

Dell Storage vSphere Web Client Plugin

Version 5.1

Administrator's Guide

Notes, cautions, and warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your product.

 **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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About this Guide

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

Revision History

Document Number: 680-054-009

Revision	Date	Description
A	August 2019	Initial release
B	October 2019	Clarify VMware vCenter support

Audience

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

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.
- *Dell Storage Integration Tools for VMware Administrator's Guide*
Provides instructions for deploying and configuring the Dell Storage vSphere Web Client Plugin.
- *Dell Storage Integration Tools for VMware Release Notes*
Describes the new features and enhancements in the latest version of DSITV.
- *Dell Storage SC Series Best Practices with VMware vSphere 5.x–6.x*
Provides configuration examples, tips, recommended settings, and other storage guidelines a user can follow while integrating VMware vSphere with a Storage Center. This document answers many frequently asked questions about how VMware interacts with Storage Center features, such as Dynamic Capacity, Data Progression, and Data Reduction.
- *Dell Storage Manager Administrator's Guide*
Provides configuration and management instructions for Dell Storage Manager.

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 Dell.com/support.

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Getting Started

Introduction to vSphere Web Client Plugin

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

 **NOTE: Use the VMware vSphere Web Client to perform all procedures in this guide, unless instructed otherwise.**

Key Features

The Dell Storage vSphere Web Client Plugin provides these functions:

- Adding and removing VMFS storage, such as datastores and Raw Device Mappings, on Storage Centers
- Provisioning virtual machines on Dell Storage
- Configuring VMware ESXi hosts on Dell Storage
- Creating and managing Storage Center Replays for VMFS datastores
- Replicating VMFS datastores between Storage Centers
- Adding and managing Live Volumes
- Recovering VMFS datastores and VMs from VMFS datastore Replays
- Managing Disaster Recovery for VMFS datastores

In addition, the vSphere Web Client Plugin displays information tabs within the VMware vSphere Web Client inventory views.

Status of vSphere Web Client Plugin Tasks

The Recent Tasks pane displays the status of tasks performed using the Dell Storage vSphere Web Client Plugin. If a task's status is not displayed 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

Hardware and software requirements must be met before installing the Dell Storage vSphere Web Client Plugin. Also, Storage Center requirements must be met to replicate data

Software Requirements

The following list identifies the minimum software requirements for using the Dell Storage vSphere Web Client Plugin.

- Dell Storage Manager 2018 R1
- Storage Center OS version 7.1
- VMware ESXi version 6.5 - 6.7
- VMware vCenter Server version 6.5 - 6.7

 **NOTE: Dell Storage vSphere Web Client Plugin v5.1 supports VMware vCenter Server Web Client (Flex-based). It does not support the VMware vCenter Server HTML5 web interface.**

 **NOTE: FluidFS is no longer supported in Dell Storage vSphere Web Client Plugin v5.1.**

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 Dell Storage Manager. They must be configured for the Dell Storage Manager user credentials supplied to the vSphere Web Client Plugin in [Configuring 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.

Configuring Dell Storage vSphere Web Client Plugin

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

Prerequisites

Install the Dell Storage Integration Tools for VMware (DSITV), and register the Dell Storage vSphere Web Client Plugin with a vCenter server as described in the *Dell Storage 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. In the **Administration** pane, click **Dell Storage**.
The Dell Storage page opens to the **Getting Started** tab.
 -  **NOTE: The more Storage Centers and volumes that are managed by the Dell Storage Manager user, the longer it takes to display the Dell Storage page.**
4. Click the **Manage** tab.
5. Click **Edit**.
The Connection Manager Credentials dialog box opens.

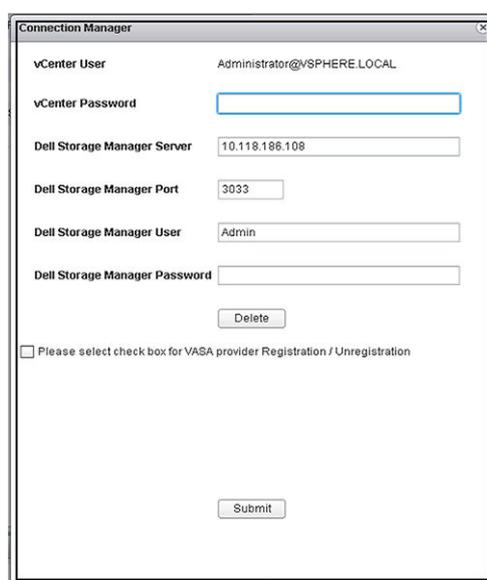


Figure 1. Connection Manager Credentials dialog box

6. Enter the requested information:
 - **vCenter User** (not editable) – The 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 the tasks after the vSphere Web Client Plugin is closed.**
 - **vCenter Password** – vCenter user password.

- **Dell Storage Manager Server** – Type the hostname or IP address of the Dell Storage Manager server.
- **Dell Storage Manager Port** – Type the port number for the Dell Storage Manager in the field.
- **Dell Storage Manager User and Password** – Type the username and password of a Dell Storage Manager user with administrator privileges. The Dell Storage Manager user credentials control which Storage Centers can be managed in the vSphere Web Client Plugin.

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

7. Click **Submit**.

- The plugin validates the vCenter and Dell Storage Manager credentials.
- If the credentials are correct, the vSphere Web Client Plugin retrieves Storage Center information from the Dell Storage Manager server.

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

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

VASA Provider

The Dell VASA Provider gathers information about the available storage topologies, capabilities, and statuses of Storage Centers, as well as Storage Center events and alerts. The VASA provider passes this information to VMware vCenter, making it accessible to vSphere clients. This information allows VMware vCenter administrators to make informed decisions when selecting the datastore on which to place new virtual machines.

Registering VASA provider

Follow these steps to register the VASA provider.

Prerequisites

Ensure that vSphere Web Client is added to Dell Storage Manager.

Steps

1. Log in to the vSphere Web Client.
The **Home** page is displayed.
2. Click  (**Go home**).
The **Home** page opens.
3. In the **Administration** pane, click **Dell Storage**.
The Dell Storage page opens to the **Getting Started** tab.

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

4. Click the **Manage** tab.
5. Click **Edit**.
The **Connection Manager** dialog box is displayed.

The screenshot shows a 'Connection Manager' dialog box with the following fields and controls:

- vCenter User:** Administrator@VSPHERE.LOCAL
- vCenter Password:** [Empty text box]
- Dell Storage Manager Server:** 10.118.186.108
- Dell Storage Manager Port:** 3033
- Dell Storage Manager User:** Admin
- Dell Storage Manager Password:** [Empty text box]
- Buttons:** 'Delete' and 'Submit'.
- Checkbox:** Please select check box for VASA provider Registration / Unregistration

Figure 2. Registering VASA provider

6. In **vCenter Password**, type the password of the vCenter user.
7. In **Dell Storage Manager Password**, type the password of a Storage Manager user with administrator privileges.
8. Select the **Please select check box for VASA provider Registration/ Unregistration** to register VASA provider.
9. Click **Submit**.

Unregistering VASA provider

Follow these steps to unregister a VASA provider.

Steps

1. Log in to the vSphere Web Client.
The **Home** page is displayed.
2. Click  (**Go home**).
The **Home** page opens.
3. In the **Administration** pane, click **Dell Storage**.
The Dell Storage page opens to the **Getting Started** tab.

 **NOTE: The more Storage Centers and volumes that are managed by the Dell Storage Manager user, the longer it takes to display the Dell Storage page.**
4. Click the **Manage** tab.
5. Click **Edit**.
The **Connection Manager** dialog box is displayed.

The screenshot shows a 'Connection Manager' dialog box with the following fields and options:

- vCenter User:** Administrator@VSPHERE.LOCAL
- vCenter Password:** [Redacted]
- Dell Storage Manager Server:** 10.118.188.108
- Dell Storage Manager Port:** 3033
- Dell Storage Manager User:** Admin
- Dell Storage Manager Password:** [Redacted]
- Buttons:** Delete, Submit
- Checkboxes:**
 - Please select check box for VASA provider Registration / Unregistration
 - Unregister VASA Provider

Figure 3. Unregistering VASA provider

- In **vCenter Password**, type the password of the vCenter user.
- In **Dell Storage Manager Password**, type the password of a Storage Manager user with administrator privileges.
- Select the **Please select check box for VASA provider Registration/ Unregistration** to register VASA provider.
- Select **Unregister VASA provider** check box.
- Click **Submit**.

Managing the vSphere Web Client Plugin

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

Changing vCenter and Dell Storage Manager Credentials

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

Prerequisites

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

Steps

- Log in to the vSphere Web Client.
- Click  (**Go home**).
The **Home** page opens.
- In the **Administration** pane, click **Dell Storage**.
The Dell Storage page opens to the **Getting Started** tab.

