.
11. Click **Finish**.

#### Related Links

- [Datastore Name](#)
- [Host Selection](#)
- [Mapping LUN](#)
- [Replay Selection](#)

### Recover an RDM From a Storage Center Replay

An RDM can be recovered using the vSphere Web Client Plugin.

#### Prerequisites

A Replay of the RDM must exist.

#### Steps

1. Select the virtual machine for which you want to recover the RDM.
2. Select **Actions** → **All Dell Storage Actions** → **Replays** → **Recover VM Data from Replay**.  
The **Storage Center Replay Recovery** wizard starts.
3. Select one or more Replays from which you want to recover data.
4. Click **Next**.

- The **VM Selection** page opens.
5. Select the virtual machine to use to access the recovered data.
  6. Click **Next**.  
The **Ready to Complete** page opens.
  7. Click **Finish**.

#### Related Links

[Replay Selection](#)

[VM Selection](#)

## Creating and Managing FluidFS NAS Volume Snapshots and Snapshot Schedules

Storage Centers present a certain amount of capacity (a NAS pool, composed of NAS volumes) to the Dell Fluid File System (FluidFS) cluster. When you create an NFS datastore (see [Creating and Managing NFS Datastores](#)), an associated NAS volume is created in the FluidFS cluster. The path of the NFS Export folder corresponds with the NAS volume and is mounted on the ESXi host.

The vSphere Web Client Plugin allows you to create and manage snapshots (similar to Replays) of NAS volumes associated with an NFS datastore, and set a schedule for taking, retaining, and deleting the snapshots.

### About FluidFS NAS Volume Snapshots

NAS volume snapshots are point-in-time copies of a NAS volume and are available for data recovery. NAS volume snapshots are similar to VMFS Replays, except that Replays are mounted as VMFS datastores and snapshots are mounted as NFS datastores. The first snapshot taken contains contents of the entire NAS volume. All snapshots created after that baseline represent only the changes made since the previous snapshot.

Using the Dell Storage vSphere Web Client Plugin, you can:

- Create a snapshot for an associated NAS volume for the corresponding NFS datastore
- Display all available snapshots of the associated NAS volume
- Modify the snapshot name and expiration date
- Select and delete one or more snapshots

### About FluidFS NAS Volume Snapshot Schedules

NAS volume snapshot schedules let you take snapshots at regular intervals (for example, hourly or daily) to provide a complete view of your file system over time.

Using the Dell Storage vSphere Web Client Plugin, you can:

- Create a schedule that specifies the snapshot schedule name, frequency of snapshots taken, and retention time. Frequency and retention can be in minutes, hours, days, or weeks.
- Select and change the snapshot schedule name, frequency, and retention time
- Select and delete a snapshot schedule


## NAS Volume Snapshots and Snapshot Schedules

This section provides steps for creating on-demand NAS volume snapshots and for setting up schedules to take snapshots at regular intervals.

### Creating NAS Volume Snapshots

You can create an on-demand snapshot of a NAS volume for an associated datastore and set the expiration date for the snapshot.

#### Steps

1. Select an NFS datastore in inventory.
2. Select **Actions** → **All Dell Storage Actions** → **Snapshots** → **Create Snapshot**.  
The **Create Snapshot** wizard starts.
3. Type a name for the snapshot. Names can be a maximum of 230 characters including special characters (right or left angle bracket, backslash, hyphen, underscore, ampersand, tilde, plus sign). As best practice, use a snapshot name that is concise and descriptive.  
 **NOTE:** If a snapshot name that you specified is already present, the snapshot will not be created and the message `Snapshot name already exists` will be displayed.
4. (Optional) If you want to set an expiration date for the snapshot, select **Enable Expiration** and a date from the calendar. You can also indicate hours and minutes.

#### Next steps

You might also want to set up a snapshot schedule to take snapshots of a NAS volume at regular intervals. See [Creating NAS Volume Snapshot Schedules](#).

### Creating NAS Volume Snapshot Schedules

Set up a snapshot schedule to take snapshots of a NAS volume at regular intervals during a designated timeframe.

1. Select an NFS datastore in inventory.
2. Select the NAS volume for which you want to take a snapshot.
3. Select **Actions** → **All Dell Storage Actions** → **Snapshots** → **Create Snapshot Schedule**.  
The **Create Snapshot Schedule** wizard starts.
4. Type a name for the snapshot schedule. Names can be a maximum of 230 characters including special characters (right or left angle bracket, back slash, hyphen, underscore, ampersand, tilde, plus sign).
5. Select **Take Snapshot Every**, type a numerical value for minutes, hours, days, or weeks, and select the snapshot frequency from the dropdown menu.
6. Alternatively, select **Take Snapshot On** to set a date and time for taking a snapshot:
  - a. Select the day of the week.
  - b. Select the time and AM or PM.
  - c. Specify the number of minutes to offset each snapshot of a NAS volume. Optionally, type an offset value to begin taking the snapshot a certain number of minutes after the hour. The default is zero (0) minutes.
7. Select **Retain Snapshot for** to indicate how long snapshots will be saved before automatic deletion. Type a numerical value for minutes, hours, days, or weeks, and select the retention interval from the dropdown menu.
8. Click **Next**.  
Summary information about the snapshot schedule is displayed.

9. Click **Finish** to set the schedule.

Snapshots of the NAS volume will be taken and retained according to the values set by the schedule. You can revise the schedule values as needed. For information, see [Editing NAS Volume Snapshot Schedules](#). If you want to take an immediate (on-demand) snapshot, see [Creating NAS Volume Snapshots](#).

## Viewing NAS Volume Snapshots and Schedules

After creating snapshots or snapshot schedules, you can view summary information about all snapshots or schedules from the Monitor tab under Dell Storage.

### Viewing Snapshots From the Monitor Tab

Follow these steps to view summary information about all snapshots taken for the selected NAS volume.

#### Steps

1. Select an NFS datastore in inventory.

The vSphere Web Client Plugin loads information for the selected datastore.



**NOTE:** If summary information does not display for the selected NFS datastore, verify that you provided correct credentials for the vCenter server and Enterprise Manager configuration.

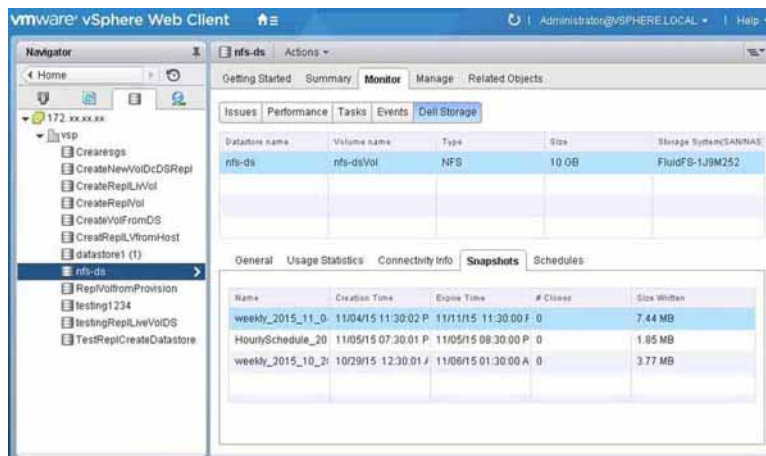
2. Click the **Monitor** tab.
3. Select **Dell Storage** from the menu bar.

The NFS datastore and associated volume are shown in the table, and the **General** tab is selected by default.

4. Click the **Snapshot** tab.

The vSphere Web Client Plugin lists all snapshots for the NAS volume, and displays the creation time, expiration date, number of clones (if any), and size of the snapshot.

[Figure 12. Monitor Tab Showing All Snapshots for the Selected NAS Volume](#) shows an example of a NAS volume with three snapshots taken.



**Figure 12. Monitor Tab Showing All Snapshots for the Selected NAS Volume**

#### Next steps

You can also view all snapshot schedules from the Monitor tab. See [Viewing Schedules From the Monitor Tab](#).


## Viewing Schedules From the Monitor Tab

Follow these steps to view summary information about all snapshot schedules for the selected NAS volume.

### Steps

1. Select an NFS datastore in inventory.

The vSphere Web Client Plugin loads information for the selected datastore.

 **NOTE:** If summary information does not display for the selected NFS datastore, verify that you provided correct credentials for the vCenter server and Enterprise Manager configuration.

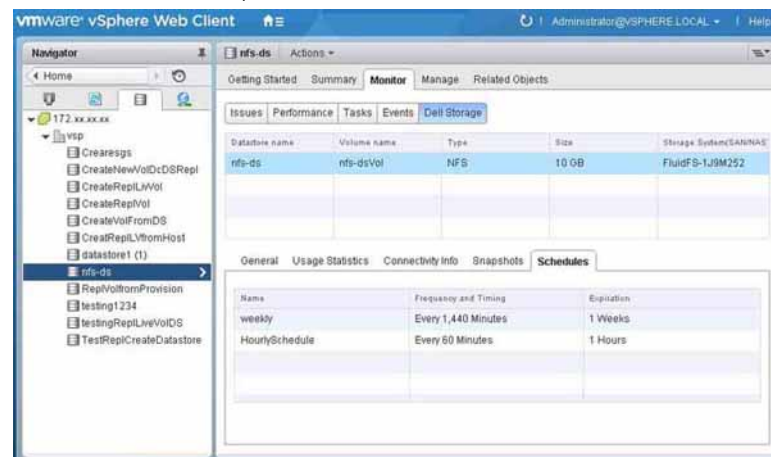
2. Click the **Monitor** tab.
3. Select **Dell Storage** from the menu bar.

The NFS datastore and associated volume are shown in the table, and the **General** tab is selected by default.

4. Click the **Schedules** tab.

The vSphere Web Client Plugin lists all schedules for the NAS volume and shows the frequency in which snapshots are taken and the expiration interval.

[Figure 13. Monitor Tab Showing All Schedules for the Selected NAS Volume](#) shows an example of a NAS volume with two snapshot schedules.



**Figure 13. Monitor Tab Showing All Schedules for the Selected NAS Volume**

### Next steps

You can also view all snapshots from the Monitor tab. See [Viewing Snapshots From the Monitor Tab](#).

## Managing NAS Volume Snapshots and Snapshot Schedules

This section describes how to revise and delete snapshots and snapshot schedules.

### Editing NAS Volume Snapshots

You can display all available snapshots of a NAS volume, then select a snapshot for editing. Editing allows you to modify the snapshot name and expiration date.

### Steps

1. Select an NFS datastore in inventory.
2. Select **Actions** → **All Dell Storage Actions** → **Snapshot** → **Edit Snapshot/Snapshot Schedule**.

The **Edit Snapshot/Snapshot Schedule** wizard starts.

3. On the **Edit Snapshot/Snapshot Schedule** page, select **Snapshot** and click **Next**.
4. Select the snapshot from the list of schedules in the table.
5. Edit any of the current information:
  - a. In the **Name** field, select the name for edit and type a revised name.
  - b. To prevent automatic deletion of the snapshot, clear the **Enable Expiration** checkbox.
  - c. To change expiration information, select a new date in the calendar and revise the numerical value for hours and minutes. The default is 30 minutes.
6. Click **Next**.

A summary screen shows the details of the changes that you made.
7. If you are satisfied with the changes, click **Finish**. Otherwise, click **Back** to perform further edits.

#### Next steps

You can also make changes to a snapshot that you created. See [Editing NAS Volume Snapshot Schedules](#).

### Editing NAS Volume Snapshot Schedules

You can display all available schedules for taking NAS volume snapshots, then select a snapshot schedule for editing. Editing allows you to modify the snapshot schedule name, change when to take the snapshot, or change the snapshot expiration date.

#### Steps

1. Select an NFS datastore in inventory.
2. Select **Actions** → **All Dell Storage Actions** → **Snapshot** → **Edit Snapshot/Snapshot Schedule**  
The **Edit Snapshot/Snapshot Schedule** wizard starts.
3. On the Edit Snapshot/Snapshot Schedule page, select **Snapshot Schedule** and click **Next**.
4. Select the snapshot schedule from the list of schedules in the table.
5. Edit any of the current information:
  - a. Select **Take Snapshot Every** and revise the numerical value and interval (minutes, hours, days, or weeks).
  - b. Alternatively, select **Take Snapshot On** and modify the day of the week, time of day, and minutes to offset each snapshot.
  - c. To prevent automatic deletion of the snapshot, clear the **Enable Expiration** checkbox.
  - d. To change expiration information, revise the numerical value and interval (minutes, hours, days, or weeks).
6. Click **Next**.

A summary screen shows the details of the changes that you made.
7. If you are satisfied with the changes, click **Finish**. Otherwise, click **Back** to perform further edits.

#### Next steps

You can also make changes to a snapshot that you created. See [Editing NAS Volume Snapshots](#).

### Deleting NAS Volume Snapshots

You can display all available snapshots of a NAS volume, then select and delete one or more snapshots.

#### Steps

1. Select an NFS datastore in inventory.
2. Select **Actions** → **All Dell Storage Actions** → **Snapshot** → **Delete Snapshot/Snapshot Schedule**.  
The **Delete Snapshot/Snapshot Schedule** wizard starts.
3. On the **Delete Snapshot/Snapshot Schedule** page, select **Snapshot** and click **Next**.

4. Select a snapshot or multiple snapshots from the list of schedules in the table. To select all snapshots in the list, check the box next to the **Snapshot Name** column heading.
5. Click **Next**.  
A summary screen specifies the snapshot or snapshots that you selected to delete.
6. Click **Finish** to delete the snapshots.

#### Next steps

You can also select and delete snapshot schedules. See [Deleting NAS Volume Snapshot Schedules](#).

### Deleting NAS Volume Snapshot Schedules

You can display all available snapshot schedules, then select and delete one or more schedules.

#### Steps

1. Select an NFS datastore in inventory.
2. Select **Actions** → **All Dell Storage Actions** → **Snapshot** → **Delete Snapshot/Snapshot Schedule**.  
The **Delete Snapshot/Snapshot Schedule** wizard starts.
3. On the **Delete Snapshot/Snapshot Schedule** page, select **Snapshot Schedule** and click **Next**.
4. Select a snapshot schedule or multiple schedules from the list of schedules in the table. To select all snapshot schedules in the list, check the box next to the **Snapshot Schedule Name** column heading.
5. Click **Next**.  
A summary screen specifies the schedule or schedules that you selected to delete.
6. Click **Finish** to delete the schedules.

#### Next steps

You can also select and delete one or more snapshots. See [Deleting NAS Volume Snapshots](#).

## Create and Manage Replications and Live Volumes

The Dell Storage vSphere Web Client Plugin supports two basic models for migrating data between Storage Centers:

- Replications
- Live Volumes

A replication copies volume data from one Storage Center to another Storage Center to safeguard data. A Live Volume is a replicating volume that can be mapped and active on a source and destination Storage Center at the same time.

For information about these concepts, see the *Dell Storage Manager Administrator's Guide*.

