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

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>June 2016</td>
<td>Dell Storage vSphere Web Client Plugin version 4.0 general release</td>
</tr>
</tbody>
</table>

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

6. 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.

7. Type the host name or IP address of the Enterprise Manager server in the **Enterprise Manager Server** field.

8. Type the port number for the Enterprise Manager in the **Enterprise Manager Port** field.

9. 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.
NOTE: The more Storage Centers and volumes managed by the Enterprise Manager user, the longer it takes to display the Dell Storage page.

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

   ![Figure 3. Getting Started Page Showing Connection to Enterprise Manager]

6. Click **Edit**. The **Connection Manager** dialog box opens.
7. Modify the vCenter and Enterprise Manager credentials as needed and click **Submit**. To delete the vCenter and Enterprise Manager 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

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controller Information</td>
<td>Displays network and status information about the Storage Center controllers</td>
</tr>
<tr>
<td>Storage Type Information</td>
<td>Displays the Storage Types defined on the Storage Center</td>
</tr>
</tbody>
</table>

FluidFS Summary Information

Figure 7. FluidFS Summary Information Page shows summary information for a FluidFS cluster.
Figure 7. FluidFS Summary Information Page

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FluidFS Cluster Information</td>
<td>Shows the details of FluidFS appliances and associated controller details</td>
</tr>
<tr>
<td>NAS Pool Capacity Statistics</td>
<td>Displays pool capacity and space information about the NAS pool</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Callout</th>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1       | KB/sec Chart| **Read KB/sec** – Transfer rate of read operations in kilobytes per second  
|         |             | **Total KB/sec** – Combined transfer rate of read and write operations in kilobytes per second  
|         |             | **Write KB/sec** – Transfer rate of write operations in kilobytes per second  |
| 2       | IO/sec Chart| **Read IO/sec** – Transfer rate of read operations in I/O operations per second  
|         |             | **Total IO/sec** – Combined transfer rate of read and write operations in I/O operations per second  
|         |             | **Write IO/sec** – Transfer rate of write operations in I/O operations per second  |

**FluidFS Chart Information**

*Figure 9. FluidFS Cluster Chart Information* shows a chart for a FluidFS cluster.
**Figure 9. FluidFS Cluster Chart Information**

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Capacity</td>
<td>Total capacity of the NAS pool</td>
</tr>
<tr>
<td>Unused (Reserved) Space</td>
<td>Size of the storage that is statically allocated to the NAS volume</td>
</tr>
<tr>
<td>Unused (Unreserved) Space</td>
<td>Space allocated for the NAS pool that has not been used</td>
</tr>
<tr>
<td>Total Used</td>
<td>Amount of all space that has been used</td>
</tr>
</tbody>
</table>

**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

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

FluidFS Usage Information

Figure 11. FluidFS Cluster Usage Information shows usage information for a FluidFS cluster.
Figure 11. FluidFS Cluster Usage Information

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Capacity</td>
<td>Total capacity of the NAS pool</td>
</tr>
<tr>
<td>Free Space</td>
<td>Amount of free space for the NAS pool</td>
</tr>
<tr>
<td>Used Space</td>
<td>Storage space occupied by writes to the NAS volume (user data and snapshots)</td>
</tr>
<tr>
<td>Unused (Unreserved) Space</td>
<td>Space allocated for the NAS pool that has not been used</td>
</tr>
<tr>
<td>Unused (Reserved) Space</td>
<td>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.</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Storage Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Storage Tier</strong></td>
<td>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:</td>
</tr>
<tr>
<td>physical media classes</td>
<td>• Tier 1: Contains the fastest media appropriate for frequently used, mission-critical data. Tier 1 media is typically the most expensive media.</td>
</tr>
<tr>
<td></td>
<td>• Tier 2: Contains medium-quality media appropriate for medium-priority data.</td>
</tr>
<tr>
<td></td>
<td>• Tier 3: Contains slower, inexpensive media appropriate for backup copies, Replays, and low-priority, rarely used data.</td>
</tr>
<tr>
<td><strong>Storage Type</strong></td>
<td>Within each tier, data can be stored as:</td>
</tr>
<tr>
<td>RAID level and page size</td>
<td>• Non-redundant: RAID 0 with 2-MB page size</td>
</tr>
<tr>
<td></td>
<td>• Redundant: RAID 10, RAID 5-5, RAID 5-9 with 512-KB, 2-MB, or 4-MB page size.</td>
</tr>
<tr>
<td></td>
<td>• Dual redundant: RAID 10 with 2-MB page size</td>
</tr>
<tr>
<td></td>
<td>• The default (and recommended) setting for storage type is redundant using both RAID 10 and RAID 5-9 with a 2-MB page size.</td>
</tr>
<tr>
<td><strong>Volume</strong></td>
<td>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.</td>
</tr>
<tr>
<td>a logical unit of storage</td>
<td></td>
</tr>
<tr>
<td><strong>Live Volume</strong></td>
<td>A Live Volume is a replicating volume that can be mapped and active on a source and destination Storage Center at the same time.</td>
</tr>
<tr>
<td>keeps applications online and data</td>
<td></td>
</tr>
<tr>
<td>accessible during planned or unplanned</td>
<td></td>
</tr>
<tr>
<td>downtime</td>
<td></td>
</tr>
<tr>
<td><strong>Data Type</strong></td>
<td>Volume data can be either of the following types:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Description</th>
</tr>
</thead>
</table>