 **NOTE:** The more Storage Centers and volumes that are managed by the Dell Storage Manager user, the longer it takes to display the Dell Storage page.
- Click the **Manage** tab.

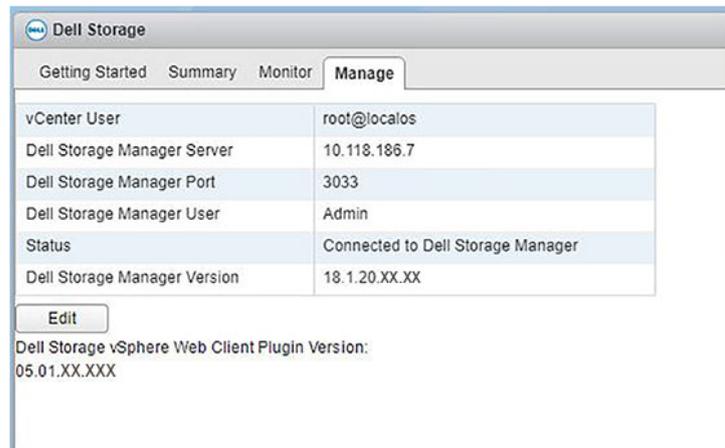


Figure 4. Connection Manager Credentials Dialog Box

5. Click **Edit**. The **Connection Manager** dialog box opens.
6. Modify the vCenter and Dell Storage Manager credentials as needed and click **Submit**.
To delete the vCenter and Dell Storage Manager credentials, click **Delete**.

Displaying Storage Center Information

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

Display Storage Center Information

The **Summary** tab displays Storage Center controller information and storage type information.

Steps

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 to the **Getting Started** tab.
 **NOTE: The more Storage Centers and volumes that are managed by the Dell Storage Manager user, the longer it takes to display the Dell Storage page.**
4. Click the **Summary** tab.
5. Select the Storage Center to display.

Storage Center Summary Information

The following figure shows summary information for a Storage Center.

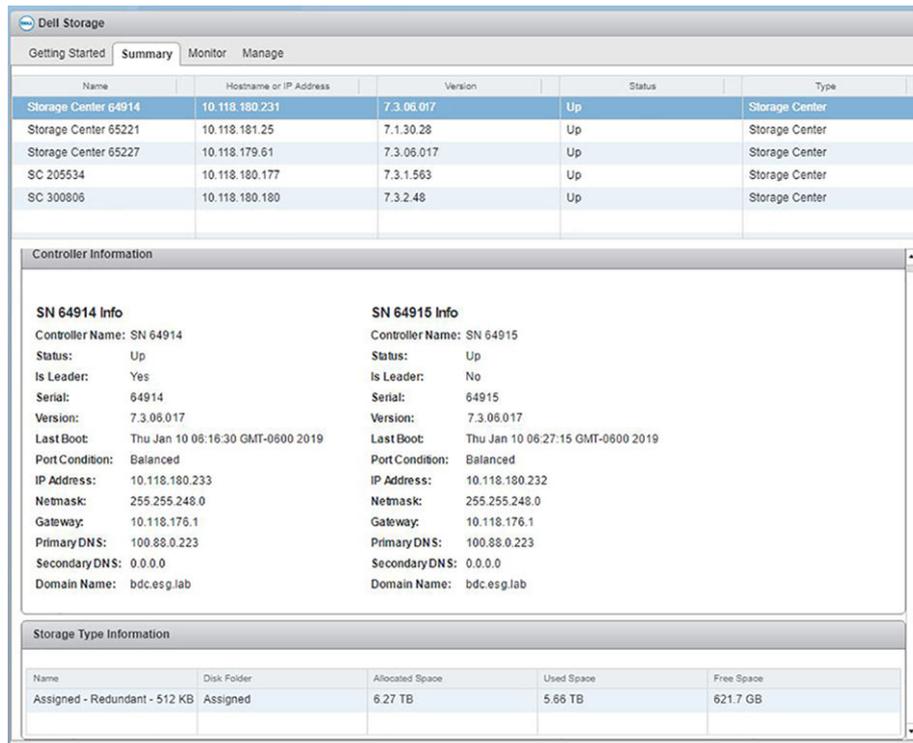


Figure 5. Storage Center Summary Information

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

FluidFS Summary Information

The following figure shows summary information for a FluidFS cluster.

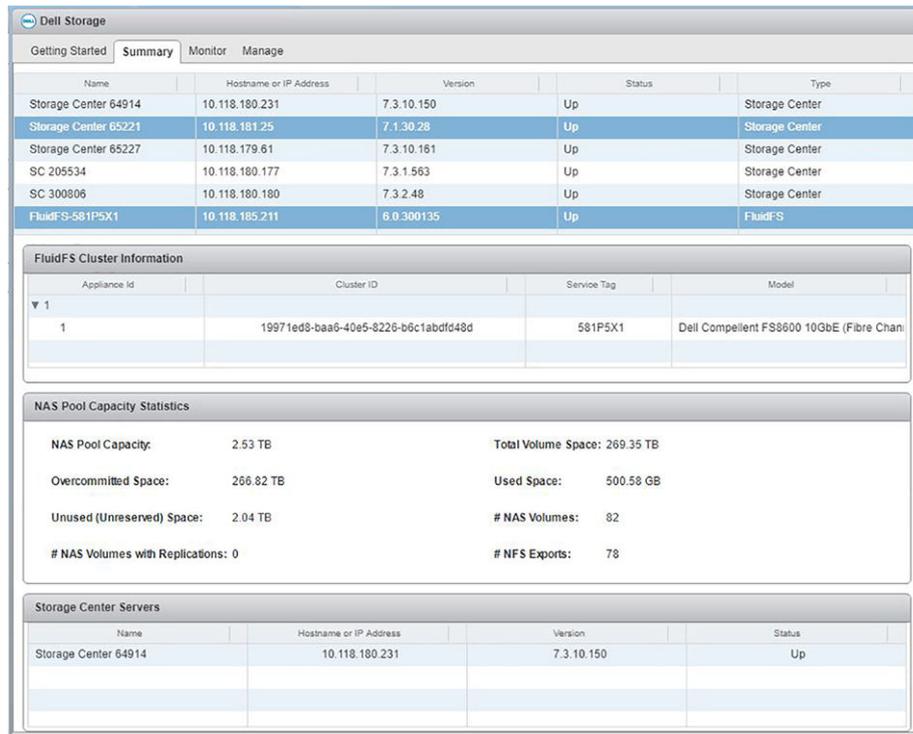


Figure 6. FluidFS Summary Information Page

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

Display Dell Storage Monitoring Information

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

Steps

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 to the **Getting Started** tab.
NOTE: The more Storage Centers and volumes that are managed by the Dell Storage Manager user, the longer it takes to display the Dell Storage page.
4. Click the **Monitor** tab.
5. Select the Storage Center to display.

Charts

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

Storage Center Charts Information

The following figure shows a chart for a Storage Center.

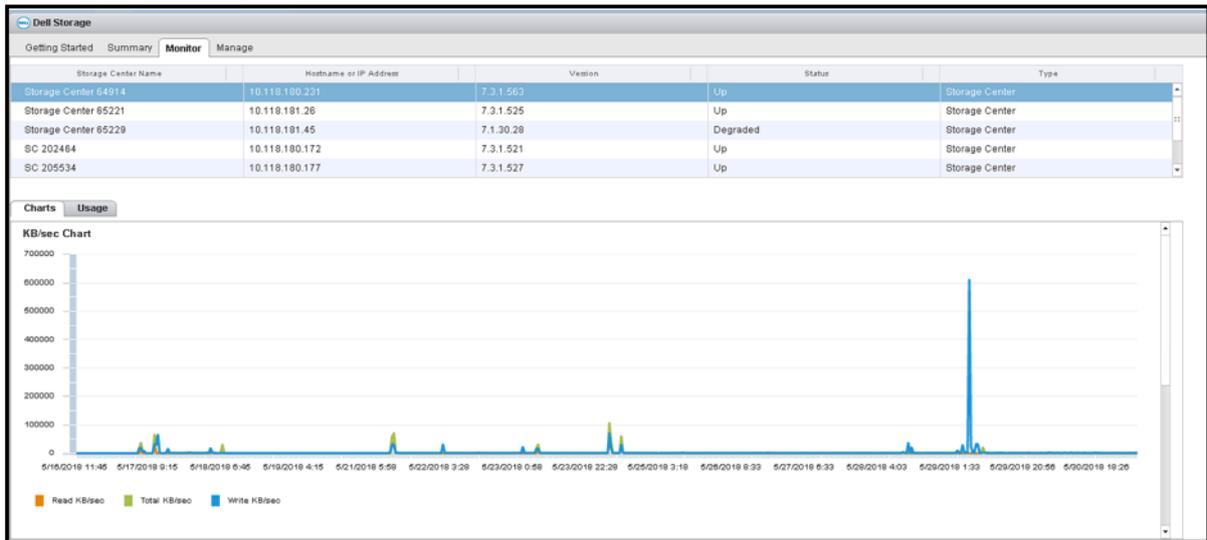


Figure 7. Storage Center Charts Information

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

FluidFS Chart Information

The following figure shows a chart for a FluidFS cluster.