You can use the Dell Storage vSphere Web Client Plugin to add and manage replications and Live Volumes to VMFS datastores and RDMS on Dell storage. You can also convert a replication to a Live Volume and vice versa.

The following sections describe the replica and Live Volume operations:

- [Replication Operations](#)
- [Live Volume Operations](#)

## Replication Operations

The vSphere Web Client Plugin enables you to add, modify, and remove replications for datastores and RDMs.

The following sections describe how to create and manage replications:

- [Creating a Datastore or RDM Replication](#)
- [Modifying a Datastore or RDM Replication](#)
- [Removing a Datastore or RDM Replication](#)

### Create a Datastore or RDM Replication

The Dell Storage vSphere Web Client Plugin provides the ability to create datastores and RDM replications.

#### **Replicating a Datastore**

A datastore replication can be created using the vSphere Web Client Plugin.

#### **Prerequisites**

If you are using iSCSI connections for replications:

- The destination Storage Center must be defined as an iSCSI Remote System on the source Storage Center.
- The source Storage Center must be defined as an iSCSI Remote Connection on the destination Storage Center.  
See the *Dell Storage Manager Administrator's Guide* for instructions on configuring iSCSI connections between Storage Centers.
- Make sure that at least one Quality of Service (QoS) definition is set up on the source Storage Center for replication. See the *Dell Storage Manager Administrator's Guide* for instructions on creating QoS definitions.

#### **Steps**

1. Select a datastore to replicate.
2. Select **Actions** → **Dell Storage Actions** → **Replications/Live Volume** → **Add**.  
The **Add Replication/Live Volume** wizard starts.
3. Select the target (destination) Storage Center.
4. Click **Next**.  
The **Replication Options** page opens.
5. Specify one of the following replication types:
  - Replication, Asynchronous
  - Replication, Synchronous — High Availability
  - Replication, Synchronous — High Consistency
6. Specify other replication settings and a target location as in [Replication Options](#)
7. Click **Next**.  
The **Ready to Complete** page opens.
8. Click **Finish**.

#### **Related Links**

- [Replication Options](#)
- [Storage Center for Replication](#)

## **Replicating an RDM**

An RDM replication can be created using the vSphere Web Client Plugin.

### **Prerequisites**

If you are using iSCSI connections for replications:

- The destination Storage Center must be defined as an iSCSI Remote System on the source Storage Center.
- The source Storage Center must be defined as an iSCSI Remote Connection on the destination Storage Center.

See the *Dell Storage Manager Administrator's Guide* for instructions on configuring iSCSI connections between Storage Centers.

- Make sure at least one Quality of Service (QoS) definition is set up on the source Storage Center for replication. See the *Dell Storage Manager Administrator's Guide* for instructions on creating QoS definitions.

### **Steps**

1. Select the virtual machine with the RDM to replicate.
2. Select **Actions** → **All Dell Storage Actions** → **Replication/Live Volume** → **Add**.  
The **Add Replication/Live Volume** wizard starts.
3. Select the RDM to replicate.
4. Click **Next**.  
The **Storage Center** page opens.
5. Select the target (destination) Storage Center.
6. Click **Next**.  
The **Replication Options** page opens.
7. Specify one of the following replication types:
  - Replication, Asynchronous
  - Replication, Synchronous — High Availability
  - Replication, Synchronous — High Consistency
8. Specify other replication settings and a target location as in [Replication Options](#).
9. Click **Next**.  
The **Ready to Complete** page opens.
10. Click **Finish**.

### **Related Links**

- [Select Raw Device](#)
- [Replication Options](#)
- [Storage Center for Replication](#)

## **Modifying a Datastore or RDM Replication**

The Dell Storage vSphere Web Client Plugin provides the ability to modify datastore and RDM replications, including the ability to convert the replication type between a Live Volume and a replication.


### **Modify a Datastore Replication**

You can modify the settings of an existing datastore replication.

### **Prerequisites**

A datastore replication must exist.

## Steps

1. Select the datastore that is being replicated.
2. Select **Actions** → **Dell Storage Actions** → **Replications/Live Volume** → **Edit Settings/Convert**.  
The **Modify Replications/Live Volume** wizard starts.
3. From the list of replications, select one to modify.
4. Click **Next**.  
The **Replication Options** page opens.
5. To change the replication type, select a type from the drop-down menu.  
 **NOTE:** If you choose to change the replication type from a replication to a Live Volume, a warning dialog box opens. You must select the checkbox to confirm that you want to make the conversion, and then click **OK**.
6. Modify the other replication settings as needed.
7. If you confirmed that you want to convert the replica to a Live Volume, the **Live Volume Options** page opens. Set the values for the Live Volume.
8. Click **Next**.  
The **Ready to Complete** page opens.
9. Click **Finish**.

## Related Links

- [Storage Center for Replication](#)
- [Replication Options](#)


## **Modify an RDM Replication**

You can modify the settings of an existing datastore replication.

### Prerequisites

An RDM replication must exist.

## Steps

1. Select the virtual machine with the RDM that is being replicated.
2. Select **Actions** → **Dell Storage Actions** → **Replications/Live Volume** → **Edit Settings/Convert**.  
The **Modify Replication/Live Volume** wizard starts.
3. Select the replication to modify.
4. Click **Next**.  
The **Replication Options** page opens.
5. To change the replication type, select a type from the drop-down menu.  
 **NOTE:** If you choose to change the replication type from a replication to a Live Volume, a warning dialog box opens. You must select the checkbox to confirm that you want to make the conversion, and then click **OK**.
6. Modify the other replication settings as needed.
7. If you confirmed that you want to convert the replica to a Live Volume, the **Live Volume Options** page opens. Set the values for the Live Volume.
8. Click **Next**.  
The **Ready to Complete** page opens.
9. Click **Finish**.

## Related Links

- [Replication Options](#)
- [Select Replications](#)

## Removing a Datastore or RDM Replication

The Dell Storage vSphere Web Client Plugin provides the ability to remove datastore and RDM replications.

### ***Remove a Datastore Replication***

Remove a datastore replication after the replication is no longer needed.

#### **Prerequisites**

A datastore replication must exist.

#### **Steps**

1. Select the datastore for which you want to remove a replication.
2. Select **Actions** → **All Dell Storage Actions** → **Replications/Live Volume** → **Remove**.  
The **Remove Replication/Live Volume** wizard starts.
3. Select the replications to remove.
4. Click **Next**.  
The **Remove Options** page opens.
5. Specify removal options for the replications.
6. Click **Next**.  
The **Ready to Complete** page opens.
7. Click **Finish**.

## Related Links

- [Replication Delete Options](#)

### ***Remove an RDM Replication***

Remove an RDM replication after the replication is no longer needed.

#### **Prerequisites**

An RDM replication must exist.

#### **Steps**

1. Select the virtual machine with the RDM from which you want to remove a replication.
2. Select **Actions** → **All Dell Storage Actions** → **Replications/Live Volume** → **Remove**.  
The **Remove Replication/Live Volume** wizard starts.
3. Select the replications to remove.
4. Click **Next**.  
The **Remove Options** page opens.
5. Specify removal options for the replications.
6. Click **Next**.  
The **Ready to Complete** page opens.
7. Click **Finish**.

## Related Links

- [Replication Delete Options](#)
- [Select Replications](#)

## Live Volume Operations

The Dell Storage vSphere Web Client Plugin enables you to add, modify, and remove Live Volumes for datastores and RDMs. You can also configure automatic failover and restore features.

The following sections describe how to create and manage Live Volumes:

- [Add a Live Volume to a Datastore or RDM](#)
- [Modify a Live Volume Datastore or RDM Replication](#)
- [Remove a Live Volume Datastore or RDM Replication](#)
- [Configure Live Volume Automatic Failover and Restore](#)

### Add a Live Volume to a Datastore or RDM

The Dell Storage vSphere Web Client Plugin provides the ability to add Live Volumes to datastores and RDMs.

#### *Adding a Live Volume to a Datastore*

1. Select a datastore to replicate.
2. Select **Actions** → **Dell Storage Actions** → **Replications/Live Volume** → **Add**.  
The **Add Replication/Live Volume** wizard starts.
3. Select the target (destination) Storage Center.
4. Click **Next**.  
The **Replication Options** page opens.
5. Specify one of the following replication types:
  - Live Volume, Asynchronous
  - Live Volume, Synchronous – High Availability
  - Live Volume, Synchronous – High Consistency
6. Specify the replication settings and a target location.
7. Click **Next**.  
The **Live Volume Settings** page opens.
8. (Optional) Select from the drop-down list of Secondary QoS Definitions.
9. (Optional) Clear the option labeled **Automatically Swap Primary Storage Center**.
10. If you keep the checkbox enabled for **Automatically Swap Primary Storage Center**, click **Advanced**.  
The Advanced options are shown. Modify the values for the following options:
  - Min. data written to secondary before swap
  - Min. % of I/O on secondary before swap
  - Min. time as primary before swap
11. (Optional) If you selected **Live Volume, Synchronous – High Availability** as the replication type in step 5, select **Failover Automatically** to configure Live Volumes to automatically fail over when service is disrupted. By default, **Restore Automatically** is also selected. For more information, see [Configure Live Volume Automatic Failover and Restore](#).
12. Specify a Live Volume Secondary Mapping target location.
13. Click **Next**.

The **Ready to Complete** page opens with a summary of the selections that you made.

14. Click **Finish**.

#### Related Links

[Replication Options](#)

[Live Volume Options](#)

[Storage Center for Replication](#)

#### ***Adding a Live Volume to an RDM***

1. Select the virtual machine with the RDM to replicate.
2. Select **Actions** → **All Dell Storage Actions** → **Replications/Live Volume** → **Add**.  
The **Add Replications/Live Volume** wizard starts.
3. Select the RDM to replicate.
4. Click **Next**.  
The **Storage Center** page opens.
5. Select the target (destination) Storage Center.
6. Click **Next**.  
The **Replication Options** page opens.
7. Specify one of the following replication types:
  - Live Volume, Asynchronous
  - Live Volume, Synchronous — High Availability
  - Live Volume, Synchronous — High Consistency
8. Specify the replication settings and a target location.
9. Click **Next**.  
The **Live Volume Settings** page opens.
10. (Optional) Select from the drop-down list of Secondary QoS Definitions.
11. (Optional) Uncheck the option labeled **Automatically Swap Primary Storage Center**.
12. If you keep the checkbox enabled for **Automatically Swap Primary Storage Center**, click **Advanced**.  
The Advanced options are shown. Modify the values for the following options:
  - Min. data written to secondary before swap
  - Min. % of I/O on secondary before swap
  - Min. time as primary before swap
13. Specify a target location.
14. Click **Next**.  
The **Ready to Complete** page opens.
15. Click **Finish**.

#### Related Links

[Select Raw Device](#)

[Replication Options](#)

[Live Volume Options](#)

[Storage Center for Replication](#)

## Modify a Live Volume Datastore or RDM Replication

The vSphere Web Client Plugin provides the ability to modify Live Volume datastore and RDM replications, including the ability to convert the replication type between a Live Volume and a replication.


### Modifying a Live Volume Datastore

You can modify the settings of an existing Live Volume datastore.

#### Prerequisites

A Live Volume datastore must exist.

#### Steps

1. Select the datastore that is being replicated.
2. Select **Actions** → **Dell Storage Actions** → **Replications/Live Volume** → **Edit Settings/Convert**.  
The **Modify Replications/Live Volume** wizard starts.
3. From the list of replications, select one to modify.
4. Click **Next**.  
The **Replication Options** page opens.
5. To change the replication type, select a type from the drop-down menu.  
 **NOTE:** If you choose to change the replication type from a Live Volume to a replica, a warning dialog box opens. You must select the checkbox to confirm that you want to make the conversion, and then click **OK**.
6. Modify the other replication settings as needed.
7. If you did not choose to convert from a Live Volume to a replica, the **Live Volumes Settings** page opens.
8. Click **Next**.  
The **Live Volumes Options** page opens.
9. (Optional) Select from the drop-down list of Secondary QoS Definitions.
10. (Optional) Uncheck the option labeled **Automatically Swap Primary Storage Center**.
11. If you keep the checkbox enabled for **Automatically Swap Primary Storage Center**, click **Advanced**.  
The Advanced options are shown. Modify the values for the following options:
  - Min. data written to secondary before swap
  - Min. % of I/O on secondary before swap
  - Min. time as primary before swap
12. (Optional) If you enabled Automatic Failover and Automatic Restore, you can disable both or Automatic Restore, as follows:
  - Clear **Failover Automatically**, which also clears **Restore Automatically**.
  - Clear **Restore Automatically**, which disables Automatic Restore but retains Automatic Failover.
13. Click **Next**.  
The **Ready to Complete** page opens.
14. Click **Finish**.

#### Related Links

[Storage Center for Replication](#)

[Live Volume Options](#)

[Replication Options](#)


## Modify a Live Volume RDM Replication

You can modify the settings of an existing Live Volume RDM replication.

### Prerequisites

A Live Volume RDM replication must exist.

### Steps

1. Select the virtual machine with the RDM that is being replicated.
2. Select **Actions** → **Dell Storage Actions** → **Replications/Live Volume** → **Edit Settings/Convert**.  
The **Modify Replication/Live Volume** wizard starts.
3. Select the Live Volume to modify.
4. Click **Next**.  
The **Replication Options** page opens.
5. To change the replication type, select a type from the drop-down menu.  
 **NOTE:** If you choose to change the replication type from a replication to a Live Volume, a warning dialog box opens. You must select the checkbox to confirm that you want to make the conversion, and then click **OK**.
6. Modify the other replication settings as needed.
7. Click **Next**. If you did not choose to convert from a Live Volume to a replication, the **Live Volumes Settings** page opens. Set the values for the Live Volume.
8. (Optional) If you enabled Automatic Failover and Automatic Restore, you can disable both or Automatic Restore, as follows:
  - Clear **Failover Automatically**, which also clears **Restore Automatically**.
  - Clear **Restore Automatically**, which disables Automatic Restore but retains Automatic Failover.
9. Click **Next**.  
The **Ready to Complete** page opens.
10. Set the values for the Live Volume.
11. Click **Finish**.

### Related Links

- [Select Replications](#)
- [Replication Options](#)
- [Live Volume Options](#)

## Remove a Live Volume Datastore or RDM Replication

The vSphere Web Client Plugin provides the ability to remove a Live Volume datastore and RDM replication.

### Removing a Live Volume Datastore

Remove a Live Volume datastore after the replication is no longer needed.

### Prerequisites

A datastore replication must exist.

### Steps

1. Select the datastore for which you want to remove a replication.
2. Select **Actions** → **All Dell Storage Actions** → **Replications/Live Volume** → **Remove**.  
The **Remove Replication/Live Volume** wizard starts.

3. Select the replications to remove.
4. Click **Next**.  
The **Remove Options** page opens.
5. Specify removal options for the replications.
6. Click **Next**.  
The **Ready to Complete** page opens.
7. Click **Finish**.

#### Related Links

[Replication Delete Options](#)

### **Remove a Live Volume RDM Replication**

Remove a Live Volume RDM replication after the replication is no longer needed.