20
### Storage Terms and Descriptions

<table>
<thead>
<tr>
<th>Storage Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>writeable or Replay</strong></td>
<td>• Writeable: Data dynamically written to storage</td>
</tr>
</tbody>
</table>
| • Replay: Point-in-time copy data                                          | **Storage Profiles**                                                        | Storage Profiles determine how volume data is stored and migrated on the Storage Center. System-defined Storage Profiles include:  
| applied to a volume to determine how data is migrated on the Storage Center| • 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.  
|                                                                            | • 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.  
|                                                                            | • 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.  
|                                                                            | • 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. |
| **Replays and Replay Profiles**                                            | 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**                                                            | An exposed (mapped) Replay used to recover data from a point-in-time copy of data (Replay) |
| **an Exposed (mapped) Replay**                                             | **Data Progression**                                                        | Based on the Storage Profile applied to the volume and the Data Progression licensing, volume data automatically progresses on the Storage Center:  
| automatically migrating volume data based on the Storage Profile settings   | • On Storage Centers with licensed Data Progression, data can automatically migrate to different Storage Types within a storage tier, and also across storage tiers. |

The following concepts apply to FluidFS.

<table>
<thead>
<tr>
<th>Storage Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid File System (FluidFS)</td>
<td>Dell’s high-performance, scalable file system software installed on NAS controllers</td>
</tr>
<tr>
<td>FluidFS cluster</td>
<td>One to four FS8600 scale-out NAS appliances configured as a FluidFS cluster</td>
</tr>
</tbody>
</table>
### Storage Terms and Descriptions

<table>
<thead>
<tr>
<th>Storage Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAS pool</td>
<td>The sum of all storage provided by up to two Storage Centers minus space reserved for internal system use</td>
</tr>
<tr>
<td>NAS volume</td>
<td>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.</td>
</tr>
<tr>
<td>NAS volume snapshot</td>
<td>A point-in-time copy of a NAS volume, mounted as an NFS datastore, similar to Replays.</td>
</tr>
<tr>
<td>Client VIP</td>
<td>Virtual IP address that clients use to access SMB shares and NFS exports hosted by the FluidFS cluster</td>
</tr>
<tr>
<td>NFS export</td>
<td>A directory in a NAS volume that is shared on the network using the Network File System (NFS) protocol</td>
</tr>
</tbody>
</table>

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.
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.
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.
   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**.
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.
   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.

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:
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.
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**.

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**.

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

Expanding 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, backslash, 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.

**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](image)

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

**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](#).

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**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.
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
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**.
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.
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
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.
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.

   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.
   The Select Datastore Options page opens.

7. Select Create NFS Datastore, and click Next.
   The Select FluidFS Cluster page opens.

8. Select a FluidFS cluster from the list, and click Next.
   The Select Action Type page opens.

9. Select Map an Existing NFS Datastore, and click Next.

10. Select an NFS export from the list of available NFS exports.

11. Type a value in the FluidFS VIP or DNS Name field.

12. Click Next.
    The Customization page opens.

13. Customize the settings for each virtual machine, click Update, and click Next.
    The Ready to Complete page appears.

14. Click Finish.
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.
   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 Datasore Using an Existing NFS Export
Customization
Datasync
Datasync Options
Datasync 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.