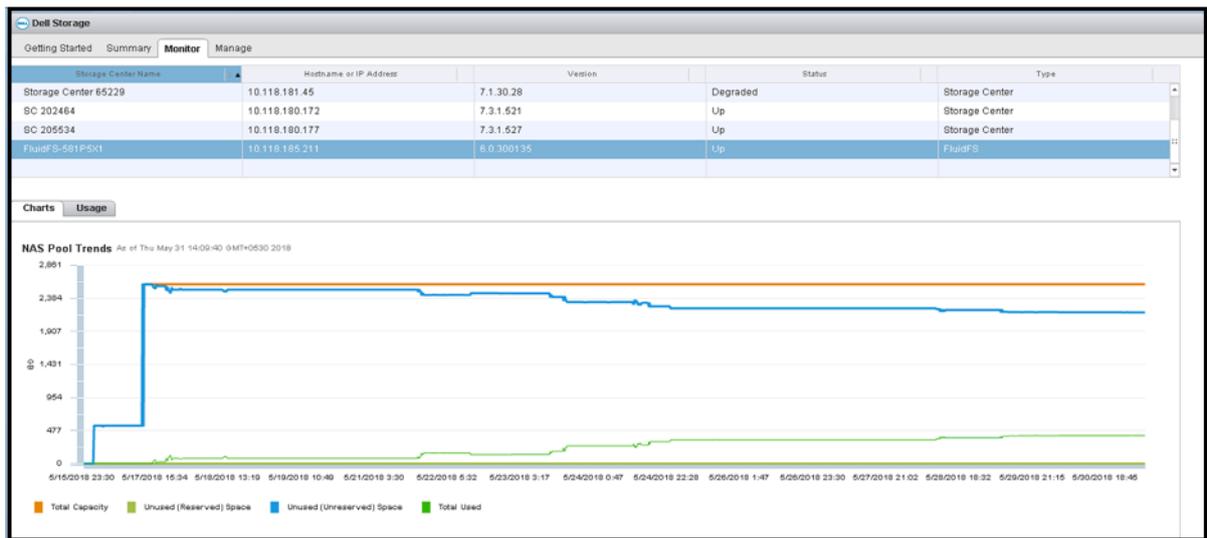


Figure 8. FluidFS Cluster Chart Information

Label	Description
Total Capacity	Total capacity of the NAS pool

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

Usage

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

Storage Center Usage Information

The following figure shows an example of the usage information for a Storage Center.

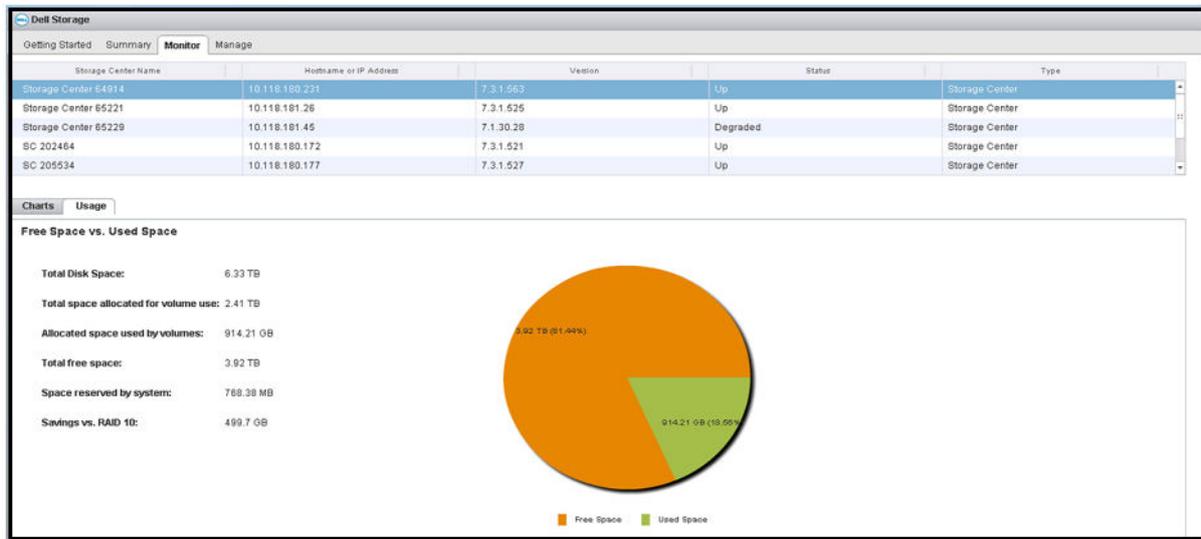


Figure 9. Storage Center Usage Information

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

FluidFS Usage Information

The following figure shows an example of usage information for a FluidFS cluster.

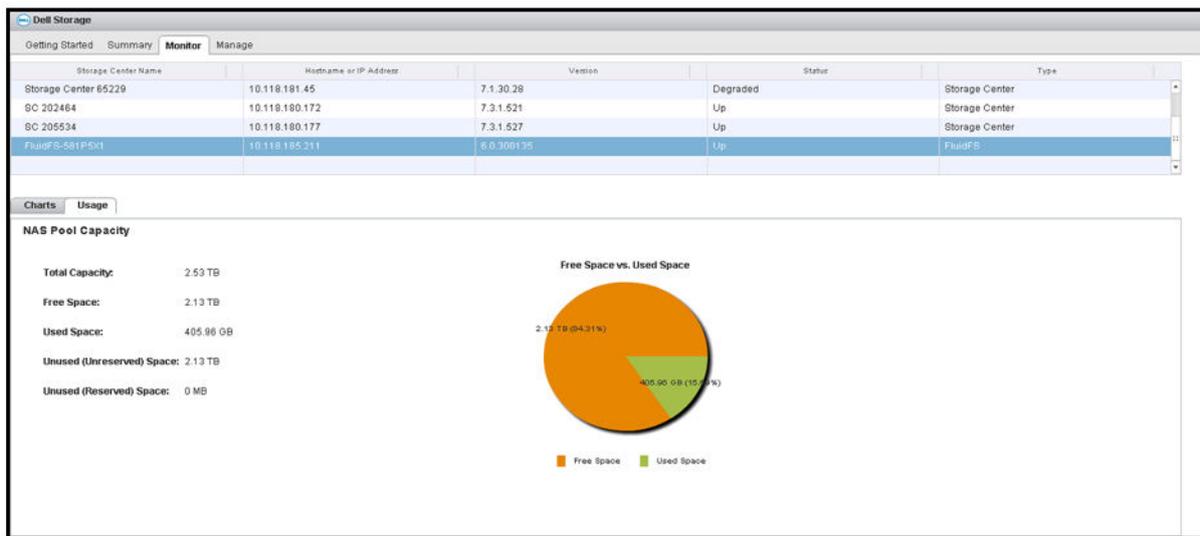


Figure 10. FluidFS Cluster Usage Information

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

Disabling and Enabling the vSphere Web Client Plugin

After installing the vSphere Web Client Plugin, enable it by registering the plugin with VMware vCenter.

All plugins can also be enabled or disabled using vSphere. The procedures for enabling and disabling plugins vary depending on the version of the vSphere Web Client. For instructions on managing plugins, see the vSphere documentation.

Working With 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.

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

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

Storage Term	Description
	<ul style="list-style-type: none"> 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. <p>You can create and modify Storage Profiles within a Storage Center, if you have licensed Data Progression software.</p>
Snapshots and Snapshot Profiles <i>applied to a volume to determine how often snapshots are taken</i>	A Storage Center snapshot is a point-in-time copy of data. As such, a snapshot can be exposed and mapped to allow recovery of a datastore or virtual machine. Snapshot Profiles determine a schedule for volume snapshots. System-defined Snapshot Profiles include commonly used schedules for daily and weekly snapshots. Custom Snapshot profiles can be created to schedule snapshots appropriate to the data that you want to back up.
View Volume <i>an Exposed (mapped) snapshot</i>	An exposed (mapped) snapshot used to recover data from a point-in-time copy of data (snapshot).
Data Progression <i>automatically migrating volume data based on the Storage Profile settings</i>	Based on the Storage Profile applied to the volume and the Data Progression licensing, volume data automatically progresses on the Storage Center. On Storage Centers with licensed Data Progression, data can automatically migrate to different Storage Types within a storage tier, and also across storage tiers.