#### Prerequisites

An RDM replication must exist.

#### Steps

1. Select the virtual machine with the RDM from which you want to remove a replication.
2. Select **Actions** → **All Dell Storage Actions** → **Replications/Live Volume** → **Remove**.  
The **Remove Replication/Live Volume** wizard starts.
3. Select the replications to remove.
4. Click **Next**.  
The **Remove Options** page opens.
5. Specify removal options for the replications.
6. Click **Next**.  
The **Ready to Complete** page opens.
7. Click **Finish**.

#### Related Links

[Replication Delete Options](#)

[Select Replications](#)

### **Configure Live Volume Automatic Failover and Restore**

You can enable Storage Center Automatic Failover and Automatic Restore from the vSphere Web Client Plugin on Live Volumes that meet certain criteria. When Automatic Failover is enabled, the secondary Live Volume will automatically be promoted to primary in the event of a failure. After the primary Live Volume comes back online, Automatic Restore, configured by default, restores the Live Volume relationship. For more information about Live Volume Automatic Repair and Automatic Restore, see the *Dell Storage Manager Administrator's Guide*.

### **Enabling Live Volume Automatic Failover and Restore**

#### Prerequisites

- Configure a datastore or RDM Live Volume with the following attributes:
  - Synchronous
  - High Availability

- Protected

 **NOTE:** If you have not configured a Live Volume to the datastore, see [Add a Live Volume to a Datastore or RDM](#).

- Storage Center version 6.7 or later
- VMware server operating system
- Port 3033 enabled for inbound traffic

### Steps

1. Select a datastore or RDM in the inventory for which you have configured Live Volume synchronous replication with high availability.  
The vSphere Web Client Plugin wizard loads information for the selected datastore.
2. Click the **Monitor** tab.
3. Select **Dell Storage** from the menu bar.  
The datastore and associated volume are shown in the table. The most recently selected tab for this datastore is displayed; otherwise the **General** tab is selected by default.
4. Click the **Replications/Live Volume** tab.  
The vSphere Web Client Plugin shows the details of the configured replication. Under **Details**, the field for **Failover Automatically** indicates **No**.
5. Select **Actions** → **All Dell Storage Actions** → **Replication/Live Volume** → **Edit Settings/Convert**.  
The **Modify Replication/Live Volume** wizard starts.
6. Click **Next**.  
The replication options are loaded and the wizard displays a screen from which you can set replication options. Verify that the **Replication Type** field shows **Live Volume, Synchronous - High Availability**. If not, change the replication type by selecting from the drop-down menu or selecting **Cancel** and choosing a different datastore with the correct replication type.
7. Click **Next**.  
The wizard displays a screen from which you can set Live Volume options.
8. Under **Live Volume Settings**, select **Failover Automatically**. By default, **Restore Automatically** is also selected. You can deselect this option when you modify a Live Volume datastore or RDM replication. For more information, see [Modify a Live Volume Datastore or RDM Replication](#).
9. Click **Next**.  
**Failover Automatically** and, optionally, **Restore Automatically** should indicate **Yes**.
10. Click **Finish** to accept the configuration and exit the wizard.  
The summary page is displayed again, and the **Details** table on the **Replications/Live Volumes** tab now indicates **Failover Automatically** and **Repair Automatically** as **Yes**.

[Figure 14. Live Volume With Automatic Failover Enabled](#) shows a Live Volume with automatic failover and automatic repair enabled.

The screenshot displays the Dell Storage Manager interface for a volume named 'testingReplLiveVolDS'. The 'Monitor' tab is active, showing a table of storage systems and a 'Replications / Live Volumes' section. The replication is configured as a 'Live Volume, Synchronous - High Availability' with a state of 'Up'. The 'Details' section shows a primary storage center (SN 65231) and a secondary storage center (Storage Center VM Apps (64914)). The volume size is 20 GB. The 'Replicate Active Replay' is set to 'Yes', and 'Failover Automatically' is also set to 'Yes'.

Dataverse name	Volume name	Type	Size	Storage System(SAUNAS)
testingReplLiveVolDS	LV of testingReplLiveVolDS	VMFS	20 GB	SN 65231  Storage Cente

Replication Type	State	Destination Storage Center	Synced	Remaining
Live Volume, Synchronous - High Availability	Up	Storage Center VM Apps (64914_64915	100%	0 MB

	Primary	Secondary
Storage Center	SN 65231  Storage Center 65231	Storage Center VM Apps (64914_64915
Volume	LV of testingReplLiveVolDS	testingReplLiveVolDS
Volume Size	20 GB	20 GB
Peer State	Connected	Connected
QoS Definition	ajqos (1 Gbps)	QoS

- Replicate Active Replay: **Yes**
- Deduplicate: **No**
- Replicate to Lowest Tier: **No**
- Sync Status: **Current**
- Auto-Swap Primary: **No**
- Failover Automatically: **Yes**
- Repair Automatically: **Yes**

Figure 14. Live Volume With Automatic Failover Enabled

# Working With Virtual Machines


The Dell Storage vSphere Web Client Plugin provides the ability to provision virtual machines and recover virtual machine data from a Replay.

The following options are available for provisioning virtual machines:

- Create a virtual machine
- Clone a virtual machine by creating a thin copy of a virtual machine

## Creating Virtual Machines

The vSphere Web Client Plugin allows you to provision (create) virtual machines using Dell storage.

 **NOTE:** When the Provision Virtual Machine wizard is launched from a VM template and the template is backed by a VMFS datastore, the **Clone VM** option is disabled and only the **Create VM** option remains enabled. The Clone function is supported only for VMs or templates backed by NFS datastores.

## Deploy Virtual Machines to an Existing VMFS or NFS Datastore

Use the Provision Virtual Machines wizard to create one or more virtual machines to an existing VMFS or NFS datastore.

### Prerequisites

This option assumes that you have already created a virtual machine template from which to deploy new virtual machines. For information about creating or updating a virtual machine template, refer to the vSphere help topics on virtual machine templates.

### Steps

1. Select an object that can be the parent of a virtual machine:
  - Datacenter
  - Host
  - Cluster
2. Select **Actions** → **All Dell Storage Actions** → **Provision Virtual Machines**.  
The **Provision Virtual Machines** wizard starts.
3. Select **Create Virtual Machine**.  
If you selected a datacenter in step 1, the **Host/Cluster** page opens. If you selected a host or cluster in step 1, the **Template Selection** page opens.
4. If necessary, select the host or cluster on which to run virtual machines, and click **Next**.  
The **Template Selection** page opens.
5. Select a virtual machine template, and click **Next**.  
The **Name and Location** page opens.

6. Specify a base name for the VMs, the number of VMs to create, and an inventory location for new virtual machines, and click **Next**.
7. If necessary, specify the resource pool within which to run virtual machines, and click **Next**.
8. Select **Lookup for Existing Datastore** and click **Next**.  
The **Datastore Lookup** page opens.
9. Select the datastore in which to store virtual machine files, and click **Next**.
10. Customize the settings for each virtual machine, click **Update**, and click **Next**.  
The **Ready to Complete** page opens.
11. Click **Finish**.

#### Related Links


- [Customization](#)
- [Datastore Lookup](#)
- [Datastore Options](#)
- [Name and Location](#)
- [Template Selection](#)

## Deploy Virtual Machines to a New VMFS Datastore

Use the Create Virtual Machines wizard to deploy one or more virtual machines to a new datastore.

#### Prerequisites

This option assumes that you have already created a virtual machine template from which to deploy new virtual machines. For information about creating or updating a virtual machine template, refer to the vSphere help topics on virtual machine templates.

 **NOTE:** The options that appear when deploying a virtual machine change depending on the volume preferences of the Enterprise Manager user defined in the vSphere Web Client Plugin.

#### Steps

1. Select an object that can be the parent of a virtual machine:
  - Datacenter
  - Host
  - Cluster
2. Select **Actions** → **All Dell Storage Actions** → **Provision Virtual Machines**.  
The **Provision Virtual Machines** wizard starts and the **Select Operation** page opens.
3. Select **Create Virtual Machine**.  
If you selected a datacenter in step 1, the **Host/Cluster** page opens. If you selected a host or cluster in step 1, the **Template Selection** page opens.
4. If the **Host/Cluster** page opens, select the host or cluster on which to run the virtual machines, and click **Next**.  
The **Template Selection** page opens.
5. Select a virtual machine template from the list, and click **Next**.  
The **Name and Location** page opens.
6. Specify a base name for the VMs, the number of VMs to create, and an inventory location for the new virtual machines, and click **Next**.
7. If necessary, specify the resource pool within which to run the virtual machines, and click **Next**.  
The **Select Datastore Options** page opens.
8. Select **Create VMFS Datastore**, and click **Next**.

- The **Storage Center** page opens.
9. Select the Storage Center for volume creation, and click **Next**  
The **Create Storage Volume** page opens.
  10. Type the name and size for the new volume, select the volume folder, and click **Next**
  11. Select the following steps that pertain to your environment. The steps that apply depend on the user-preferences settings of the Storage Center user in Enterprise Manager.
    - a. Select the pagepool to use for creating the volume.
    - b. Select the storage options for this volume.
      - Select a Storage Profile for the volume. Dell recommends using the Recommended (All Tiers) profile for most volumes.
      - If your storage system contains multiple disk folders, select a Disk Folder from the drop-down menu.

Click **Next**.

    - c. Select a Replay Profile for the volume, and click **Next**.
    - d. Specify the LUN for mapping the volume, and click **Next**.
    - e. Select the file system version, and click **Next**.  
If the file system version is VMFS-3, select the maximum file size and block size for the file system.
    - f. Click **Next**.  
The **Datastore Properties** page opens.
    - g. Verify the name and inventory location for the datastore, and click **Next**.  
The **Customization** page opens.
  12. (Optional) Select **Create Replication/Live Volume** if you want to replicate the volume data to a second Storage Center and allow both Storage Centers to process I/O requests for the volume. For information, see [Live Volume Operations](#).
  13. (Optional) Select **Replication Options** if you want to replicate a datastore. For information, see [Replication Options](#).
  14. Customize the settings for each virtual machine, click **Update**, and click **Next**.  
The **Ready to Complete** page opens.
  15. Click **Finish**.

#### Related Links


[Customization](#)  
[Datastore Options](#)  
[Datastore Properties](#)  
[File System Version](#)  
[Mapping LUN](#)  
[Name and Location](#)  
[Pagepool Selection](#)  
[Replay Profile](#)  
[Storage Center](#)  
[Storage Profile](#)  
[Template Selection](#)  
[Volume](#)

## Create Virtual Machines to an NFS Datastore Using an Existing NFS Export

Use the Provision Virtual Machines wizard to create (deploy) one or more virtual machines to an NFS datastore using an existing NFS export.

### Prerequisites

This option assumes that you have already created a virtual machine template from which to deploy the new virtual machines. For information about creating or updating a virtual machine template, refer to the vSphere help topics on virtual machine templates.

 **NOTE:** The options that appear when deploying a virtual machine change depending on the volume preferences of the Enterprise Manager user defined in the vSphere Web Client Plugin.

### Steps

1. Select an object that can be the parent of a virtual machine:
  - Datacenter
  - Host
  - Cluster
2. Select **Actions** → **All Dell Storage Actions** → **Provision Virtual Machines**.  
The **Provision Virtual Machines** wizard starts.
3. Select **Create Virtual Machine**.  
If you selected a datacenter in step 1, the **Host/Cluster** page opens. If you selected a host or cluster in step 1, the **Template Selection** page opens.
4. If the **Host/Cluster** page opens, select the host or cluster on which to run the virtual machines, and click **Next**.  
The **Template Selection** page opens.
5. Select a virtual machine template from the list, and click **Next**.  
The **Name and Location** page opens.
6. Specify a base name for the VMs, the number of VMs to create, and an inventory location for the new virtual machines, and click **Next**.
7. If necessary, specify the resource pool within which to run the virtual machines, and click **Next**.  
The **Select Datastore Options** page opens.
8. Select **Create NFS Datastore**, and click **Next**.  
The **Select FluidFS Cluster** page opens.
9. Select a FluidFS cluster from the list, and click **Next**.  
The **Select Action Type** page opens.
10. Select **Map an Existing NFS Datastore**, and click **Next**.
11. Select an NFS export from the list of available NFS exports.
12. Type a value in the **FluidFS VIP or DNS Name** field.
13. Click **Next**.  
The **Customization** page opens.
14. Customize the settings for each virtual machine, click **Update**, and click **Next**.  
The **Ready to Complete** page appears.
15. Click **Finish**.

## Related Links


- [Add an NFS Datastore Using an Existing NFS Export Customization](#)
- [Datastore Options](#)
- [Datastore Properties](#)
- [Name and Location](#)
- [NFS Exports](#)
- [Template Selection](#)
- [Volume](#)

## Create Virtual Machines By Creating a New NFS Export

Use the Provision Virtual Machines wizard to deploy one or more virtual machines to an NFS datastore.

### Prerequisites

This option assumes that you have already created a virtual machine template from which to create (deploy) new virtual machines. For information about creating or updating a virtual machine template, refer to the vSphere help topics on virtual machine templates.

 **NOTE:** The options that appear when deploying a virtual machine change depending on the volume preferences of the Enterprise Manager user defined in the vSphere Web Client Plugin.

### Steps

1. Select an object that can be the parent of a virtual machine:
  - Datacenter
  - Host
  - Cluster
2. Select **Actions** → **All Dell Storage Actions** → **Provision Virtual Machines**.  
The **Provision Virtual Machines** wizard starts.
3. Select **Create Virtual Machine**.  
If you selected a datacenter in step 1, the **Host/Cluster** page opens. If you selected a host or cluster in step 1, the **Template Selection** page opens.
4. If the **Host/Cluster** page opens, select the host or cluster on which to run the virtual machines, and click **Next**.  
The **Template Selection** page opens.
5. Select a virtual machine template from the list, and click **Next**.  
The **Name and Location** page opens.
6. Specify a base name for the VMs, the number of VMs to create, and an inventory location for the new virtual machines, and click **Next**.
7. If necessary, specify the resource pool within which to run the virtual machines, and click **Next**.  
The **Select Datastore Options** page opens.
8. Select **Create NFS Datastore**, and click **Next**.  
The **Datastore Properties** page opens.
9. Type the name for the new datastore, select the volume folder under Inventory Location, and click **Next**.  
The **NFS Export** page opens.
10. Select **Create a new volume** and click **Next**.
11. Type a value for size and select the unit of measurement. Click **Create a New NAS Volume Folder** then type a name in the Volume Folder field.

12. Type a value in the **FluidFS Cluster VIP or DNS Name** field and click **Next**.  
The **Customization** page opens.
13. Customize the settings for each virtual machine, click **Update**, and click **Next**.  
The **Ready to Complete** page opens.
14. Click **Finish**.

#### Related Links

[Add an NFS Datastore Using an Existing NFS Export Customization](#)  
[Datastore Options](#)  
[Datastore Properties Name and Location](#)  
[NFS Exports](#)  
[Template Selection](#)  
[Volume](#)

## Clone a Virtual Machine

The Provision Virtual Machine wizard allows you to clone a virtual machine to create a thin copy of the existing virtual machine.