   - 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](image)

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

<table>
<thead>
<tr>
<th>Icon</th>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Connected FC" /></td>
<td>Connected FC</td>
<td>A Fibre Channel connection between the HBA and Storage Center exists.</td>
</tr>
<tr>
<td><img src="image" alt="Disconnected FC" /></td>
<td>Disconnected FC</td>
<td>A Fibre Channel connection between the HBA and Storage Center does not exist.</td>
</tr>
<tr>
<td><img src="image" alt="Connected iSCSI" /></td>
<td>Connected iSCSI</td>
<td>An iSCSI connection between the HBA and Storage Center exists.</td>
</tr>
<tr>
<td><img src="image" alt="Disconnected iSCSI" /></td>
<td>Disconnected iSCSI</td>
<td>An iSCSI connection between the HBA and Storage Center does not exist.</td>
</tr>
<tr>
<td><img src="image" alt="Connected Storage Center" /></td>
<td>Connected Storage Center</td>
<td>The Storage Center is connected to the ESXi host.</td>
</tr>
<tr>
<td><img src="image" alt="Partially Connected Storage Center" /></td>
<td>Partially Connected Storage Center</td>
<td>The Storage Center is partially connected to the ESXi host.</td>
</tr>
<tr>
<td><img src="image" alt="Not Connected Storage Center" /></td>
<td>Not Connected Storage Center</td>
<td>The Storage Center is not connected to the ESXi host.</td>
</tr>
<tr>
<td><img src="image" alt="Storage Center Ready to Configure" /></td>
<td>Storage Center Ready to Configure</td>
<td>The Storage Center is ready to be configured to connect to the ESXi host.</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Adapter model name</td>
</tr>
<tr>
<td>WWN</td>
<td>World Wide Name (WWN) for Fibre Channel and the iSCSI Qualified Name (IQN) for iSCSI</td>
</tr>
<tr>
<td>Device</td>
<td>Name of the adapter</td>
</tr>
<tr>
<td>Type</td>
<td>Storage adapter type (FC or iSCSI)</td>
</tr>
<tr>
<td>Node Name</td>
<td>Fibre Channel node name</td>
</tr>
<tr>
<td>Alias</td>
<td>iSCSI alias name</td>
</tr>
<tr>
<td>Status</td>
<td>Status of the adapter</td>
</tr>
</tbody>
</table>

**Storage Details**

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Center</td>
<td>Name of the Storage Center</td>
</tr>
<tr>
<td>Storage Center SN</td>
<td>Serial number of the Storage Center</td>
</tr>
<tr>
<td>Storage Server</td>
<td>Server to which the device is connected</td>
</tr>
<tr>
<td>Status</td>
<td>Configuration status of the Storage Center (Configured, Configurable, Not Visible)</td>
</tr>
<tr>
<td>Connectivity</td>
<td>Status of the Storage Center connection (Up, Down, or Not Connected)</td>
</tr>
</tbody>
</table>

**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.
Table 1. Information From the General Tab

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name of the volume</td>
</tr>
<tr>
<td>Serial Number</td>
<td>Volume serial number</td>
</tr>
<tr>
<td>Storage Center</td>
<td>Storage Center on which the volume resides</td>
</tr>
<tr>
<td>Dell SN</td>
<td>Dell serial number of the volume</td>
</tr>
<tr>
<td>Dell Index</td>
<td>Object index for the volume</td>
</tr>
<tr>
<td>Size</td>
<td>Size of the volume</td>
</tr>
<tr>
<td>Disk Folder</td>
<td>Storage Center disk folder location</td>
</tr>
<tr>
<td>Folder</td>
<td>Folder location of the volume</td>
</tr>
<tr>
<td>Storage Type</td>
<td>Storage type of the volume</td>
</tr>
<tr>
<td>Status</td>
<td>Current status for the volume, as well as the controller on which the volume is active</td>
</tr>
<tr>
<td>Replay Profiles</td>
<td>Replay Profiles applied to the volume</td>
</tr>
<tr>
<td>Storage Profiles</td>
<td>Storage Profiles for the volume</td>
</tr>
<tr>
<td>Write Cache Enabled</td>
<td>Indicates whether write cache is enabled for the volume</td>
</tr>
<tr>
<td>Read Cache Enabled</td>
<td>Indicates whether read cache is enabled for the volume</td>
</tr>
<tr>
<td>Label</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Read Cache</td>
<td>Indicates whether Read Cache is enabled or not (Yes or No)</td>
</tr>
<tr>
<td>Date Created</td>
<td>Date and time the volume was created</td>
</tr>
<tr>
<td>Created By</td>
<td>User that created the volume</td>
</tr>
<tr>
<td>Date Updated</td>
<td>Date the volume was last updated</td>
</tr>
<tr>
<td>Updated By</td>
<td>User that last updated the volume</td>
</tr>
<tr>
<td>Notes</td>
<td>Descriptive notes for the volume</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FluidFS Cluster Name</td>
<td>Name of the cluster</td>
</tr>
<tr>
<td>FluidFS Clusters IP Address</td>
<td>IP address of the cluster</td>
</tr>
<tr>
<td>Storage Center Servers</td>
<td>Information about any connected Storage Centers</td>
</tr>
</tbody>
</table>