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 Storage Manager user defined in the vSphere Web Client Plugin.

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.

Prerequisites

- The active controller option is not available if the Storage Center user in Storage Manager has only volume manager privileges.
- The SAS mapping protocol selection is only available on Storage Centers that support Front-end SAS: SCv2000 Series and SC4020 Storage Centers.
- The options for selecting the VMFS versions depend on the version of ESXi that is running on the host. If the host is running ESXi 5.5 or ESXi 6.5, the VMFS version selection is available. The VMFS version selection does not appear when only ESXi 6.0 hosts are available in the inventory. ESXi 6.0 supports only VMFS 5. ESXi 5.5 supports VMFS 3 and VMFS 5. ESXi 6.5 supports VMFS 5 and VMFS 6.
- On the **Volumes** page, the values for Storage Profile and Disk Folder can be modified only if the preferences for the Storage Center have been set to Allow. For information about managing the preferences, see the *Dell Storage Manager Administrator's Guide*

Steps

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 opens.
3. Select the **VMFS** datastore type and click **Next**.
The vSphere Web Client Plugin loads the Storage Center information.
4. If necessary, select one or more hosts to which to map the new volume.
5. Select the Storage Center and/or active controller for volume creation. Click **Next**.
6. Select **Create New Dell Volume**, and click **Next**.
7. Select from the following steps that pertain to your environment. The steps that apply depend on the user-preferences settings of the Storage Center user in Storage 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.
 - c) If applicable, select the storage options for this volume.
 - If the preferences for the Storage Center have been set, you can select a Storage Profile for the volume.
 - If the preferences for the Storage Center have been set, select a Disk Folder from the drop-down menu.
 - Click **Next**.
 - d) Select a **Data Reduction Profile** from the list or select **None**.
 - e) Click **Change** next to **Volume QoS Profile Default** and select a new QoS Profile.
 - f) Click **Next**.
 - g) Select a Snapshot Profile for the volume, and click **Next**.
 - h) Select the LUN for mapping the volume, and click **Next**.
 - i) If permitted, select the VMFS version, and click **Next**.
8. If necessary, select the protocol for mapping, and click **Next**.
 **NOTE: The option to select protocol mappings is visible only when more than one protocol is available. If FE-SAS is supported on the Storage Center, the SAS option is listed as available.**
9. Review the Datastore Properties. You can change the name or location if required.
Depending on the VMFS file system version, you are also prompted to 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 [Create and Manage Replications and Live Volumes](#).
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.

Prerequisites

- The active controller option is not available if the Storage Center user in Storage Manager has only volume manager privileges.
- The SAS mapping protocol selection is available only on Storage Centers that support Front-end SAS: SCv2000 series and SC4020 Storage Centers.

Steps

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.
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**.

NOTE: If FE-SAS is supported on the Storage Center, the SAS option is listed as available.
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.

Prerequisites

- The active controller option is not available if the Storage Center user in Storage Manager only has volume manager privileges.
- The SAS mapping protocol selection is available only on Storage Centers that support Front-end SAS: SCv2000 Series and SC4020 Storage Centers.
- The options for selecting the VMFS versions depend on the version of ESXi that is running on the host.

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**.
3. Select the Storage Center and/or active controller for volume creation, and click **Next**.
The **Select Action Type** page opens.
4. Select **Create New Dell Volume**, and click **Next**.
5. Select from the following steps that pertain to your environment: The steps that apply depend on the user-preferences settings of the Storage Center user in Storage 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.
 - 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 **Data Reduction Profile** from the list or select **None**.
 - e) Click **Change** next to **Volume QoS Profile Default** and select a new QoS Profile.
 - f) Click **Next**.
 - g) Select a Snapshot Profile for the volume, and click **Next**.

- h) Specify the LUN for mapping the volume, and click **Next**.
- i) Select the VMFS version, and click **Next**.

 **NOTE:** The option to select the VMFS version is shown only if the host is running ESXi 6.0 or 6.5.

6. If necessary, select the protocol for mapping, and click **Next**.

 **NOTE:** If FE-SAS is supported on the Storage Center, the SAS option is listed as available.

7. 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.
8. Click **Next**.
The **Create Multiple Datastores** page opens.
9. Type the number of datastores to create, and type the number from which to start the numbering of volume names and datastore names.
10. (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.
11. Click **Next**.
The **Ready to Complete** page opens.
12. Click **Finish**.

Editing Volume Settings

Edit volume settings to select or remove the Data Reduction option, to pause Data Reduction, or to select a different QoS Profile for the datastore.

Prerequisites

- Compression is available as a Data Reduction option only if the Allow Compression option has been set on the Storage Center.
- QoS Profiles are created and managed in Storage Manager.

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

Steps

1. Select a datastore.
2. Select **Actions** > **All Dell Storage Actions** > **Edit Volume Settings**.
The **Edit Volume Settings** wizard opens.
3. Select a **Data Reduction Profile** from the list or select **None**.
4. Select or clear the **Pause Data Reduction** check box as applicable.
5. Click **Change** next to **Volume QoS Profile Default**.
The **Select QoS Profile to Apply** page opens.
6. Select a QoS Profile from the list.
7. Click **Next**.
The **Ready to Complete** page opens.
8. Click **Finish**.

Related reference

[Edit 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.

Steps

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 with the **Device Configuration** page open.
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 only available if the Storage Center user in Storage Manager only has Administrator 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 Storage 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.
 - 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**.
NOTE: If the Reduction Profile option has been set to enable Compression in the user preferences of Storage Manager Compression will be applied to the datastore. For information about managing the preferences, see the Dell Storage Manager Administrator's Guide.
 - d) Select a Snapshot 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 reference

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

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.

Steps

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 with the **Device Configuration** page open.
3. Select **Map Existing Raw Device Mapping to Hosts and Clusters** 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 only available if the Storage Center user in Storage Manager only has Administrator privileges.

6. If necessary, select one or more hosts to which to map the new Dell volume, and click **Next**.
7. Select **Map Existing Dell Volume**, and click **Next**.
8. Find and select an existing Dell volume to map as a raw device, and click **Next**.
9. Select the LUN for mapping the volume, and click **Next**.
10. If necessary, select the protocol for mapping, and click **Next**.
11. Select the compatibility mode for the raw device, and click **Next**.
The **Ready to Complete** page opens.
12. Click **Finish**.

Related reference

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

Map an Existing RDM to Additional Hosts or Clusters

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

Steps

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

Related reference

[Device Configuration](#)

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

Resizing a Datastore or RDM

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

Resize a Datastore

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

Steps

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 reference

[Resize Datastore](#)

Extend an RDM

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

Steps

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 reference

[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.

Steps

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 reference

[Volume Retention](#)

Remove an RDM

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

Steps

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 reference

[Select Raw Device](#)

[Volume Retention](#)

Configuring, Creating, and Recovering Snapshots

The Dell Storage vSphere Web Client Plugin allows you to create, configure, and expire snapshots, and recover data from snapshots.

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

Configuring Data Instant Snapshot

Configure Data Instant Snapshot to assign a Snapshot Profile to a datastore (Dell volume) or all volumes associated with a virtual machine to establish a schedule for automatically taking snapshots.

Only Snapshot Profiles already defined on the Storage Center are available for selection. For instructions on creating or modifying Snapshot Profiles, see the *Dell Storage Manager Administrator's Guide*.

Configure Data Instant Snapshot for a Datastore

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

Steps

1. Select a datastore in inventory.

2. Select **Actions** > **All Dell Storage Actions** > **Snapshot** > **Set Snapshot Profile**.
The **Configure Data Instant Snapshot** wizard starts.
3. Select one or more Snapshot Profiles to apply to the datastore.
4. Click **Next**.
The **Ready to Complete** page opens.
5. Click **Finish**.

Related reference

[Snapshot Profile](#)

Configure Data Instant Snapshot for RDMs on a Virtual Machine

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

Steps

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

Related reference

[Snapshot Profile](#)

Creating a Snapshot

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

Take a Snapshot of a Datastore

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

Steps

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

Related reference

[Snapshot Profile](#)

Take a Snapshot of RDM Volumes Associated With a Virtual Machine

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

Steps

1. Select the virtual machine for which you want to take a snapshot.

2. Select **Actions > All Dell Storage Actions > Snapshot > Create Snapshot**.
The **Create Snapshot** wizard starts.
3. Specify a time after which you want the snapshot to expire. To set the snapshot 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 snapshot 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 reference

[Snapshot Options](#)

[Snapshot Properties](#)

Deleting a Snapshot

When a snapshot is created, an expiration time is assigned to the snapshot. However, you can override the expiration time by explicitly deleting a snapshot. Deleting a snapshot removes the snapshot from the Storage Center.

Delete Snapshots for a Datastore

A snapshot of a datastore can be deleted using the vSphere Web Client Plugin.