#### Prerequisites

 **NOTE:** This option applies only to VMs or VM templates on an NFS datastore.


The Clone Virtual Machine action is supported from a virtual machine template or a virtual machine that is in the Power Off state.

#### Steps

1. Select an object that can be the parent of a virtual machine:
  - Datacenter
  - Host
  - Cluster
2. Select **Actions** → **All Dell Storage Actions** → **Provision Virtual Machines**.  
The **Provision Virtual Machines** wizard starts.
3. Select **Clone Virtual Machine**.  
If you selected a datacenter in step 1, the **Host/Cluster** page opens. If you selected a host or cluster in step 1, the **Template Selection** page opens.
4. If the **Host/Cluster** page opens, select the host or cluster on which to run the virtual machines, and click **Next**.  
The **Template Selection** page opens.
5. Choose one of the following options:
  - **Select a Virtual Machine template:** Select a predefined virtual machine template to clone.
  - **Select Virtual Machine:** Select a specific machine to clone.

 **NOTE:** An error message is displayed if you select a VM that is in the Powered On state or a VM that resides on a VMFS datastore.

Click **Next**. The **Name and Location** page opens.

6. Specify a base name for the VMs, the number of VMs to create, and an inventory location for the new virtual machines.
7. If you want the virtual machine to be powered on, select the checkbox **Power on virtual machine after cloning**.
8. If necessary, specify the resource pool within which to run the virtual machines, and click **Next**.  
The **Customization** page opens.
9. (Optional) Select **Use Customization Spec**.  
The page then displays a list of customization specs that have been defined previously. Select from the list and click **Next**. The **Host/Cluster (Destination)** page opens.  
 **NOTE:** Use the Customization Specification Manager in vSphere to create and manage customization specs.
10. Select the destination host or cluster on which to deploy the virtual machine clone, and click **Next**.  
The **Datastore** page opens.
11. Select the datastore to store the virtual machine files and click **Next**.  
The **Ready to Complete** page opens.
12. Click **Finish**.

#### Related Links

- [Host/Cluster Name and Location](#)
- [Datastore Selection for Clone Virtual Machine](#)
- [Template Selection - Clone VM](#)
- [Customization for Clone VM](#)

## Recovering a Virtual Machine From a Replay

The vSphere Web Client Plugin allows you to recover virtual machine data from a Replay of a VMFS datastore.

### Recovering Virtual Machine Data From a Replay

Use the Storage Center Replay Recovery wizard to recover virtual machine data from a Replay of a VMFS datastore.

#### Prerequisites

This option assumes that at least one Replay of the virtual machine exists.

#### Steps

1. Select a virtual machine.
2. Select **Actions** → **All Dell Storage Actions** → **Replay Actions** → **Recover VM Data from Replay**.  
The **Storage Center Replay Recovery Wizard** starts.
3. Select one or more Replays from which you want to recover data, and click **Next**.  
The **VM Selection** page opens.
4. Select the virtual machine that is used to access the Replay data, and click **Next**.  
The **Ready to Complete** page opens.
5. Click **Finish**.

**Related Links**

[Replication Delete Options](#)

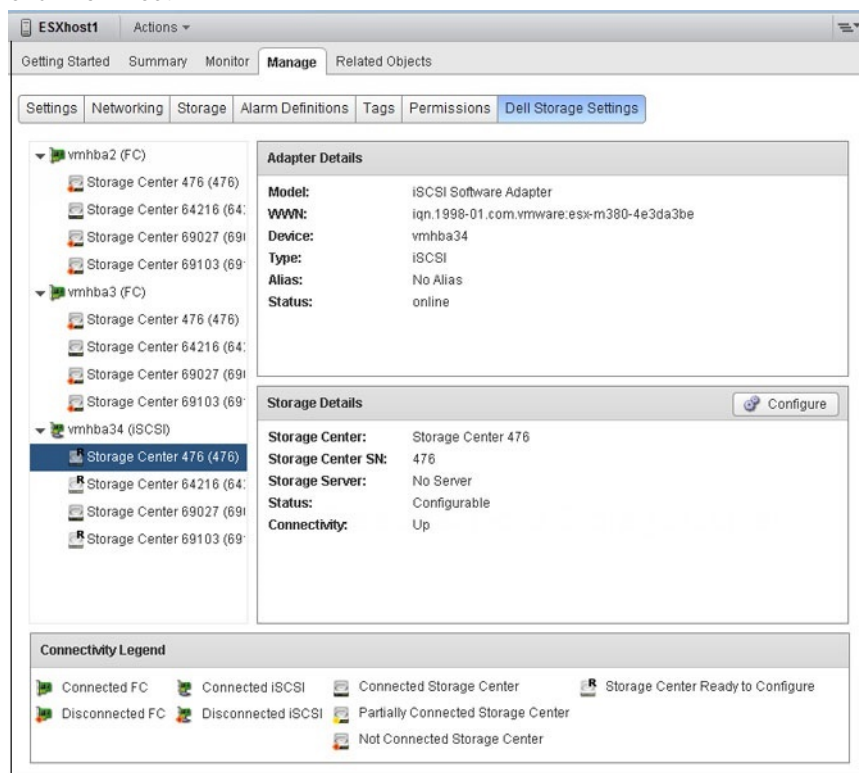
[VM Selection](#)

# Viewing Dell Storage Information

The Dell Storage vSphere Web Client Plugin enables you to display information about Dell storage including HBA to Storage Center connectivity, datastore information, and performance charts.

## Viewing the Dell Settings for a Host









Use the Dell Settings tab to display information about the Fibre Channel and iSCSI connections between the ESXi host and the Storage Center. The **Dell Storage Settings** page is accessible from the **Manage** tab of an ESXi host.



**Figure 15. Dell Storage Settings for a Host**

The left pane displays Fibre Channel and iSCSI host bus adapters (HBAs) on the ESXi host and Storage Center connections. The Storage Center icons indicate whether the Storage Center is connected, partially connected, not connected, or ready to be configured.

## Connectivity Legend

Icon	Label	Description
	Connected FC	A Fibre Channel connection between the HBA and Storage Center exists.
	Disconnected FC	A Fibre Channel connection between the HBA and Storage Center does not exist.
	Connected iSCSI	An iSCSI connection between the HBA and Storage Center exists.
	Disconnected iSCSI	An iSCSI connection between the HBA and Storage Center does not exist.
	Connected Storage Center	The Storage Center is connected to the ESXi host.
	Partially Connected Storage Center	The Storage Center is partially connected to the ESXi host.
	Not Connected Storage Center	The Storage Center is not connected to the ESXi host.
	Storage Center Ready to Configure	The Storage Center is ready to be configured to connect to the ESXi host.

Select a Storage Center connection to display configuration information for the HBA and Storage Center.


## Configuring Storage Center Connections

To configure a connection between an HBA and a Storage Center:

1. Select a Storage Center connection that is unconfigured and shows the **Storage Center Ready to Configure** icon.
2. Click **Configure**.


The configure operation performs the following tasks for a Fibre Channel connection:

- Creates a server definition on the Storage Center if it does not exist
- Creates corresponding HBA definitions associated with this server

 **NOTE:** If the host is in a cluster that does not exist on the Storage Center, the cluster definition is created on the Storage Center.

The configure operation performs the following tasks for an iSCSI connection:

- If necessary, enables the iSCSI software initiator on the ESXi host side
- Sets the ESXi host firewall rules to enable iSCSI connections
- Configures iSCSI software initiators with Storage Center IP (IQN) targets (the targets are added to a list of iSCSI static targets on the ESXi host)
- Creates a server definition on the Storage Center if it does not exist and creates a corresponding HBA definition associated with this server

 **NOTE:** If the host is in a cluster that does not exist on the Storage Center, the cluster definition is created on the Storage Center.

## Adapter Details

Label	Description
Model	Adapter model name
WWN	World Wide Name (WWN) for Fibre Channel and the iSCSI Qualified Name (IQN) for iSCSI
Device	Name of the adapter
Type	Storage adapter type (FC or iSCSI)
Node Name	Fibre Channel node name
Alias	iSCSI alias name
Status	Status of the adapter

## Storage Details

Label	Description
Storage Center	Name of the Storage Center
Storage Center SN	Serial number of the Storage Center
Storage Server	Server to which the device is connected
Status	Configuration status of the Storage Center (Configured, Configurable, Not Visible)
Connectivity	Status of the Storage Center connection (Up, Down, or Not Connected)

## Using Dell Views

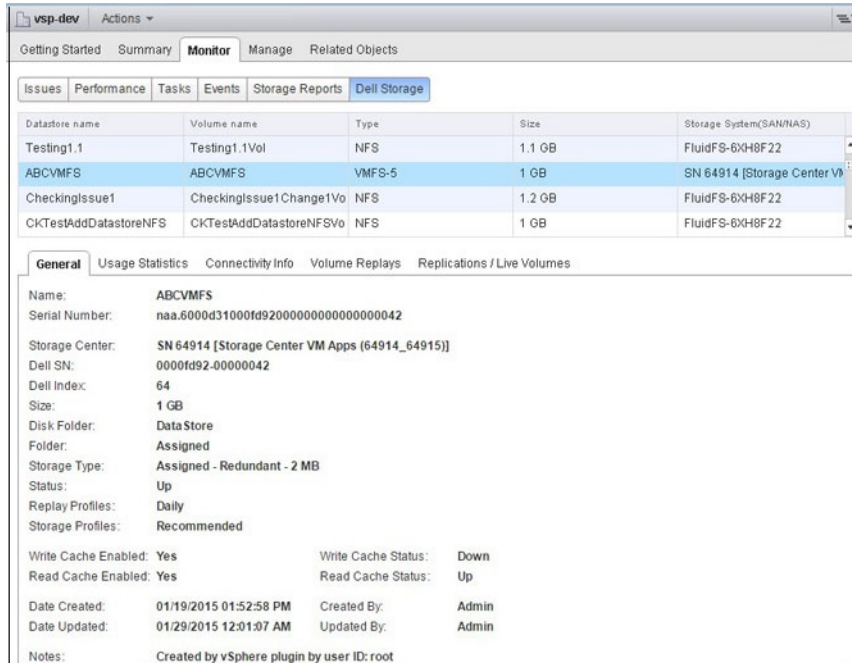
Use Dell Storage Views to display information about a Dell datastore or RDM. The **Dell Views** page is accessible from the **Monitor** tab of a host, cluster, datastore, datastore cluster, virtual machine, or datacenter.

### General Tab

The **General** tab displays general information about the selected Dell volume.

### Storage Center General Tab Information

[Figure 16. General Tab Information for a Storage Center](#) shows an example of information in the **General** tab for a Storage Center.



**Figure 16. General Tab Information for a Storage Center**

[Table 1. Information From the General Tab](#) describes the information in the **General** tab.

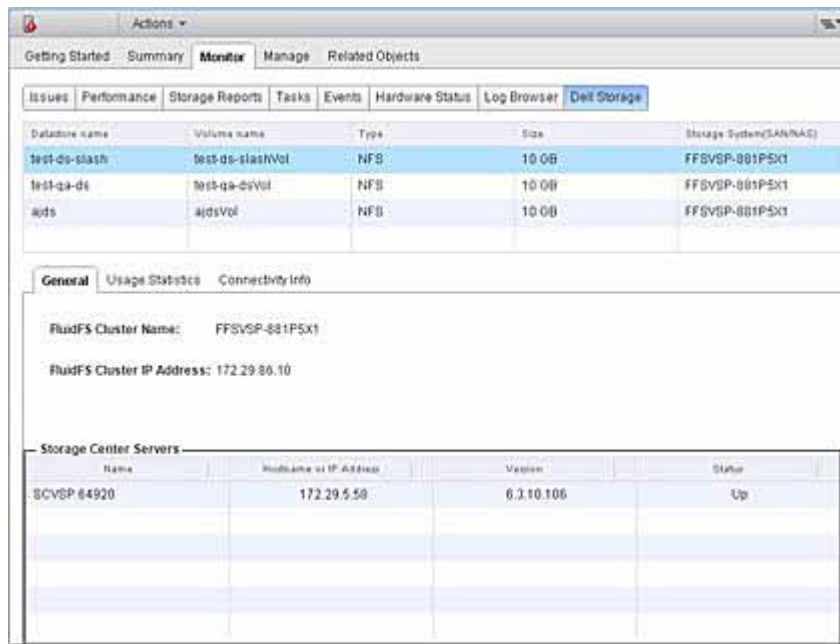
**Table 1. Information From the General Tab**

Label	Description
Name	Name of the volume
Serial Number	Volume serial number
Storage Center	Storage Center on which the volume resides
Dell SN	Dell serial number of the volume
Dell Index	Object index for the volume
Size	Size of the volume
Disk Folder	Storage Center disk folder location
Folder	Folder location of the volume
Storage Type	Storage type of the volume
Status	Current status for the volume, as well as the controller on which the volume is active
Replay Profiles	Replay Profiles applied to the volume
Storage Profiles	Storage Profiles for the volume
Write Cache Enabled	Indicates whether write cache is enabled for the volume
Read Cache Enabled	Indicates whether read cache is enabled for the volume

Label	Description
Read Cache	Indicates whether Read Cache is enabled or not (Yes or No)
Date Created	Date and time the volume was created
Created By	User that created the volume
Date Updated	Date the volume was last updated
Updated By	User that last updated the volume
Notes	Descriptive notes for the volume

### FluidFS General Tab Information

[Figure 17. Information in the General Tab for a FluidFS Cluster](#) shows an example of information in the **General** tab for a FluidFS cluster.



**Figure 17. Information in the General Tab for a FluidFS Cluster**

[Table 2. Information From the General Tab for a FluidFS Cluster](#) describes the information in the **General** tab for a FluidFS cluster.