*Table 2. Information From the General Tab for a FluidFS Cluster* describes the information in the General tab for a FluidFS cluster.
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.

**Table 3. Usage Statistics for a Storage Center** describes the usage statistics for a Storage Center.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total volume space consumed</td>
<td>Total space used on the volume</td>
</tr>
<tr>
<td>Savings vs. basic RAID 10 storage</td>
<td>Estimate of storage space saved using Dell Dynamic Block Architecture compared to basic RAID storage</td>
</tr>
<tr>
<td>Total disk space consumed</td>
<td>Total disk space consumed by the volume</td>
</tr>
<tr>
<td>Data Instant Replay overhead</td>
<td>Total space consumed by volume Replays</td>
</tr>
<tr>
<td>Tier 1 Storage</td>
<td>Active volume space, active disk space, and Replay space for the volume on tier 1</td>
</tr>
<tr>
<td>Label</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Tier 2 Storage</td>
<td>Active volume space, active disk space, and Replay space for the volume on tier 2</td>
</tr>
<tr>
<td>Tier 3 Storage</td>
<td>Active volume space, active disk space, and Replay space for the volume on tier 3</td>
</tr>
</tbody>
</table>

**FluidFS Statistics Information**

Figure 19. *Usage Statistics for a FluidFS Cluster* shows an example of usage statistics for a FluidFS cluster.

![Usage Statistics for a FluidFS Cluster](image)

**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**

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAS Volume Name</td>
<td>Name of the volume</td>
</tr>
<tr>
<td>Size</td>
<td>Size of the volume</td>
</tr>
<tr>
<td>Unused (Reserved) Space</td>
<td>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.</td>
</tr>
<tr>
<td>Unused (Unreserved) Space</td>
<td>Space allocated for the NAS pool that has not been used</td>
</tr>
<tr>
<td>Snapshot Space</td>
<td>Storage space occupied by snapshots of a NAS volume</td>
</tr>
<tr>
<td>Label</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Overcommitted Space</td>
<td>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) 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.</td>
</tr>
<tr>
<td>Volume Folder</td>
<td>Name of the NAS volume folder</td>
</tr>
<tr>
<td>Used Vs Unused Space</td>
<td>Bar charts showing comparison of used space and unused space</td>
</tr>
</tbody>
</table>

**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.

![Figure 20. Connectivity Information for a Storage Center](image)

**Table 5. Information From the Connectivity Info Tab** describes the information from the Connectivity tab.
### Table 5. Information From the Connectivity Info Tab

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server Port</td>
<td>Server name and port</td>
</tr>
<tr>
<td>Storage Port</td>
<td>Storage port on the Storage Center</td>
</tr>
<tr>
<td>LUN</td>
<td>Mapping LUN</td>
</tr>
<tr>
<td>Type</td>
<td>Protocol (Fibre Channel or iSCSI)</td>
</tr>
<tr>
<td>Status</td>
<td>Status for the path</td>
</tr>
</tbody>
</table>

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

Figure 21. Connectivity Information for a FluidFS Cluster shows an example of connectivity information for a FluidFS cluster.

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

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host</td>
<td>IP address of the host</td>
</tr>
<tr>
<td>Folder</td>
<td>Folder location of NFS datastores</td>
</tr>
<tr>
<td>Status</td>
<td>Status of host (connected, offline)</td>
</tr>
<tr>
<td>Virtual IP Address</td>
<td>IP address of virtual IP</td>
</tr>
</tbody>
</table>
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.