Steps

1. Select the datastore for which you want to delete snapshots.
2. Select **Actions > All Dell Storage Actions > Snapshot > Delete Snapshot/Snapshot Schedule**.
The **Delete Storage Center Snapshot** wizard starts.
3. Select the snapshots that you want to delete.
4. Click **Next**.
The **Ready to Complete** page opens.
5. Click **Finish**.

Related reference

[Snapshot Selection](#)

Delete Snapshots of RDM Volumes Associated With a Virtual Machine

A snapshot of an RDM can be deleted using the vSphere Web Client Plugin.

Steps

1. Select the virtual machine for which you want to delete datastore snapshots.
2. Select **Actions > All Dell Storage vSphere Web Client Plugin Actions > Snapshot > Delete Snapshots/Snapshot Schedules**.
The **Delete Storage Center Snapshot** wizard starts.
3. Select the snapshots that you want to delete.
4. Click **Next**.
The **Ready to Complete** page opens.
5. Click **Finish**.

Related reference

[Snapshot Selection](#)

Recovering Data From a Snapshot

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

Recover a Datastore From a Storage Center Snapshot

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

Prerequisites

A snapshot of the datastore must exist.

Steps

1. Select the datastore for which you want to recover data.
2. Select **Actions > All Dell Storage Actions > Snapshot > Recover VM Data from Snapshot**.
The **Storage Center Snapshot Recovery** wizard starts.
3. Select one or more snapshots from which to recover data.

 **NOTE: Only one snapshot 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 reference

[Datastore Name](#)

[Host Selection](#)

[Mapping LUN](#)

[Snapshot Selection](#)

Recover an RDM From a Storage Center Snapshot

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

Prerequisites

A snapshot 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 vSphere Web Client Plugin Actions > Snapshot > Recover VM Data from Snapshot**.
The **Storage Center Replay Recovery** wizard starts.
3. Select one or more snapshots 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 reference

[Snapshot Selection](#)

[VM Selection](#)

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 replications and Live Volumes, see the *Dell Storage Manager Administrator's Guide*.

Use the plugin to add and manage replications and Live Volumes to VMFS datastores and RDMS on Dell storage. You can use the plugin to convert a replication to a Live Volume and vice versa.

Replication Operations

Use the vSphere Web Client Plugin to add, modify, and remove replications for datastores and RDMS.

Create a Datastore or RDM Replication

Use the Dell Storage vSphere Web Client Plugin to create datastores and RDM replications.

Replicating a Datastore

Use the vSphere Web Client Plugin to replicate a datastore.

Prerequisites

If you are using iSCSI connections for replications, the following conditions must be met:

- 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 .

- At least one 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

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 reference

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

Replicating an RDM

Use the vSphere Web Client Plugin to create an RDM replication.

Prerequisites

If you are using iSCSI connections for replications, the following conditions must be met:

- 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.
- At least one 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.

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 reference

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

Modifying a Datastore or RDM Replication

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

Modify a Datastore Replication

Modify the settings of an existing datastore replication.

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.

- To change the replication type, select a type from the drop-down menu.

i **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.**

- Modify the other replication settings as needed.
- 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.
- Click **Next**.
The **Ready to Complete** page opens.
- Click **Finish**.

Related reference

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

Modify an RDM Replication

Modify the settings of an existing datastore replication.

Steps

- Select the virtual machine with the RDM that is being replicated.
- Select **Actions > Dell Storage Actions > Replications/Live Volume > Edit Settings/Convert**.
The **Modify Replication/Live Volume** wizard starts.
- Select the replication to modify.
- Click **Next**.
The **Replication Options** page opens.
- To change the replication type, select a type from the drop-down menu.

i **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.**

- Modify the other replication settings as needed.
- 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.
- Click **Next**.
The **Ready to Complete** page opens.
- Click **Finish**.

Related reference

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

Removing a Datastore or RDM Replication

The Dell Storage vSphere Web Client Plugin can remove datastore and RDM replications.

Remove a Datastore Replication

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

Steps

- Select the datastore for which you want to remove a replication.
- Select **Actions > All Dell Storage Actions > Replications/Live Volume > Remove**.
The **Remove Replication/Live Volume** wizard starts.
- Select the replications to remove.
- 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 reference

[Replication Delete Options](#)

Remove an RDM Replication

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

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 reference

[Replication Delete Options](#)

[Select Replications](#)

Live Volume Operations

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

Add a Live Volume to a Datastore or RDM

Use the Dell Storage vSphere Web Client Plugin to add Live Volumes to datastores and RDMs.

Adding a Live Volume to a Datastore

Use the Dell Storage vSphere Web Client Plugin to add Live Volumes to datastore.

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:
 - Live Volume, Asynchronous
 - Live Volume, Synchronous — High Availability
 - Live Volume, Synchronous — High Consistency
6. Specify the replication settings and a target location.
7. Click **Next**.
The **Live Volume Settings** page opens.
8. (Optional) Select from the drop-down list of Secondary QoS Definitions.

9. (Optional) Clear the option labeled **Automatically Swap Primary Storage Center**.
10. If you keep the checkbox enabled for **Automatically Swap Primary Storage Center**, click **Advanced**.
The Advanced options are shown. Modify the values for the following options:
 - Min. data written to secondary before swap
 - Min. % of I/O on secondary before swap
 - Min. time as primary before swap
11. (Optional) If you selected **Live Volume, Synchronous – High Availability** as the replication type in step 5, select **Failover Automatically** to configure Live Volumes to automatically fail over when service is disrupted. By default, **Restore Automatically** is also selected. For more information, see [Configure Live Volume Automatic Failover and Restore](#).
12. Specify a Live Volume Secondary Mapping target location.
13. Click **Next**.
The **Ready to Complete** page opens with a summary of the selections that you made.
14. Click **Finish**.

Related reference

[Replication Options](#)

[Live Volume Options](#)

[Storage Center for Replication](#)

Adding a Live Volume to an RDM

Use the Dell Storage vSphere Web Client Plugin to add Live Volumes to RDMs.

Steps

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 reference

[Select Raw Device](#)

Modify a Live Volume Datastore or RDM Replication

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

Modifying a Live Volume Datastore

Modify the settings of an existing Live Volume datastore.

Steps

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

Related reference

Modify a Live Volume RDM Replication

Modify the settings of an existing Live Volume RDM replication.

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 reference

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

Remove a Live Volume Datastore or RDM Replication

Use the vSphere Web Client Plugin 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.

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 reference

[Replication Delete Options](#)

Remove a Live Volume RDM Replication

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

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 reference

[Replication Delete Options](#)

[Select Replications](#)

Configure Live Volume Automatic Failover and Restore

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

Enabling Live Volume Automatic Failover and Restore

Prerequisites

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

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

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

Steps

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

Results

The following figure shows a Live Volume with automatic failover and automatic repair enabled.

The screenshot displays the Dell Storage Manager interface for a volume named 'testingReplLiveVolDS'. The 'Monitor' tab is active, showing a table of datastores and a 'Replications / Live Volumes' section. The 'Details' section provides a comparison between Primary and Secondary storage centers and lists various replication settings.

Datstore name	Volume name	Type	Size	Storage System(SAN/NAS)
testingReplLiveVolDS	LV of testingReplLiveVolE	VMFS	20 GB	SN 65231 Storage Cente

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

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

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

Figure 11. 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

Topics:

- [Creating Virtual Machines](#)
- [Clone a Virtual Machine](#)
- [Recovering a Virtual Machine From a Snapshot](#)

Creating Virtual Machines

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

Deploy Virtual Machines to an Existing VMFS Datastore

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

Prerequisites

A virtual machine template must be created from which new virtual machines can be deployed. 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
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 reference

[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

A virtual machine template must be created from which new virtual machines can be deployed. For information about creating or updating a virtual machine template, refer to the vSphere help topics on virtual machine templates.

i **NOTE:** The options that appear when deploying a virtual machine change depending on the volume preferences of the Storage 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 Storage 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 reference

[Customization](#)
[Datastore Options](#)
[Datastore Properties](#)
[Mapping LUN](#)
[Name and Location](#)
[Snapshot Profile](#)
[Storage Center](#)
[Template Selection](#)
[Volume](#)
[Volume Settings](#)

Clone a Virtual Machine

Use the Provision Virtual Machine wizard to clone a virtual machine and create a thin copy of the existing virtual machine.

Prerequisites

 **NOTE: This option applies only to VMs.**

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
2. Select **Actions** > **All Dell Storage Actions** > **Provision Virtual Machines**.
The **Provision Virtual Machines** wizard starts.
3. Select **Clone Virtual Machine**.
The **Host/Cluster** page opens.
4. If the **Host/Cluster** page opens, select the host 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 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 reference

[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 Snapshot

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 Snapshot

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

Prerequisites

At least one Replay of the virtual machine must exist.