**Table 2. Information From the General Tab for a FluidFS Cluster**

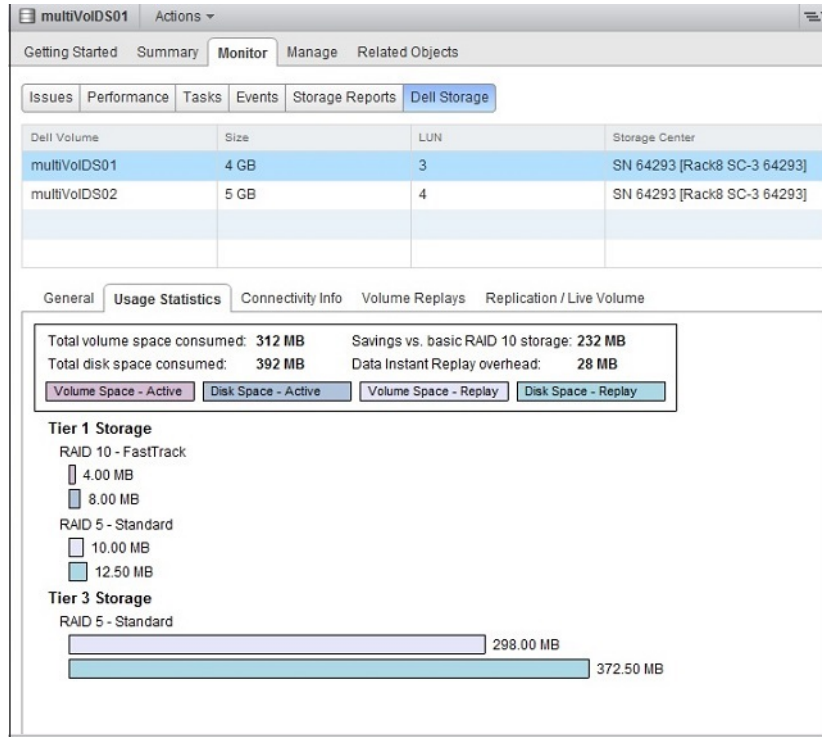
Label	Description
FluidFS Cluster Name	Name of the cluster
FluidFS Cluters IP Address	IP address of the cluster
Storage Center Servers	Information about any connected Storage Centers

## Usage Statistics Tab

The **Usage Statistics** tab displays usage information about the selected Dell volume.

### Storage Center Statistics Information

[Figure 18. Storage Center Statistics Information](#) shows an example of usage statistics for a Storage Center.



**Figure 18. Storage Center Statistics Information**

[Table 3. Usage Statistics for a Storage Center](#) describes the usage statistics for a Storage Center.

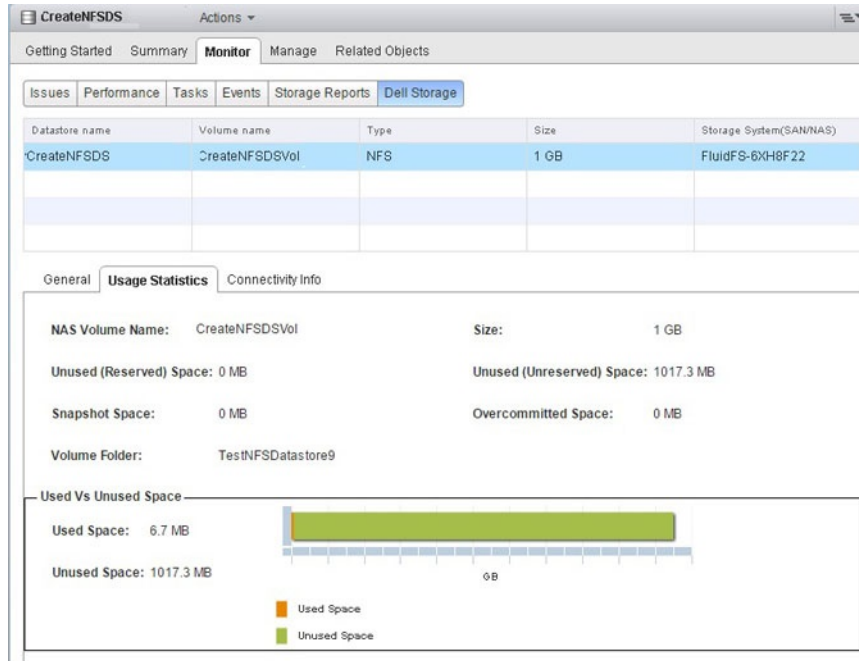
**Table 3. Usage Statistics for a Storage Center**

Label	Description
Total volume space consumed	Total space used on the volume
Savings vs. basic RAID 10 storage	Estimate of storage space saved using Dell Dynamic Block Architecture compared to basic RAID storage
Total disk space consumed	Total disk space consumed by the volume
Data Instant Replay overhead	Total space consumed by volume Replays
Tier 1 Storage	Active volume space, active disk space, and Replay space for the volume on tier 1

Label	Description
Tier 2 Storage	Active volume space, active disk space, and Replay space for the volume on tier 2
Tier 3 Storage	Active volume space, active disk space, and Replay space for the volume on tier 3

## FluidFS Statistics Information

[Figure 19. Usage Statistics for a FluidFS Cluster](#) shows an example of usage statistics for a FluidFS cluster.



**Figure 19. Usage Statistics for a FluidFS Cluster**

[Table 4. Fluid FS Usage Statistics Information](#) describes the FluidFS usage statistics information.

**Table 4. Fluid FS Usage Statistics Information**

Label	Description
NAS Volume Name	Name of the volume
Size	Size of the volume
Unused (Reserved) Space	A portion of a thin-provisioned NAS volume that is dedicated to the NAS volume (no other volumes can take the space). The amount of reserved space is specified by the storage administrator. Reserved space is used before unreserved space.
Unused (Unreserved) Space	Space allocated for the NAS pool that has not been used
Snapshot Space	Storage space occupied by snapshots of a NAS volume

Label	Description
Overcommitted Space	<p>A portion of a thin-provisioned NAS volume that is not available and not in use by the NAS volume. The amount of overcommitted space for a NAS volume is: (NAS volume size) – (NAS volume available space) – (NAS volume used space)</p> <p>With thin provisioning, storage space is consumed only when data is physically written to the NAS volume, not when the NAS volume is initially allocated. This provisioning means more storage space can be allocated to the NAS volumes than has been allocated in the NAS pool itself.</p>
Volume Folder	Name of the NAS volume folder
Used Vs Unused Space	Bar charts showing comparison of used space and unused space

## Connectivity Info Tab

The **Connectivity Info** tab displays connectivity information about the selected Dell volume.

[Figure 20. Connectivity Information for a Storage Center](#) shows the connectivity information for a Storage Center.

Datastore name	Volume name	Type	Size	Storage System(SAN/NAS)
11VMFSDatastoreFromCre	11VMFSDatastoreFromCre	VMFS-5	45 GB	SN 64914 [Storage Center]

Server Port	Storage Port	LUN	Type	Status
Ajith_Server (iqn.1998-01.c	5000D31000FD922B	17	ISCSI	Up

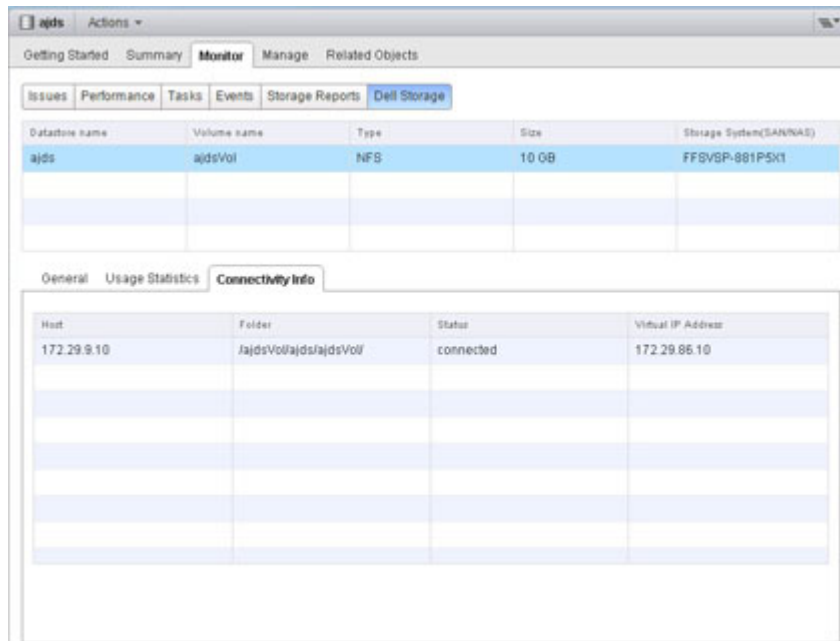
**Figure 20. Connectivity Information for a Storage Center**

[Table 5. Information From the Connectivity Info Tab](#) describes the information from the Connectivity tab.

**Table 5. Information From the Connectivity Info Tab**

Label	Description
Server Port	Server name and port
Storage Port	Storage port on the Storage Center
LUN	Mapping LUN
Type	Protocol (Fibre Channel or iSCSI)
Status	Status for the path

[Figure 21. Connectivity Information for a FluidFS Cluster](#) shows an example of connectivity information for a FluidFS cluster.



**Figure 21. Connectivity Information for a FluidFS Cluster**

[Table 6. Connectivity Information for a FluidFS Cluster](#) describes connectivity information for a FluidFS cluster.

**Table 6. Connectivity Information for a FluidFS Cluster**

Label	Description
Host	IP address of the host
Folder	Folder location of NFS datstores
Status	Status of host (connected, offline)
Virtual IP Address	IP address of virtual IP

## Volume Replays Tab

The **Volume Replays** tab displays information about the Replays for the selected Dell volume.

[Figure 22. Volume Replays Tab](#) shows an example of information on the Volume Replays tab.

Dell Volume	Size	LUN	Storage Center
multiVolDS01	4 GB	3	SN 64293 [Rack8 SC-3 64293]
multiVolDS02	5 GB	4	SN 64293 [Rack8 SC-3 64293]

Freeze Time	Expire Time	Replay Size	Description
Active		4 MB	
Wed Oct 15 20:01:08 GMT-0400	Wed Oct 22 20:01:08 GMT-0400	4 MB	Daily at 12:01 AM
Tue Oct 14 20:01:08 GMT-0400	Tue Oct 21 20:01:08 GMT-0400	4 MB	Daily at 12:01 AM
Mon Oct 13 20:01:08 GMT-0400	Mon Oct 20 20:01:08 GMT-0400	4 MB	Daily at 12:01 AM
Sun Oct 12 20:01:08 GMT-0400	Sun Oct 19 20:01:08 GMT-0400	4 MB	Daily at 12:01 AM
Sat Oct 11 20:01:08 GMT-0400	Sat Oct 18 20:01:08 GMT-0400	4 MB	Daily at 12:01 AM
Fri Oct 10 20:01:07 GMT-0400	Fri Oct 17 20:01:07 GMT-0400	4 MB	Daily at 12:01 AM
Thu Oct 9 20:01:08 GMT-0400	Thu Oct 16 20:01:08 GMT-0400	284 MB	Daily at 12:01 AM

**Figure 22. Volume Replays Tab**

[Table 7. Information From the Volume Replays Tab](#) describes the information in the Volume Replays tab.

**Table 7. Information From the Volume Replays Tab**

Label	Description
Freeze Time	Time at which the Replay was taken
Expire Time	Time at which the Replay automatically expires
Replay Size	Total space consumed by the Replay
Description	Name of the Replay Profile that automatically created the Replay for a description of the Replay

## Replications/Live Volume Tab

The **Replications/Live Volume** tab displays information about the replications for the selected Dell volume.

[Figure 23. Replications/Live Volume Tab](#) shows an example of information in the Replications/Live Volume tab.

Getting Started Summary <b>Monitor</b> Manage Related Objects				
Issues Performance Tasks Events Storage Reports <b>Dell Storage</b>				
Dell Volume	Size	LUN	Storage Center	
multiVolDS01	4 GB	3	SN 64293 [Rack8 SC-3 64293]	
multiVolDS02	5 GB	4	SN 64293 [Rack8 SC-3 64293]	
General Usage Statistics Connectivity Info Volume Replays <b>Replications / Live Volumes</b>				
Replication Type	State	Destination Storage Center	Synced	Remaining
Replication, Asynchronous	Up	Rack8 SC-2 64506	100%	0 MB
Replication, Asynchronous	Up	Rack8 SC-2 64506	100%	0 MB
<b>Details</b>				
	Source	Destination	Replicate Active Replay: <b>Yes</b>	
Storage Center	SN 64293 [Rack8 SC-3 64293]	Rack8 SC-2 64506	Deduplicate: <b>No</b>	
Volume	multiVolDS01	Repl of multiVolDS01	Replicate to Lowest Tier: <b>Yes</b>	
Volume Size	4 GB	4 GB	QoS Definition: <b>SC3_OOSNODE (1 Gbps)</b>	
<b>Replays</b>				
Replays at Source Volume		Size	Replays at Destination Volume	
Active		4 MB	Active	4 MB
Wed Oct 29 00:01:08 GMT-0400 2014		4 MB	Wed Oct 29 00:01:08 GMT-0400 2014	4 MB
Tue Oct 28 00:01:08 GMT-0400 2014		4 MB	Tue Oct 28 00:01:08 GMT-0400 2014	4 MB
Mon Oct 27 18:38:23 GMT-0400 2014		4 MB	Mon Oct 27 18:38:23 GMT-0400 2014	4 MB
Mon Oct 27 18:33:16 GMT-0400 2014		4 MB	Mon Oct 27 18:33:16 GMT-0400 2014	4 MB
Mon Oct 27 00:01:08 GMT-0400 2014		4 MB	Mon Oct 27 00:01:08 GMT-0400 2014	4 MB
Sun Oct 26 00:01:08 GMT-0400 2014		4 MB	Sun Oct 26 00:01:08 GMT-0400 2014	4 MB
Sat Oct 25 00:01:08 GMT-0400 2014		4 MB	Sat Oct 25 00:01:08 GMT-0400 2014	4 MB
Fri Oct 24 00:01:08 GMT-0400 2014		4 MB	Fri Oct 24 00:01:08 GMT-0400 2014	4 MB
Thu Oct 23 00:01:08 GMT-0400 2014		284 MB	Thu Oct 23 00:01:08 GMT-0400 2014	284 MB

Figure 23. Replications/Live Volume Tab

Table 8. Information on the Replications/Live Volume Tab describes the information in the Replications/Live Volume tab.

Table 8. Information on the Replications/Live Volume Tab

Label	Description
Replication Type	Name of the replication
State	Current state of the replication
Destination Storage Center	Destination (target) Storage Center for the replication
Synced	Percentage of data currently in sync
Remaining	Amount of data that is not yet synced
<b>For each replication:</b>	
Source Storage Center	Source Storage Center for the replication
Destination Storage Center	Destination (target) Storage Center for the replication
Source Volume	Name of the volume on the source Storage Center
Destination Volume	Name of the volume on the destination Storage Center

Label	Description
Source Volume Size	Capacity of the volume on the source Storage Center
Destination Volume Size	Capacity of the volume on the destination Storage Center
Replicate Active Replay	Indicates whether the <b>Replicate Active Replay</b> option is enabled
Deduplicate	Indicates whether the <b>Deduplication</b> option is enabled
Replicate to Lowest Tier	Preference (Yes or No) for replicating to lowest tier
QoS Definition	Name of the QoS definition for the replication

## Viewing Dell Charts

Use Dell Charts to display Storage Center performance information for an ESXi host. The Dell Charts view is accessible from the **Performance** page on the **Monitor** tab of a host, cluster, datastore, datastore cluster, virtual machine, or datacenter.

[Figure 24. Example of KB/sec Chart and IO/sec Chart for a Storage Center](#) shows KB/sec and IO/sec charts for a Storage Center.