**Table 7. Information From the Volume Replays Tab** describes the information in the Volume Replays tab.

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeze Time</td>
<td>Time at which the Replay was taken</td>
</tr>
<tr>
<td>Expire Time</td>
<td>Time at which the Replay automatically expires</td>
</tr>
<tr>
<td>Replay Size</td>
<td>Total space consumed by the Replay</td>
</tr>
<tr>
<td>Description</td>
<td>Name of the Replay Profile that automatically created the Replay for a description of the Replay</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replication Type</td>
<td>Name of the replication</td>
</tr>
<tr>
<td>State</td>
<td>Current state of the replication</td>
</tr>
<tr>
<td>Destination Storage Center</td>
<td>Destination (target) Storage Center for the replication</td>
</tr>
<tr>
<td>Synced</td>
<td>Percentage of data currently in sync</td>
</tr>
<tr>
<td>Remaining</td>
<td>Amount of data that is not yet synced</td>
</tr>
</tbody>
</table>

**For each replication:**

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source Storage Center</td>
<td>Source Storage Center for the replication</td>
</tr>
<tr>
<td>Destination Storage Center</td>
<td>Destination (target) Storage Center for the replication</td>
</tr>
<tr>
<td>Source Volume</td>
<td>Name of the volume on the source Storage Center</td>
</tr>
<tr>
<td>Destination Volume</td>
<td>Name of the volume on the destination Storage Center</td>
</tr>
</tbody>
</table>
### 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.

---

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

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent</td>
<td>Name of the Storage Center</td>
</tr>
<tr>
<td>Name</td>
<td>Name of the VMware object</td>
</tr>
<tr>
<td>Type</td>
<td>Type of object</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>KB/sec Chart</td>
<td><strong>Read KB/sec</strong> – Transfer rate of read operations in kilobytes per second</td>
</tr>
<tr>
<td></td>
<td><strong>Total KB/sec</strong> – Combined transfer rate of read and write operations in kilobytes per second</td>
</tr>
<tr>
<td></td>
<td><strong>Write KB/sec</strong> – Transfer rate of write operations in kilobytes per second</td>
</tr>
<tr>
<td>IO/sec Chart</td>
<td><strong>Read IO/sec</strong> – Transfer rate of read operations in I/O operations per second</td>
</tr>
<tr>
<td>Label</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Total IO/sec</strong></td>
<td>Combined transfer rate of read and write operations in I/O operations per second</td>
</tr>
<tr>
<td><strong>Write IO/sec</strong></td>
<td>Transfer rate of write operations in I/O operations per second</td>
</tr>
<tr>
<td><strong>IO Size Chart</strong></td>
<td><strong>Average IO Size</strong> – Average size of I/O operations in kilobytes</td>
</tr>
<tr>
<td><strong>Latency (ms) Chart</strong></td>
<td><strong>Read Latency</strong> – Latency of read operations in milliseconds</td>
</tr>
<tr>
<td></td>
<td><strong>Write Latency</strong> – Latency of write operations in milliseconds</td>
</tr>
<tr>
<td></td>
<td><strong>Transfer Latency</strong> – Latency of data transfer operations in milliseconds</td>
</tr>
</tbody>
</table>
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.

- **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.

- **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.

- **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.

<table>
<thead>
<tr>
<th>Volume</th>
<th>Datastore</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume 2</td>
<td>Datastore 2</td>
<td>500 GB</td>
</tr>
<tr>
<td>Volume 3</td>
<td>Datastore 3</td>
<td>500 GB</td>
</tr>
<tr>
<td>Volume 4</td>
<td>Datastore 4</td>
<td>500 GB</td>
</tr>
<tr>
<td>Volume 5</td>
<td>Datastore 5</td>
<td>500 GB</td>
</tr>
<tr>
<td>Volume 6</td>
<td>Datastore 6</td>
<td>500 GB</td>
</tr>
<tr>
<td>Volume 7</td>
<td>Datastore 7</td>
<td>500 GB</td>
</tr>
<tr>
<td>Volume 8</td>
<td>Datastore 8</td>
<td>500 GB</td>
</tr>
<tr>
<td>Volume 9</td>
<td>Datastore 9</td>
<td>500 GB</td>
</tr>
<tr>
<td>Volume 10</td>
<td>Datastore 10</td>
<td>500 GB</td>
</tr>
</tbody>
</table>

- **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** – 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.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Last Updated Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>TextCloneSpec</td>
<td>Windows</td>
<td>09/06/16 8:27:10 AM</td>
</tr>
<tr>
<td>LinuxSpec</td>
<td>Linux</td>
<td>09/15/16 4:54:5 AM</td>
</tr>
</tbody>
</table>
• **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.