Steps

1. Select a virtual machine.
2. Select **Actions > All Dell Storage Actions > Snapshot > Recover VM Data from Snapshot**.
The **Storage Center Snapshot 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 reference

[Replication Delete Options](#)

[VM Selection](#)

Managing Disaster Recovery

Use the Dell Storage vSphere Web Client Plugin to manage Disaster Recovery for VMFS datastores.

Topics:

- [Activate Disaster Recovery](#)
- [Restore/Start Disaster Recovery](#)
- [Predefine Disaster Recovery](#)

Activate Disaster Recovery

Activate Disaster Recovery for the corresponding datastore on the associated Storage Center.

Prerequisites

Valid restore points must be defined.

Steps

1. Select a datacenter.
2. Select **Actions > All Dell Storage Actions > Disaster Recovery > Activate**.
The **Activate Disaster Recovery** wizard starts and the **Select SAN array source/destination** page opens.
3. From the list, select the Storage Center pair that hosts the replications for which you want to activate Disaster Recovery. Click **Next**.
The **Disaster Recovery Warning** page opens.
4. (Optional) Check **Allow Planned Activate Disaster Recoveries**. Click **Next**.
If this option is selected, the following actions result:
 - The servers on the production site are shut down.
 - The Storage Centers on the production site do not have to be shut down.
 - The source volume is no longer mapped to the server.

The **Available Restore Points** page opens showing the datastores that have been specified as restore points.
5. From the list, select the restore points that you want to activate. Click **Next**.
A page opens showing the selected restore points.
6. (Optional) To modify the settings, click **Edit Settings**.
The **Edit Activate Disaster Recovery Setting** page opens.
7. Modify the settings:
 - Click **Change** next to **Server** to specify the server to which the activated volume will be mapped when DR is activated.
 - Check the **Use Original Volumes Folder** checkbox to use the source volume folder path for the activated DR volume.
 - Check the **Use Active Snapshot** checkbox to use the current state of the volume (active snapshot) for the activated volume.
 - Click **Change** next to **Snapshot Profile List** to modify the snapshot profile to be applied.

Click **OK** to save the modified settings.
8. Click **Next**.
The **Ready to Complete** page opens.
9. Click **Finish**.

Related reference

- [Edit Activate Recovery Settings](#)
- [Select Restore Points](#)
- [Select Source/Destination Pair](#)

Restore/Start Disaster Recovery

Use the **Restore/Start Disaster Recovery** page to restore the Disaster Recovery activated volume for the corresponding datastore.

Prerequisites

Valid restore points must be defined.

Steps

1. Select a datacenter.
2. Select **Actions > All Dell Storage Actions > Disaster Recovery > Restore/Restart**.
The **Restore/Restart Disaster Recovery** wizard starts, and the **Select SAN array source/destination** page opens.
3. From the list, select the Storage Center pair that hosts the replications for which you want to restore the Disaster Recovery. Click **Next**.
The **Restore/Restart Disaster Recovery Warning** page opens.
4. (Optional) Select Disaster Recovery options:
 - Check **Mirror Back Only** to skip recreating the replication in the original direction and use the Disaster Recovery site as the source.
 - Check **Automatically Deactivate Destination** to automatically remove server mappings from the activated volume without requiring administrator intervention. This option is available only if Disaster Recovery has been activated for the restore point. If this option is selected, I/O to the activated volume should be halted before performing the restore.

Click **Next**.

The **Available Restore Points** page opens showing the datastores that have been specified as restore points.

5. From the list, select a pair of restore points. Click **Next**.
A page opens that shows the selected restore points.
6. (Optional) To modify the settings, click **Edit Settings**.
The **Edit Activate Disaster Recovery Setting** page opens.
7. Modify the settings:
 - Click **Change** next to **Server** to specify the server to which the activated volume will be mapped when DR is activated.
 - Check the **Use Original Volumes Folder** checkbox to use the source volume folder path for the activated DR volume.
 - Check the **Use Active Snapshot** checkbox to use the current state of the volume (active snapshot) for the activated volume.
 - Click **Change** next to **Snapshot Profile List** to modify the snapshot profile to be applied.

Click **OK** to save the modified settings.

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

Related reference

[Edit Activate Recovery Settings](#)

[Recover/Restart Disaster Recovery Warning](#)

[Select Restore Points](#)

[Select Source/Destination Pair](#)

Predefine Disaster Recovery

Predefine Disaster Recovery updates the Disaster Recovery settings for the corresponding datastore on the associated Storage Center volume.

Steps

1. Select a datacenter.
2. Select **Actions > All Dell Storage Actions > Disaster Recovery > Predefine**.
The **Select SAN array source/destination** page opens.
3. From the list, select the Storage Center pair that hosts the replications for which you want to update the Disaster Recovery settings. Then click **Next**.

A page opens that shows the selected restore points.

4. (Optional) To modify the settings, click **Edit Settings**.
The **Edit Activate Disaster Recovery Setting** page opens.
5. Modify the settings:

- Click **Change** next to **Server** to specify the server to which the activated volume will be mapped when DR is activated.
- Check the **Use Original Volumes Folder** checkbox to use the source volume folder path for the activated DR volume.
- Check the **Use Active Snapshot** checkbox to use the current state of the volume (active snapshot) for the activated volume.
- Click **Change** next to **Snapshot Profile List** to modify the snapshot profile to be applied.

Click **OK** to save the modified settings.

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

Related reference

[Edit Activate Recovery Settings](#)

[Select Restore Points](#)

[Select Source/Destination Pair](#)

Viewing Dell Storage Information

Viewing the Dell Settings for a Host

Use the **Dell Storage 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 **Configure** tab of an ESXi host.

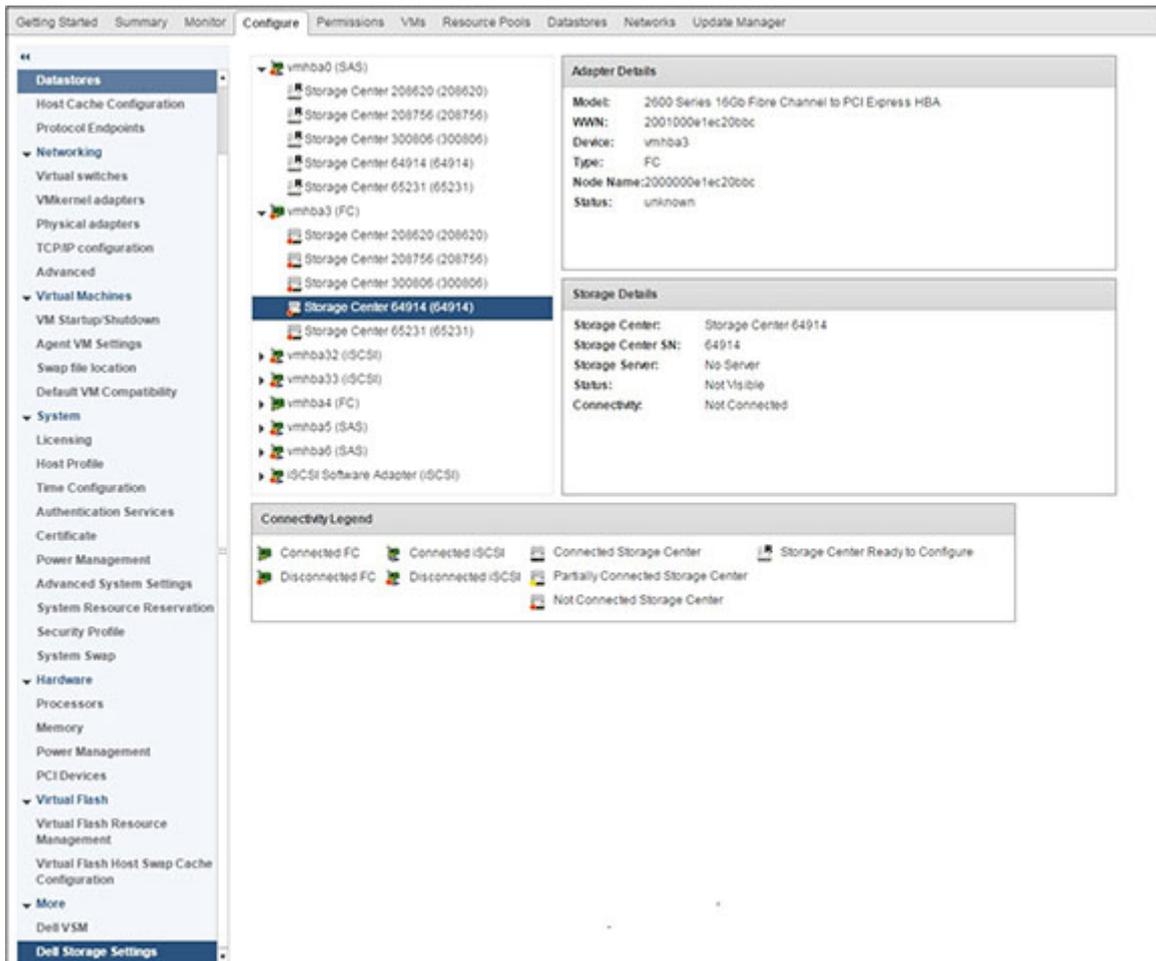


Figure 12. Dell Storage Settings for a Host

NOTE: The method for viewing Adapter Details varies depending on the version of ESXi that is running on the host. The previous figure shows the Adapter Details report on ESXi 6.5.