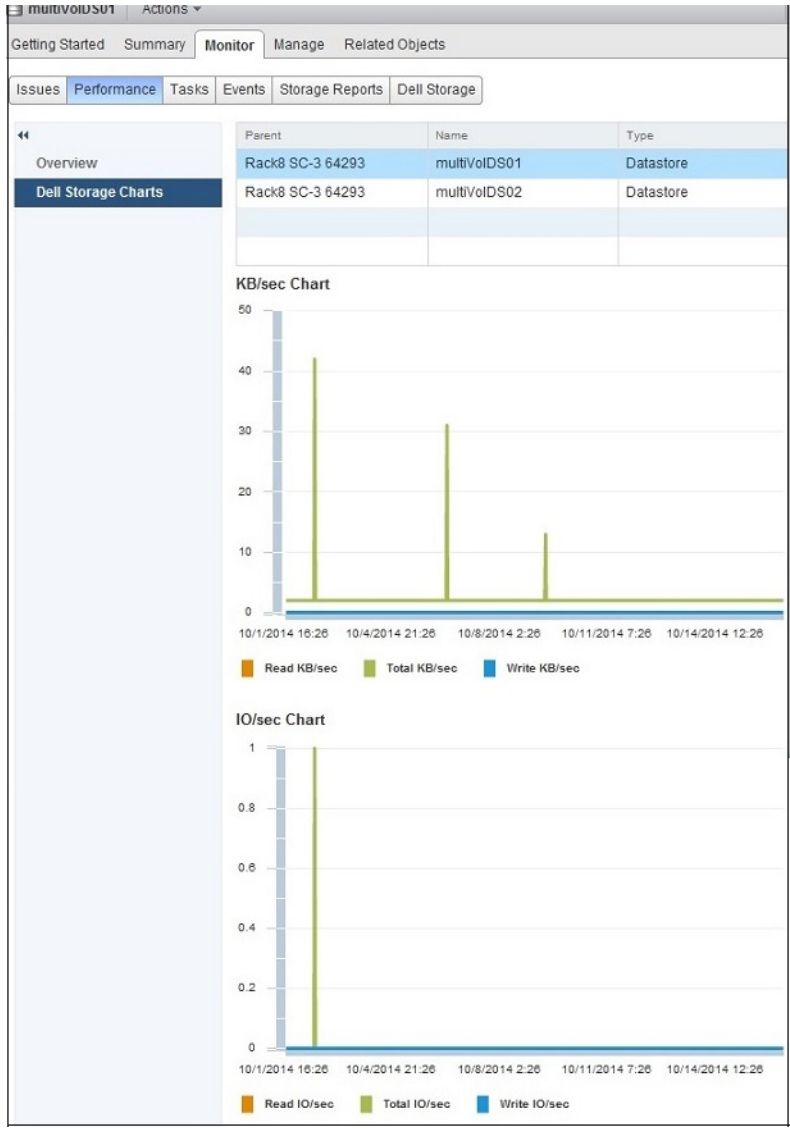


Figure 24. Example of KB/sec Chart and IO/sec Chart for a Storage Center

[Figure 25. Example of Latency Chart for a Storage Center](#) shows an example of a latency chart for a Storage Center.

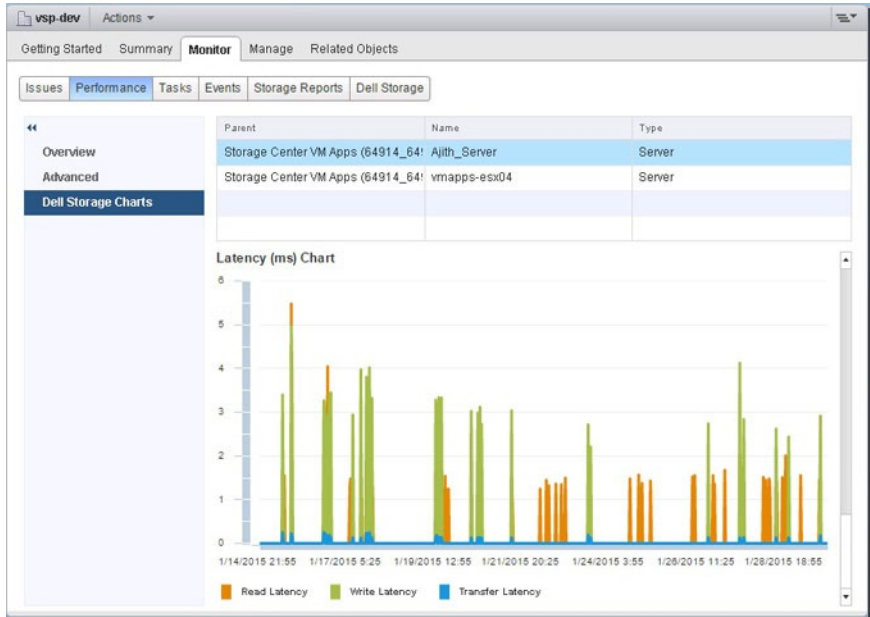


Figure 25. Example of Latency Chart for a Storage Center

For each Storage Center connected to the ESXi host, the header includes information described in [Table 9. Header Information for a Storage Center](#).

Table 9. Header Information for a Storage Center

Label	Description
Parent	Name of the Storage Center
Name	Name of the VMware object
Type	Type of object

### Charts

[Table 10. Charts Displaying Storage Center Performance Information](#) describes the type of Storage Center performance data displayed in charts.

Table 10. Charts Displaying Storage Center Performance Information

Label	Description
KB/sec Chart	<p><b>Read KB/sec</b> – Transfer rate of read operations in kilobytes per second</p> <p><b>Total KB/sec</b> – Combined transfer rate of read and write operations in kilobytes per second</p> <p><b>Write KB/sec</b> – Transfer rate of write operations in kilobytes per second</p>
IO/sec Chart	<p><b>Read IO/sec</b> – Transfer rate of read operations in I/O operations per second</p>

Label	Description
	<p><b>Total IO/sec</b> – Combined transfer rate of read and write operations in I/O operations per second</p> <p><b>Write IO/sec</b> – Transfer rate of write operations in I/O operations per second</p>
IO Size Chart	<b>Average IO Size</b> – Average size of I/O operations in kilobytes
Latency (ms) Chart	<p><b>Read Latency</b> – Latency of read operations in milliseconds</p> <p><b>Write Latency</b> – Latency of write operations in milliseconds</p> <p><b>Transfer Latency</b> – Latency of data transfer operations in milliseconds</p>

## Wizard Page Reference

The following sections describe the wizard pages of the Dell Storage vSphere Web Client Plugin.

### Add Storage (Storage Center)

Use the **Add Storage** page to select how you want to add storage.

**Select Action Type**

**Create New Dell Volume**  
Create a new volume on the Dell Storage Center

**Map Existing Dell Volume**  
Find a volume on the Dell Storage Center to be mapped to the host(s). This volume must be a VMFS formatted datastore volume.

Back Next Finish Cancel

- **Create New Dell Volume** – Select this option to create a new Dell volume to map.
- **Map Existing Dell Volume** – Select this option to select an existing Dell volume to map.

## Add Storage (NFS)

Use the **Add Storage** page to select how you want to add storage for an NFS datastore.

**Select Action Type**

**Create an New NFS Datastore**  
Create a New NFS Datastore on a NAS Volume

**Map an Existing NFS Export**  
Map an existing NFS export on FluidFS cluster as a VMware NFS Datastore

Back Next Finish Cancel

- **Create New NFS Datastore** – Select this option to create a new NFS datastore to map.
- **Map an Existing NFS Export** – Select this option to select an existing NFS datastore to map.

## Compatibility Mode

Use the **Compatibility Mode** page to select the access mode for the virtual disk.

The compatibility mode you choose will only apply to this virtual disk and will not affect any other disks using this LUN mapping.

**Compatibility**

**Physical**  
Allow the guest operating system to access the hardware directly. Taking a snapshot of this virtual machine will not include this disk.

**Virtual**  
Allow the virtual machine to use VMware snapshots and other advanced functionality.  
Warning: This may cause incompatibility with some Dell Compellent applications.

LUNs with capacity greater than 2 TB support physical mode only.

Back Next Finish Cancel

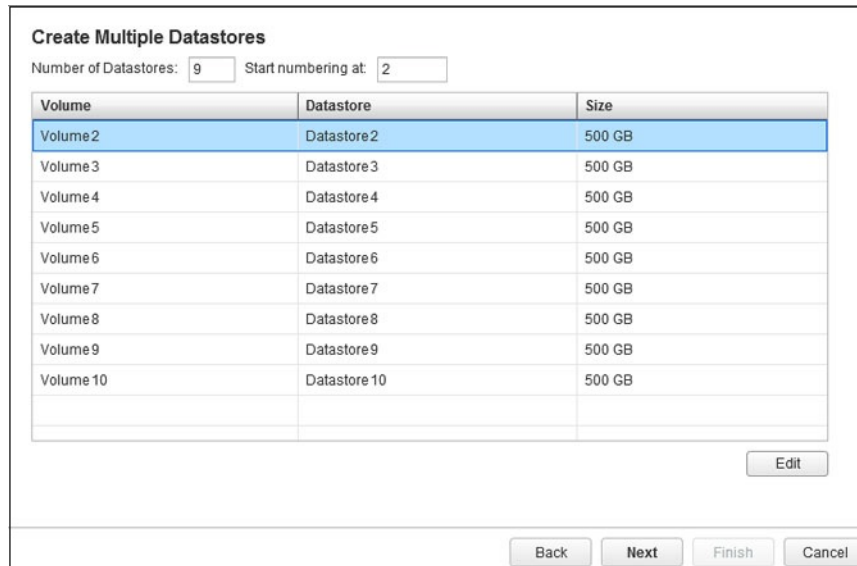
- **Physical** – Select this option to allow the guest operating system direct access to the hardware. VMware snapshots of the virtual machine will not include this disk.

 **NOTE:** vSphere 5 supports 64-TB pRDMs and individual file sizes of up to 64 TB.

- **Virtual** – Select this option to provide the guest operating system virtual access to the disk. As such, VMware snapshots and other advanced VMware features can be used. Note, however, that only providing virtual access might cause incompatibility issues with some Dell applications.

## Create Multiple Datastores

Use the **Create Multiple Datastores** page to specify the number and name of datastores to create.



**Create Multiple Datastores**

Number of Datastores:  Start numbering at:

Volume	Datastore	Size
Volume 2	Datastore 2	500 GB
Volume 3	Datastore 3	500 GB
Volume 4	Datastore 4	500 GB
Volume 5	Datastore 5	500 GB
Volume 6	Datastore 6	500 GB
Volume 7	Datastore 7	500 GB
Volume 8	Datastore 8	500 GB
Volume 9	Datastore 9	500 GB
Volume 10	Datastore 10	500 GB

- **Number of Datastores** – Type the number of datastores to create.
- **Start numbering at** – Type the number from which to start the numbering of volume names and datastore names.
- **Edit** – Select a datastore and click **Edit** to open the **Datastore Properties** dialog box, from which you can change the volume name, datastore name, and datastore size.

# Customization

Use the **Customization** page to customize settings for the virtual machines.

Customize virtual machine settings:

**Name**

New Virtual Machine1
New Virtual Machine2
New Virtual Machine3
New Virtual Machine4
New Virtual Machine5

**Virtual Machine Settings**

Name:

CPU:

Memory (MB):

Network:

- **Customize virtual machine settings** – Select the virtual machine for which you want to specify custom settings.
- **Name** – Type a name for the virtual machine.
- **CPU** – Select the number of CPUs for the virtual machine.
- **Memory** – Select the memory capacity for the virtual machine.
- **Network** – Select the virtual networks to which to connect this virtual machine.

# Customization For Clone Virtual Machine

Use the **Customization** page to customize settings for cloning virtual machines.

Use Customization Spec.

Select a customization spec from the list to continue.

Name	Type	Last Updated Time
TestCloneSpec	Windows	09/09/16 6:27:10 AM
Linux-Spec	Linux	09/15/16 4:54:5 AM

- **Use Customization Spec** – Select this checkbox to choose from predefined customization specifications.

## Datastore Lookup

Use the **Datastore Lookup** page to select the datastore in which to store the virtual machine files.

Select a datastore in which to store the virtual machine files

Name	Capacity	Provisioned	Free	Type
Datastore 1	458.25 GB	4.71 GB	453.54 GB	VMFS
Datastore 2	458.25 GB	4.71 GB	453.54 GB	VMFS
Datastore 3	458.25 GB	974.00 MB	457.30 GB	VMFS
Datastore 4	499.75 GB	43.74 GB	456.01 GB	VMFS
Datastore 5	499.75 GB	3.81 GB	495.94 GB	VMFS
Datastore 6	499.75 GB	974.00 MB	498.80 GB	VMFS

Back Next Finish Cancel

## Datastore Name

Use the **Datastore Name** page to specify the name and location for the recovered datastore.

Recovery Datastore

Datastore Name:

Use original datastore name: "[original name] (Replay time)"

Location:

- ▼ Datacenter
  - Storage Folder

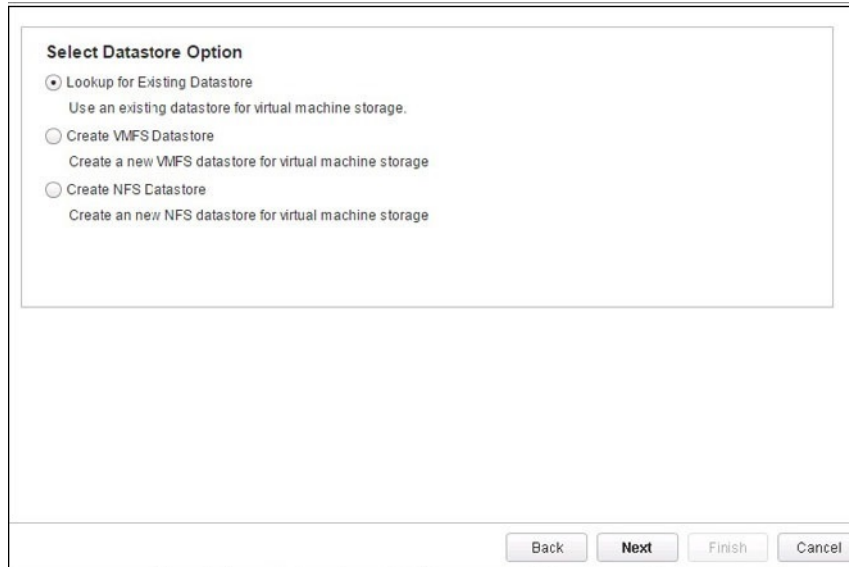
Back Next Finish Cancel

- **Datastore Name** – Type a name for the recovered datastore.
- **Use original datastore name** – Select this checkbox to use the original datastore name and the Replay time as the name of the recovered datastore.

- **Location** – Select the location for the recovered datastore.

## Datastore Options

When provisioning a virtual machine, use the **Datastore Options** page to select a datastore to hold the virtual machine.



The screenshot shows a wizard window titled "Select Datastore Option". It contains three radio button options:

- Lookup for Existing Datastore**  
Use an existing datastore for virtual machine storage.
- Create VMFS Datastore**  
Create a new VMFS datastore for virtual machine storage
- Create NFS Datastore**  
Create a new NFS datastore for virtual machine storage

At the bottom of the window, there are four buttons: "Back", "Next", "Finish", and "Cancel".