<table>
<thead>
<tr>
<th>Name</th>
<th>Capacity</th>
<th>Provisioned</th>
<th>Free</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Datastore 1</td>
<td>458.25 GB</td>
<td>4.71 GB</td>
<td>453.54 GB</td>
<td>VMFS</td>
</tr>
<tr>
<td>Datastore 2</td>
<td>458.25 GB</td>
<td>4.71 GB</td>
<td>453.54 GB</td>
<td>VMFS</td>
</tr>
<tr>
<td>Datastore 3</td>
<td>458.25 GB</td>
<td>974.00 MB</td>
<td>457.30 GB</td>
<td>VMFS</td>
</tr>
<tr>
<td>Datastore 4</td>
<td>499.75 GB</td>
<td>43.74 GB</td>
<td>456.01 GB</td>
<td>VMFS</td>
</tr>
<tr>
<td>Datastore 5</td>
<td>499.75 GB</td>
<td>3.81 GB</td>
<td>495.94 GB</td>
<td>VMFS</td>
</tr>
<tr>
<td>Datastore 6</td>
<td>499.75 GB</td>
<td>974.00 MB</td>
<td>495.60 GB</td>
<td>VMFS</td>
</tr>
</tbody>
</table>

**Datastore Name**

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

• **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.

![Datastore Options](image)

- **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.

- **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.
Datastore Selection for Clone Virtual Machine

When cloning a virtual machine, use the **Datastores** page to select a datastore to store the virtual machine files.

![Datastore Selection Page](image)

Device Configuration

Use the **Device Configuration** page to select the option for adding a raw device.

![Device Configuration Page](image)

- **Add New Raw Device Mapping to Virtual Machine** – Select this option to create a new volume to be mapped as an RDM to the virtual machine.
- **Virtual Device Node** – If the **Add New Raw Device Mapping to Virtual Machine** option is selected, select the node for the raw device mapping.
• **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.

![Extended RDM Size](image)

- **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](image)
• **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 Selection Table]

**Host/Cluster**

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

![Host/Cluster Selection]

Wizard Page Reference 85
Hosts and Clusters

Use the Hosts and Clusters page to select one or more hosts or clusters to which to add the datastore.

Host Selection for Replay Recovery

Use the Host Selection page to select the host or cluster on which to expose the recovered data.
Live Volumes

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

- **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.

![Select LUN page](image)

Name and Location

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

![Base Name and Number of VMs](image)

- **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.

- **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.
Protocol Selection

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

- **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** – 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.](image)

• **Schedule** – Displays the Replay schedule for the selected Replay Profile.

### Replay Properties

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

• **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.
Replay Selection

Use the Select Replays page to select the Replays from which to recover data or to select the Replays to delete.

- Select one or more Replays to use to recover data. To recover data, select one Replay per volume that you want to recover. If more than one RDM is mapped to the virtual machine, you must select one Replay for each volume to recover.
- Select one or more Replays that you want to delete (expire).
Replication Delete Options

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

- **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.

- **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.

- **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.

- **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).
Resource Pool

Use the **Resource Pool** page to select a resource pool in which to run the virtual machine.

Select the resource pool within which you wish to run this virtual machine. Resource pools allow hierarchical management of computing resource within a host or cluster. Virtual machines and child pools share the resources of their parent pool.

Note: When a vApp is selected as the resource pool, the target folder will be ignored.

Select Raw Device

Use the **Select Raw Device** page to select the raw devices to replicate or remove.
Select RDM

Use the Select RDM page to select the RDM to extend.

Select Replications

Use the Select Replications page to select one or more replications to modify or remove.
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.

<table>
<thead>
<tr>
<th>Storage Center</th>
<th>Name</th>
<th>Controller 1</th>
<th>Controller 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>476</td>
<td>Storage Center 476</td>
<td>476</td>
<td>479</td>
</tr>
<tr>
<td>69103</td>
<td>Storage Center 69103</td>
<td>69103</td>
<td>69104</td>
</tr>
<tr>
<td>69113</td>
<td>Storage Center 69113</td>
<td>69113</td>
<td>69114</td>
</tr>
</tbody>
</table>

#### 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 99476
- Controller 99479

### Notes

- **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.
Storage Center for Replication

Use the Storage Center page to select the destination Storage Center for replication.

Storage Profile

Use the Storage Profile page to select a Storage Profile for the Dell volume. For information about Storage Profiles, see Introduction to Dell Storage.

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

- **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.