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 Legends

Table 1. Description of Connectivity Legends

Icon	Label	Description
	Connected FC	A Fibre Channel connection between the HBA and Storage Center exists.

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

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

Configuring Storage Center Connections

Configure a connection between an HBA and a Storage Center.

Steps

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 2. Description of Reported Adapter Information

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

Label	Description
Status	Status of the adapter

Storage Details

Table 3. Description of Storage Details

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

Using Dell Views

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

General Tab

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

Storage Center General Tab Information

The following figure shows an example of information in the **General** tab for a Storage Center.

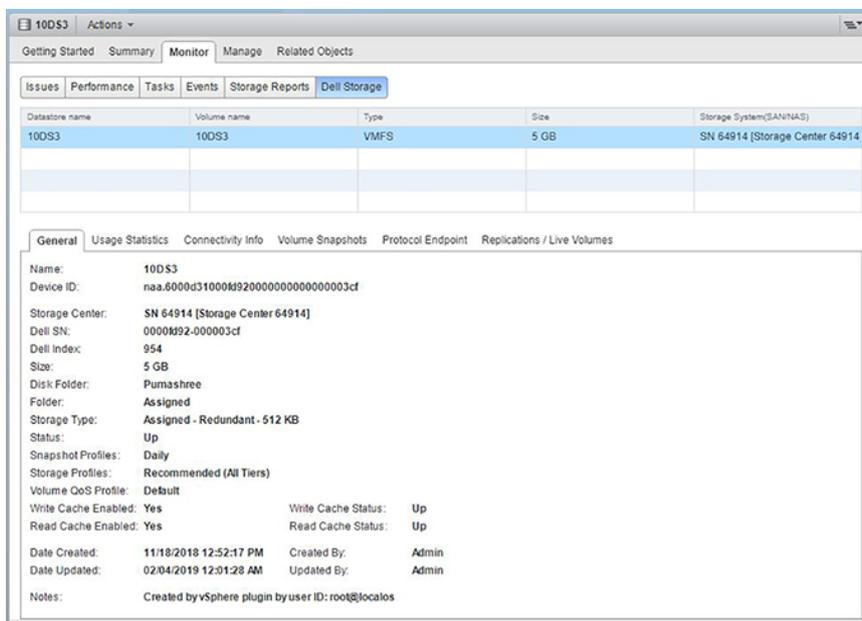


Figure 13. General Tab Information for a Storage Center

Label	Description
Name	Name of the volume
Serial Number	Volume serial number

Label	Description
Storage Center	Storage Center on which the volume resides
Dell SN	Dell serial number of the volume
Dell Index	Object index for the volume
Size	Size of the volume
Disk Folder	Storage Center disk folder location
Folder	Folder location of the volume
Storage Type	Storage type of the volume
Status	Current status for the volume, as well as the controller on which the volume is active
Snapshot Profiles	Snapshot Profiles applied to the volume
Storage Profiles	Storage profile for the volume
Volume QoS Profile	QoS profile for the volume
Write Cache Enabled	Indicates whether write cache is enabled for the volume
Read Cache Enabled	Indicates whether read cache is enabled for the volume
Read Cache	Indicates whether Read Cache is enabled or not (Yes or No)
Date Created	Date and time the volume was created
Created By	User that created the volume
Date Updated	Date the volume was last updated
Updated By	User that last updated the volume
Notes	Descriptive notes for the volume

FluidFS General Tab Information

The following figure shows an example of information in the **General** tab for a FluidFS cluster.

The screenshot displays the 'General' tab of a FluidFS cluster configuration page. The interface includes a navigation bar with tabs for 'Getting Started', 'Summary', 'Monitor', 'Manage', and 'Related Objects'. Below this is a sub-navigation bar with tabs for 'Issues', 'Performance', 'Utilization', 'Tasks', 'Events', 'Resource Reservation', 'Hardware Status', 'Log Browser', and 'Dell Storage'. The main content area shows a table of datastores and their associated volumes.

Datstore name	Volume name	Type	Size	Storage System(SAN/NAS)
1	Naveen 1	VMFS	5 GB	SN 205534 [Storage Center 205534]
43rew	43rew/vol	NFS	20 GB	FluidFS-A290006
2	Naveen 2	VMFS	6 GB	SN 205534 [Storage Center 205534]
naveen15	naveen15	VMFS	500 GB	SN 205534 [Storage Center 205534]

Below the table, the 'General' tab is selected, showing the following information:

- FluidFS Cluster Name: FluidFS-A290006
- FluidFS Cluster IP Address: 172.XX.XXX.XX

At the bottom, there is a section for 'Storage Center Servers' with the following table:

Name	Hostname or IP Address	Version	Status
Storage Center 65221	172.XX.XXX.XX	7.1.1.101	Up

Figure 14. Information in the General Tab for a FluidFS Cluster

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

Usage Statistics Tab

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

Storage Center Statistics Information

The following figure shows an example of usage statistics for a Storage Center.

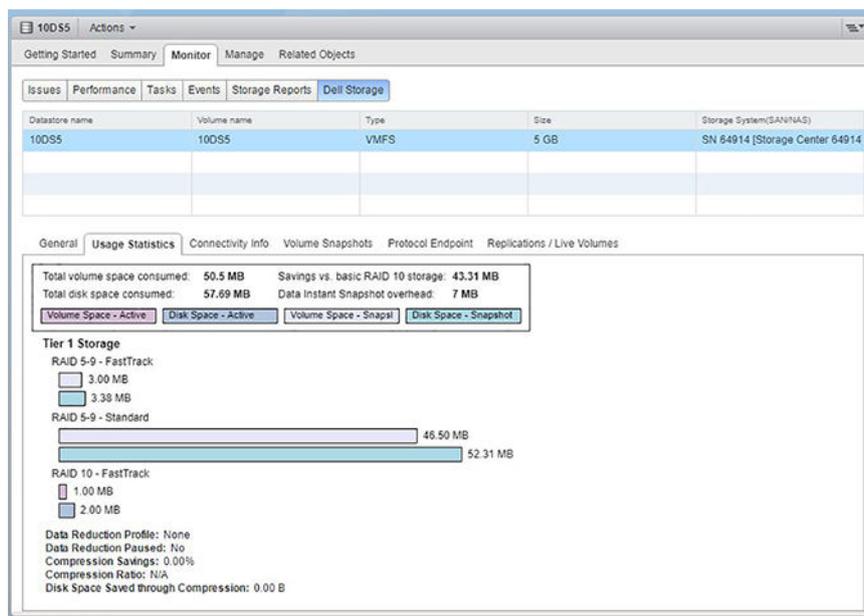


Figure 15. Storage Center Statistics Information

The following table describes the usage statistics for a Storage Center.

Label	Description
Total volume space consumed	Total space used on the volume
Savings vs. basic RAID 10 storage	Estimate of storage space saved using Dell Dynamic Block Architecture compared to basic RAID storage
Total disk space consumed	Total disk space consumed by the volume
Data Instant Snapshot overhead	Total space consumed by volume snapshots
Tier 1 Storage	Active volume space, active disk space, and Snapshot space for the volume on tier 1
Tier 2 Storage	Active volume space, active disk space, and Snapshot space for the volume on tier 2
Tier 3 Storage	Active volume space, active disk space, and Snapshot space for the volume on tier 3
Data Reduction Profile	Indicates either Compress or None, depending on the Data Reduction option selected
Data Reduction Paused	Indicates whether Data Compression is currently running on the volume
Compression Savings	Percentage of volume space saved by using Compression
Compression Ratio	Indicates the volume efficiency of using Compression
Disk Space Saved Through Compression	Amount of volume space saved by using Compression

FluidFS Statistics Information

The following figure shows an example of usage statistics for a FluidFS cluster.