- **Lookup for Existing Datastore** – Select this option to use an existing datastore for the virtual machine.
- **Create VMFS Datastore** – Select this option to create a new datastore for the virtual machine. Creating a new datastore includes creating a new Dell volume and configuring a new datastore.
- **Create NFS Datastore** – Select this option to create a new NFS datastore for a virtual machine.

# Datastore Properties

Use the **Datastore Properties** page to specify properties for the datastore.

The screenshot shows a wizard window titled "Datastore Properties". It is divided into two main sections: "Datastore Properties" and "Inventory Location".

- Datastore Properties:** This section contains a text input field for "Datastore name" with the value "New Volume". Below it is a note: "Large files require large block size. The minimum disk space used by any file is equal to the file system block size". At the bottom of this section is a dropdown menu for "Maximum file size" with the selected option "256 GB, Block size: 1 MB".
- Inventory Location:** This section features a tree view with a single folder icon and the text "Datacenter", which is currently selected.

At the bottom of the wizard window, there are four buttons: "Back", "Next", "Finish", and "Cancel".

- **Datastore name** – Type a name for the datastore.
- **Maximum file size** – If the file system version is VMFS-3, select the file system block size option for the datastore. The block size affects the maximum file size the new datastore can support.
  - ✎ **NOTE:** VMFS-5 uses a unified 1-MB file block size. Therefore, the **Maximum file size** option is not displayed if the file system version is VMFS-5.
- **Inventory Location** – Select the location for the datastore.



- **Map Existing Raw Device Mapping to Hosts and Clusters** – Select this option to map an existing raw device mapping on this virtual machine to other hosts and/or clusters.

## Extend RDM Size

Use the **Expansion Size** page to specify a new, expanded size for an RDM of an existing volume.

Select the new size for datastore 'Volume'.

Original Size: 500.00 GB

Extend to:

Storage Size Type: GB

Back Next Finish Cancel

- **Original Size** – Displays the current size of the volume.
- **Extend to** – Type a new, resized value for the volume.
- **Storage Size Type** – Select a unit of measure (GB or TB).

## File System Version

Use the **File System Version** page to specify the version of the VMFS for the datastore.

File System Version

VMFS-5  
Select this option to enable additional capabilities, such as 2 TB+ support.

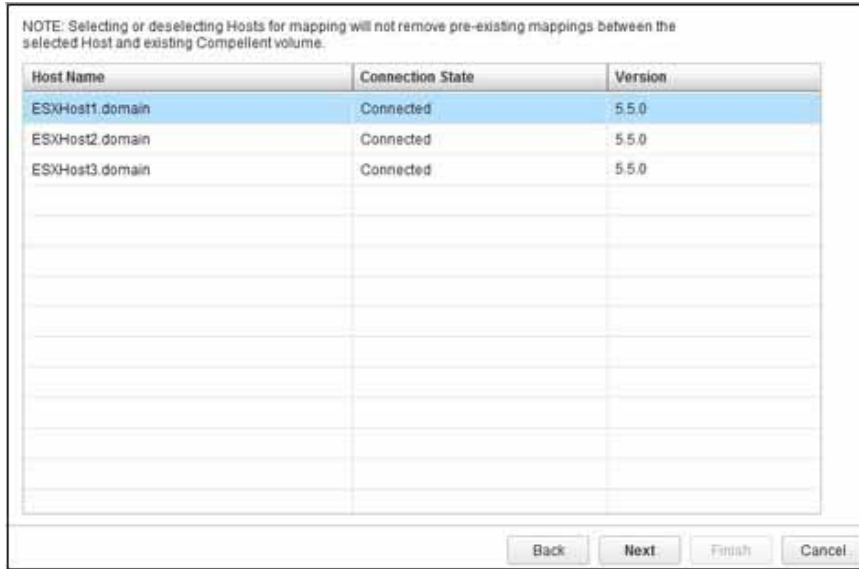
VMFS-3  
Select this option if the datastore will be accessed by legacy (pre-5.0) hosts.

Back Next Finish Cancel

- **VMFS-5** – Select this option to enable additional capabilities, such as support for a datastore that is larger than 2 TB.
- **VMFS-3** – Select this option if the datastore is accessed by legacy (pre-5.0) ESX hosts.

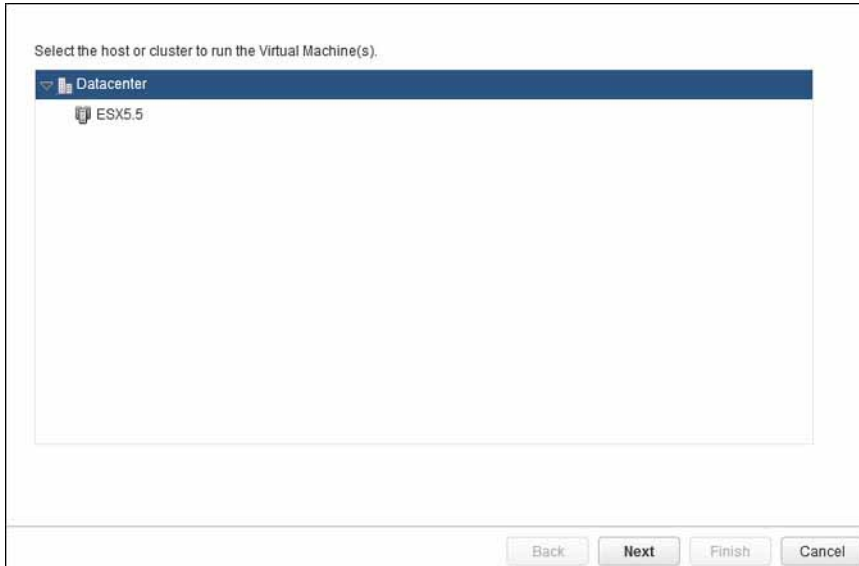
## Host Selection

Use the **Host Selection** page to select one or more hosts to which to map the raw storage.



## Host/Cluster

Use the **Host/Cluster** page to select a host or cluster on which to run the virtual machine.





# Live Volumes

Use the **Live Volumes** page to specify the values for Live Volume replication.

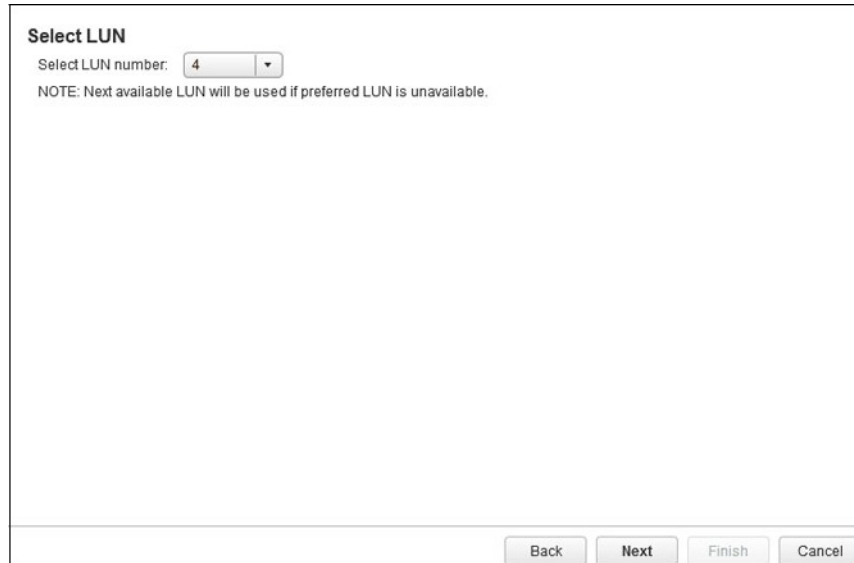
The screenshot shows a wizard window titled "Live Volume Settings". It contains the following elements:

- Secondary QoS Definition:** A dropdown menu with "QoS Node K" selected.
- Automatically Swap Primary Storage Center:** A checked checkbox.
- Advanced:** A section with three input fields:
  - Min. Data Written to Secondary before Swap:** A text box with "1" and a dropdown menu with "MB".
  - Min. % of I/O on Secondary before Swap:** A text box with "60" and a "%" symbol.
  - Min. Time as Primary before Swap:** A text box with "30" and the word "minutes".
- Live Volume Secondary Mapping:** A section with a tree view showing a folder icon and the text "Servers".
- Navigation Buttons:** "Back", "Next", "Finish", and "Cancel" buttons at the bottom right.

- **Secondary QoS Definition** – Select a secondary Quality of Service (QoS) definition for the Live Volume. For information about creating or modifying QoS definitions, see the *Dell Storage Manager Administrator's Guide*.
- **Automatically Swap Primary Storage Center** – Select this checkbox to set the values for automatic swapping, then click **Advanced**.
- **Min. Data Written to Secondary before Swap** – Specifies the minimum amount of data that must be written to the secondary volume before the roles can be swapped.
- **Min. % of I/O on Secondary before Swap** – Specifies the minimum percentage of I/O that must occur before the roles can be swapped.
- **Min. Time as Primary before Swap** – Specifies the number of minutes that must pass before the roles can be swapped.
- **Live Volume Secondary Mapping** – Select the location on the destination Storage Center for the Live Volume.

## Mapping LUN

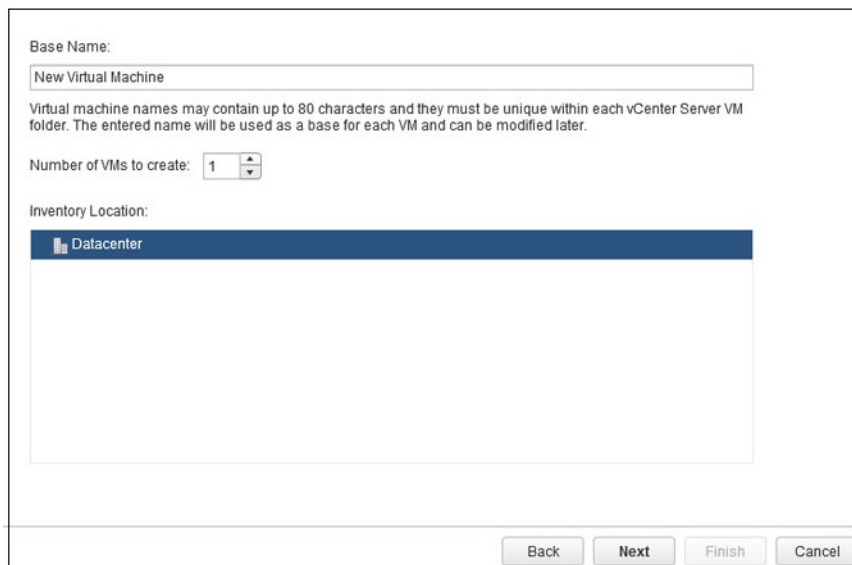
Use the **Mapping LUN** page to select the LUN to which to map the Dell volume. When creating multiple datastores, the assignment of LUNs starts at the specified LUN and increments using the available LUNs.



The screenshot shows a wizard window titled "Select LUN". At the top, it says "Select LUN number:" followed by a dropdown menu containing the number "4". Below this, a note reads: "NOTE: Next available LUN will be used if preferred LUN is unavailable." At the bottom of the window, there are four buttons: "Back", "Next", "Finish", and "Cancel".

## Name and Location

Use the **Name and Location** page to specify the name and location for the virtual machines.



The screenshot shows a wizard window titled "Name and Location". It has three main sections: "Base Name:" with a text input field containing "New Virtual Machine"; "Number of VMs to create:" with a spinner box set to "1"; and "Inventory Location:" with a list box containing "Datacenter". Below the list box is a large empty rectangular area. At the bottom of the window, there are four buttons: "Back", "Next", "Finish", and "Cancel".

- **Base Name** – Type a base name for the virtual machines to create.
- **Number of VMs to Create** – Specify the number of virtual machines to create.
- **Inventory Location** – Select the inventory location for the virtual machines.

# NFS Export


Use the **NFS Export** page to specify properties for a NAS datastore.

The screenshot shows a two-step wizard. The first step, 'NAS Volume', allows choosing between 'Create a new Volume' (selected) and 'Use Existing Volume'. It includes fields for 'Name' (testVol), 'Size' (3 GB), and 'Create New NAS Volume Folder' (selected) with a text box containing 'test'. The second step, 'Create NFS Export', includes 'NFS Export Folder Path' (test) and 'FluidFS VIP or DNS Name' (empty). Below the second step, example values are listed: 'E.g. dell-nas, dell-nas.it.com, 192.168.1.2 or FE81:0:0:0:2BB:DD:GH9A:4FQ2'. Navigation buttons 'Back', 'Next', 'Finish', and 'Cancel' are at the bottom.

- **Create a New Volume** – Select this option to create a new NAS volume.
- **Use Existing Volume** – When you select this option, the existing NAS volumes are shown. Select a volume from the list.
- **Name** – NAS datastore name specified on the previous step of the datastore provisioning wizard.
- **Size** – Type a number and select the unit of measurement from the drop-down menu.
- **Create New NAS Volume Folder** – Type a name for the new volume folder. By default, this field is filled in with the datastore name specified in the previous step.
- **Use Existing NAS Volume Folder** – When you select this option, the existing NAS volume folders are shown. Select a folder from the list.
- **NFS Export Folder Path** – A default folder path is preselected based on the NFS datastore name. You can type a different folder path.
- **FluidFS VIP or DNS Name** – Type either the IP address or the DNS name of the host to be used for the FluidFS VIP.

## Pagepool Selection

Use the **Pagepool Selection** page to select the pagepool to use when creating a volume.

 **NOTE:** The **Pagepool Selection** page opens only if the **Allow Storage Type Selection** user-preference setting is set for the Storage Center user in Enterprise Manager.

**Select Pagepool**  
Please select the pagepool to use for creating this volume.

Pagepool:

## Protocol Selection

Use the **Protocol Selection** page to select the connection protocol for the Dell volume.

**Mapping Protocol:**

**Fibre Channel**  
Only use Fibre Channel paths for mapping.

**iSCSI**  
Only use iSCSI paths for mapping.

**Any Available**  
Use any available paths between host and storage.

- **Fibre Channel** – Select this option to restrict mapping to Fibre Channel paths only.
- **iSCSI** – Select this option to restrict mapping to iSCSI paths only.
- **Any available** – Select this option to use any available path between the host and the storage.

## Replay Profile

Use the **Replay Profile** page to select one or more Replay Profiles to apply to the Dell volume. For information about Replay Profiles, see [Introduction to Dell Storage](#).

**Select Replay Profiles to be used for this volume**

Selected Replay Profiles	
<input checked="" type="checkbox"/>	Daily
<input checked="" type="checkbox"/>	Sample
<input type="checkbox"/>	
<input type="checkbox"/>	

Schedule	Expiration
Daily at 12:01 AM	1 week(s)

- **Select Replay Profiles** – Select one or more Replay Profiles to associate with the volume.
  - ✎ **NOTE:** To deselect a Replay Profile, press the Ctrl key and click the selected Replay Profile.
- **Schedule** – Displays the Replay schedule for the selected Replay Profile.

## Replay Properties

Use the **Replay Properties** page to specify properties for the Replay.

Replays expire after a set amount of time in order to limit the load on the Compellent system. Please enter the time after which you would like the created Replay to expire.

Expiration:

Never Expire

You may also enter a brief description to help identify this Replay later.

Description:

- **Expiration** – Specify the time after which you want the Replay to expire.
- **Never Expire** – Select this checkbox to prevent the Replay from expiring automatically. The Replay must be expired manually.
- **Description** – Type a description for the Replay.



## Replication Delete Options

Use the **Delete Options** page to select options for removing a replication destination volume and restore point.



**Remove Options**

- Recycle Destination Volume
- Delete Destination Volume
- Delete Restore Point

Back Next Finish Cancel

- **Recycle Destination Volume** – Select this checkbox if you want to move the destination volume to the Recycle Bin on the destination Storage Center.
- **Delete Destination Volume** – Select this checkbox if you do not want to retain the deleted destination volume in the Recycle Bin (not recommended).
- **CAUTION: If you delete the destination volume, you cannot recover the volume on the destination (target) Storage Center. The volume is permanently deleted.**
- **Delete Restore Point** – Select this checkbox if you want to delete the restore point for the replication.

# Replication Modification Options

Use the **Modification Options** page to select options for replicating a datastore.

**Modification Options**

Replicate Active Replay

Deduplication (optimizes copy of replay history - resource intensive)

STAND\_10GB\_QOS

Replicate Storage to Lowest Tier

Back Next Finish Cancel

- **Replicate Active Replay** – Select this checkbox to copy all writes from the active Replay area of the volume. Note that replicating active Replays can require significant bandwidth.
- **Deduplication** – Select this checkbox to copy only the changed portions of the Replay history on the source volume, rather than all data captured in each Replay.
- **QoS Definition** – Select a Quality of Service (QoS) definition for the replication. For information about creating or modifying QoS definitions, see the *Dell Storage Manager Administrator's Guide*.
- **Replicate Storage to Lowest Tier** – Select this checkbox to force all data written to the destination volume to the lowest storage tier configured for the volume.

# Replication Options

Use the **Replication Options** page to select options for replicating a datastore.

The screenshot shows a web interface for configuring replication options. It is divided into three main sections:

- Replication Type:** A dropdown menu currently set to "Replication, Asynchronous".
- Replication Settings:** Includes a "QoS Definition" dropdown set to "Naveen-1", and two checkboxes: "Replicate Active Replay" (unchecked) and "Deduplication (optimizes copy of Replay history - resource intensive)" (unchecked).
- Replication Target Location:** Features a "Disk Folder" dropdown menu with "10K" selected. Below it are two radio buttons: "Duplicate Source" (selected) and "Use Selected". A file explorer view shows a folder icon.

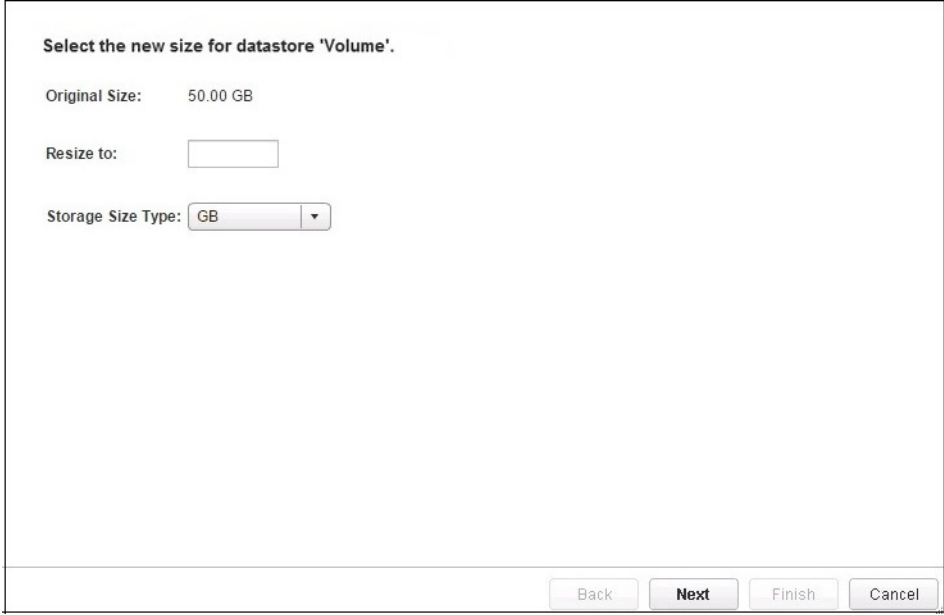
- **Replication Type** – Select one of the following types:
  - Replication, Asynchronous
  - Replication, Synchronous – High Availability
  - Replication, Synchronous – High Consistency
  - Live Volume, Asynchronous
  - Live Volume, Synchronous – High Availability
  - Live Volume, Synchronous – High Consistency

For information about these replication types, see the *Dell Storage Manager Administrator's Guide*.

- **Replication Settings** – Select among the following fields:
  - **QoS Definition** – Select a Quality of Service (QoS) definition for the replication. For information about creating or modifying QoS definitions, see the *Dell Storage Manager Administrator's Guide*.
  - **Replicate Active Replay** – Select this checkbox to copy all writes from the active Replay area of the volume. Note that replicating active Replays can require significant bandwidth.
  - **Deduplication** – Select this checkbox to copy only the changed portions of the Replay history on the source volume, rather than all data captured in each Replay.
- **Replication Target Location** – Select the location on the destination Storage Center for the replicated volume:
  - **Disk Folder** – If your storage system contains multiple disk folders, select a Disk Folder from the drop-down menu, then select either:
  - **Duplicate Source** – To duplicate the source folder
  - **Use Selected** – To use the selected disk folder

## Resize Datastore Storage

Use the **Resize Datastore Storage** page to specify a new, expanded size for an existing volume.



The screenshot shows a wizard window titled "Select the new size for datastore 'Volume'". It contains the following fields:

- Original Size:** 50.00 GB
- Resize to:** An empty text input field.
- Storage Size Type:** A dropdown menu currently set to "GB".

At the bottom right of the window, there are four buttons: "Back", "Next", "Finish", and "Cancel". The "Next" button is highlighted.

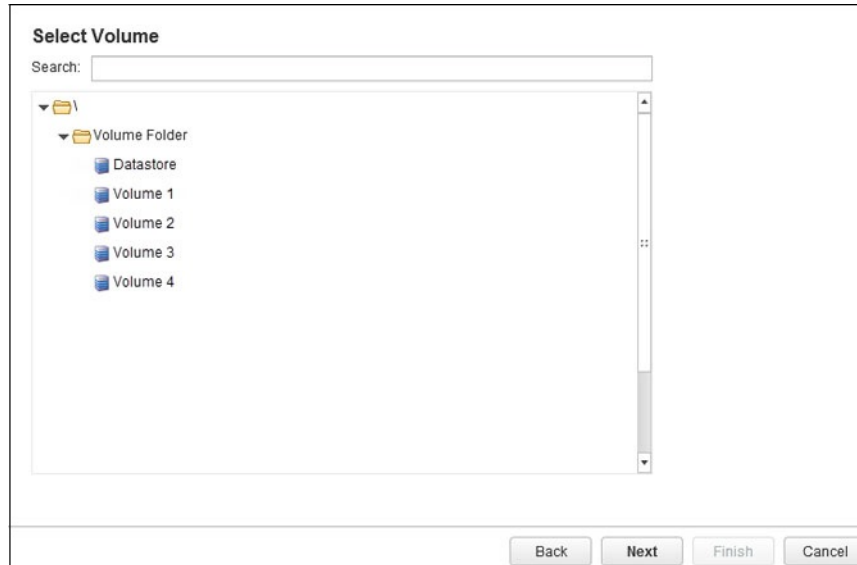
- **Original Size** – Displays the current size of the volume.
- **Resize to** – Type a new, resized value for the volume.
- **Storage Size Type** – Select a unit of measure (GB or TB).





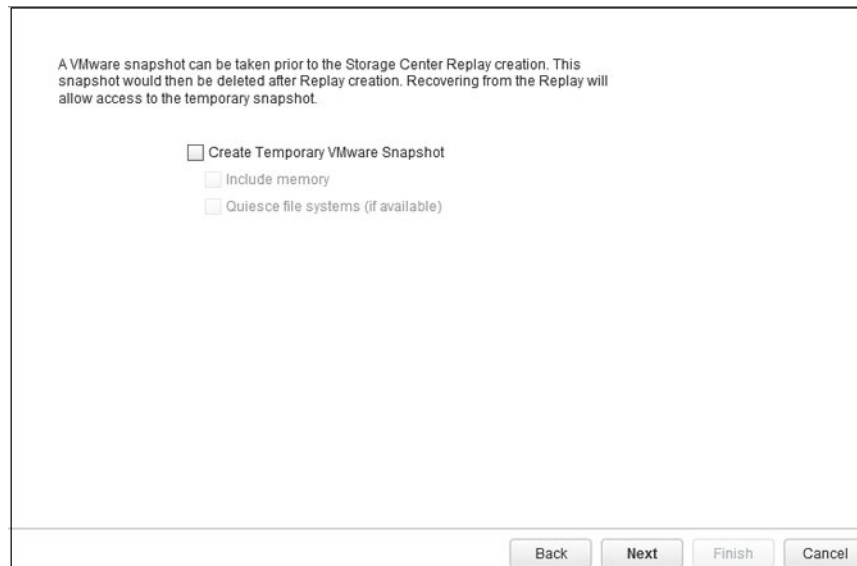
## Select Volume

Use the **Select Volume** page to search for and select an existing Dell volume to map as storage. The selected volume must already be formatted as a VMFS datastore.



## Snapshot Options

Use the **Snapshot Options** page to take a temporary VMware snapshot and specify options for the snapshot.



- **Create Temporary VMware Snapshot** – Select this checkbox to take a temporary VMware snapshot before taking a Replay.

- **Include memory** – Select this checkbox to capture the virtual machine memory in the snapshot.
- **Quiesce file system (if available)** – Select this checkbox to pause running processes in the guest operating system before taking the snapshot. Pausing the processes ensures that the file system is in a known, consistent state when the snapshot is taken. (Note that this option requires that VMware tools are installed.) See VMware help for information about VMware snapshot options.

## Storage Center

Use the **Storage Center** page to select the Storage Center on which to add storage.

**Select Storage Center**

Storage Center	Name	Controller 1	Controller 2
476	Storage Center 476	476	479
69103	Storage Center 69103	69103	69104
69113	Storage Center 69113	69113	69114

**Select Active Controller**


Auto-Select

A specific controller can be selected for volume creation. There are cases where storage controllers can be geographically separate. In that event, a local controller can be preferred for volume creation. If both controllers are local, select 'Auto-Select' to allow automated system resource load balancing.

Controller SN476

Controller SN479

- **Select Storage Center** – Select the Storage Center on which to add storage.
- **Select Active Controller** – Select the **Auto-Select** checkbox to allow the Storage Center to load balance the system by automatically selecting the controller on which to add storage. Clear the **Auto-Select** checkbox to select a specific controller for accessing the storage.

 **NOTE:** The Select Active Controller option is not available if the Storage Center user in Enterprise Manager only has volume manager privileges.



- **Recommended (All Tiers)** – Select this option for most volumes. The Recommended profile allows the system to automatically progress data between and across all storage tiers based on data type and usage.
- **High Priority (Tier 1)** – Select this option to force volume data to remain in tier 1 storage.
- **Medium Priority (Tier 2)** – Select this option to force volume data to remain in tier 2 storage.
- **Low Priority (Tier 3)** – Select this option to force volume data to remain in tier 3 storage.
- **Custom** – If available, select a custom storage profile that is appropriate to the volume data.

## Template Selection

Use the **Template Selection** page to select a virtual machine template on which to base a new virtual machine.

Select Virtual Machine template

Select Virtual Machine template

Microsoft Windows 7 (64-bit)

**Details**

Guest OS	Microsoft Windows 7 (64-bit)
VM Version	10
CPU	1 vCPU
Memory	4096 MB
Network	VM Network
<b>Annotations</b>	
Type	VM Template
Status	N/A

Back Next Finish Cancel

- **Select Virtual Machine template** – Select a VM template from the drop-down list of available templates.
- **Details** – Displays details about the currently selected VM template.

# Template Selection for Clone Virtual Machine

Use the **Template Selection** page to select a virtual machine template on which to clone a virtual machine.

Select the VMS or VM template

Select Virtual Machine template

Select Virtual Machine

ajlth-clonevm-template

**Details**

Guest OS Microsoft Windows Server 2008 R2 (64-bit)

VM Version 10

CPU 1 vCPU

Memory 4096 MB

Network VM Network

Annotations

Type VM

Status Powered Off

aj-nfs-vm

nfs-vm

aj-em

aj

aj-multids

Analytics VM

VM31

Back Next Finish Cancel

- **Select Virtual Machine template** – Select a VM template from the drop-down list of available templates.
- **Select Virtual Machine** – Select a VM from the drop-down list of available virtual machines.
- **Details** – Displays details about the currently selected VM template.

# Volume

Use the **Volume** page to specify attributes for a new Dell volume.

Create Dell Storage Volume

Volume name:

Size: 500 GB

Volume Folder: \

Select Volume Folder

Volumes

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- **Volume Name** – Type a name for the volume.
- **Size** – Specify the volume size.
- **Volume Folder** – Select the folder location for the volume.

## Volume Retention

Use the **Volume Retention** page to specify retention options for removing the volume or raw device.

**Storage Center volume options:**

**Unmap volume**  
Unmap volume from selected hosts.

**Place in Recycle Bin**  
Unmap volume from all hosts and place in the Recycle Bin.

**Permanently delete**  
Unmap volume from all hosts and permanently delete.

- **Unmap volume** – Select this option to unmap the volume from the host. The unmapped volume remains on the Storage Center.
- **Place in Recycle Bin** – Select this option to unmap the volume from the host and move the volume to the Recycle Bin. If necessary, the volume can be recovered from the Recycle Bin at a later time (unless the Recycle Bin is emptied). To recover a volume from the Recycle Bin, use the Storage Center System Manager or Enterprise Manager.
- **Permanently delete** – Select this option to unmap the volume and permanently delete the volume. After the volume is permanently deleted, it cannot be recovered.

## VM Selection

If an RDM volume is associated with the virtual machine, use the Recovery **VM Selection** page to select the virtual machine that you want to use to access the recovered data.

Customize virtual machine settings:

Name
New Virtual Machine1
New Virtual Machine2
New Virtual Machine3
New Virtual Machine4
New Virtual Machine5

**Virtual Machine Settings**

Name:

CPU:

Memory (MB):

Network: 

Network
VM Network