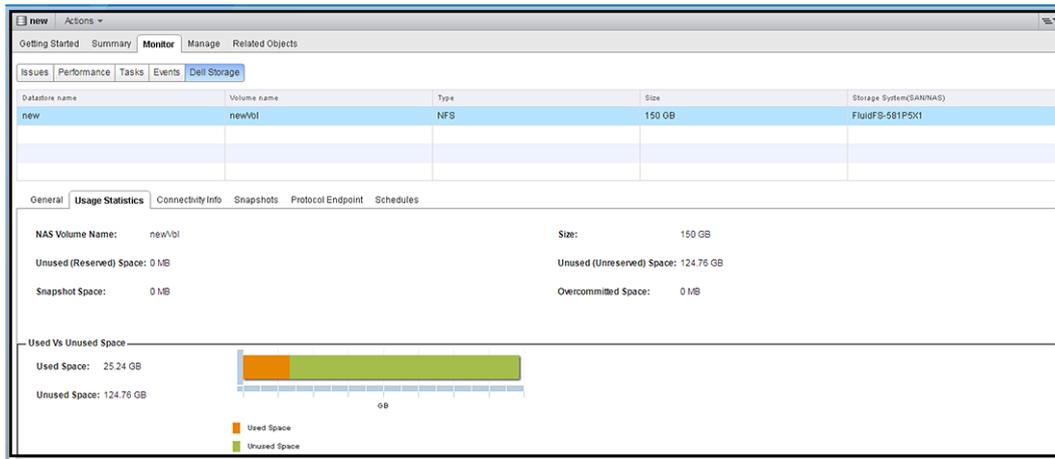


Figure 16. Usage Statistics for a FluidFS Cluster

The following table describes the FluidFS usage statistics information.

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

Connectivity Info Tab

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

The following figures shows the connectivity information for a Storage Center.

Datastore name	Volume name	Type	Size	Storage System(SAN/NAS)
1	Naveen 1	VMFS	5 GB	SN 205534 [Storage Center 205534]
2	Naveen 2	VMFS	6 GB	SN 205534 [Storage Center 205534]
naveen15	naveen15	VMFS	500 GB	SN 205534 [Storage Center 205534]

Server Port	Storage Port	LUN	Type	Status
172.29.82.6 (2001000)	5000D3100322DE1C	1	Fibre Channel	Up
172.29.82.5 (2001000)	5000D3100322DE1C	1	Fibre Channel	Up
172.29.82.6 (2001000)	5000D3100322DE1C	1	Fibre Channel	Up
172.29.82.5 (2001000)	5000D3100322DE1C	1	Fibre Channel	Up
172.29.82.5 (2001000)	5000D3100322DE1B	1	Fibre Channel	Up
172.29.82.6 (2001000)	5000D3100322DE1B	1	Fibre Channel	Up
172.29.82.6 (2001000)	5000D3100322DE1B	1	Fibre Channel	Up
172.29.82.5 (2001000)	5000D3100322DE1B	1	Fibre Channel	Up

Figure 17. Connectivity Information for a Storage Center

The following table describes connectivity information for a Storage Center.

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

Volume Snapshots Tab

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

The following figure shows an example of information on the Volume Snapshots tab.

Datstore name	Volume name	Type	Size	Storage System(SAN/NAS)
1	Naveen 1	VMFS	5 GB	SN 205534 [Storage Center 205534]
2	Naveen 2	VMFS	6 GB	SN 205534 [Storage Center 205534]
naveen15	naveen15	VMFS	500 GB	SN 205534 [Storage Center 205534]

Freeze Time	Expire Time	Snapshot Size	Description
Active		6 MB	
Mon Sep 12 05:31:05 GMT+0530 2016	Mon Sep 19 05:31:05 GMT+0530 2016	6 MB	Daily at 12:01 AM
Sun Sep 11 05:31:05 GMT+0530 2016	Sun Sep 18 05:31:05 GMT+0530 2016	8 MB	Daily at 12:01 AM
Sat Sep 10 05:31:08 GMT+0530 2016	Sat Sep 17 05:31:08 GMT+0530 2016	6 MB	Daily at 12:01 AM
Fri Sep 9 05:31:08 GMT+0530 2016	Fri Sep 16 05:31:08 GMT+0530 2016	6 MB	Daily at 12:01 AM
Thu Sep 8 05:31:06 GMT+0530 2016	Thu Sep 15 05:31:06 GMT+0530 2016	8 MB	Daily at 12:01 AM
Wed Sep 7 05:31:06 GMT+0530 2016	Wed Sep 14 05:31:06 GMT+0530 2016	8 MB	Daily at 12:01 AM
Tue Sep 6 05:31:07 GMT+0530 2016	Tue Sep 13 05:31:07 GMT+0530 2016	188 MB	Daily at 12:01 AM

Figure 18. Volume Snapshots Tab

The following table describes the information in the Volume Snapshots tab.

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

Replications/Live Volume Tab

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

The following figure shows an example of information in the Replications/Live Volume tab.

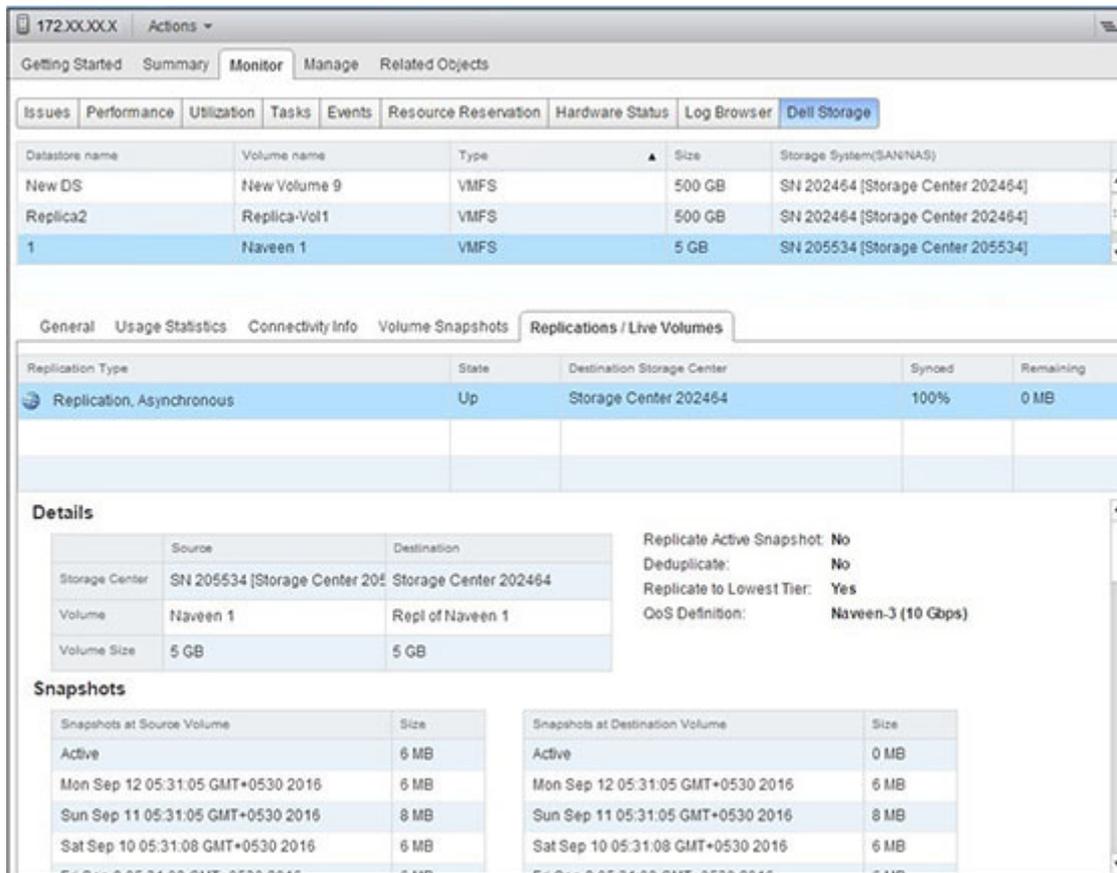


Figure 19. Replications/Live Volume Tab

The following table describes the information in the Replications/Live Volume tab.

Label	Description
Replication Type	Type of replication
State	Current state of the replication
Destination Storage Center	Destination (target) Storage Center for the replication
Synced	Percentage of data currently in sync
Remaining	Amount of data that is not yet synced
For each replication:	
Source Storage Center	Source Storage Center for the replication
Destination Storage Center	Destination (target) Storage Center for the replication
Source Volume	Name of the volume on the source Storage Center
Destination Volume	Name of the volume on the destination Storage Center
Source Volume Size	Capacity of the volume on the source Storage Center
Destination Volume Size	Capacity of the volume on the destination Storage Center
Replicate Active Replay	Indicates whether the Replicate Active Snapshot option is enabled
Deduplicate	Indicates whether the Deduplication option is enabled
Replicate to Lowest Tier	Preference (Yes or No) for replicating to lowest tier
QoS Definition	Name of the QoS definition for the replication

Viewing Dell Charts

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

The following figure shows KB/sec and IO/sec charts for a Storage Center.

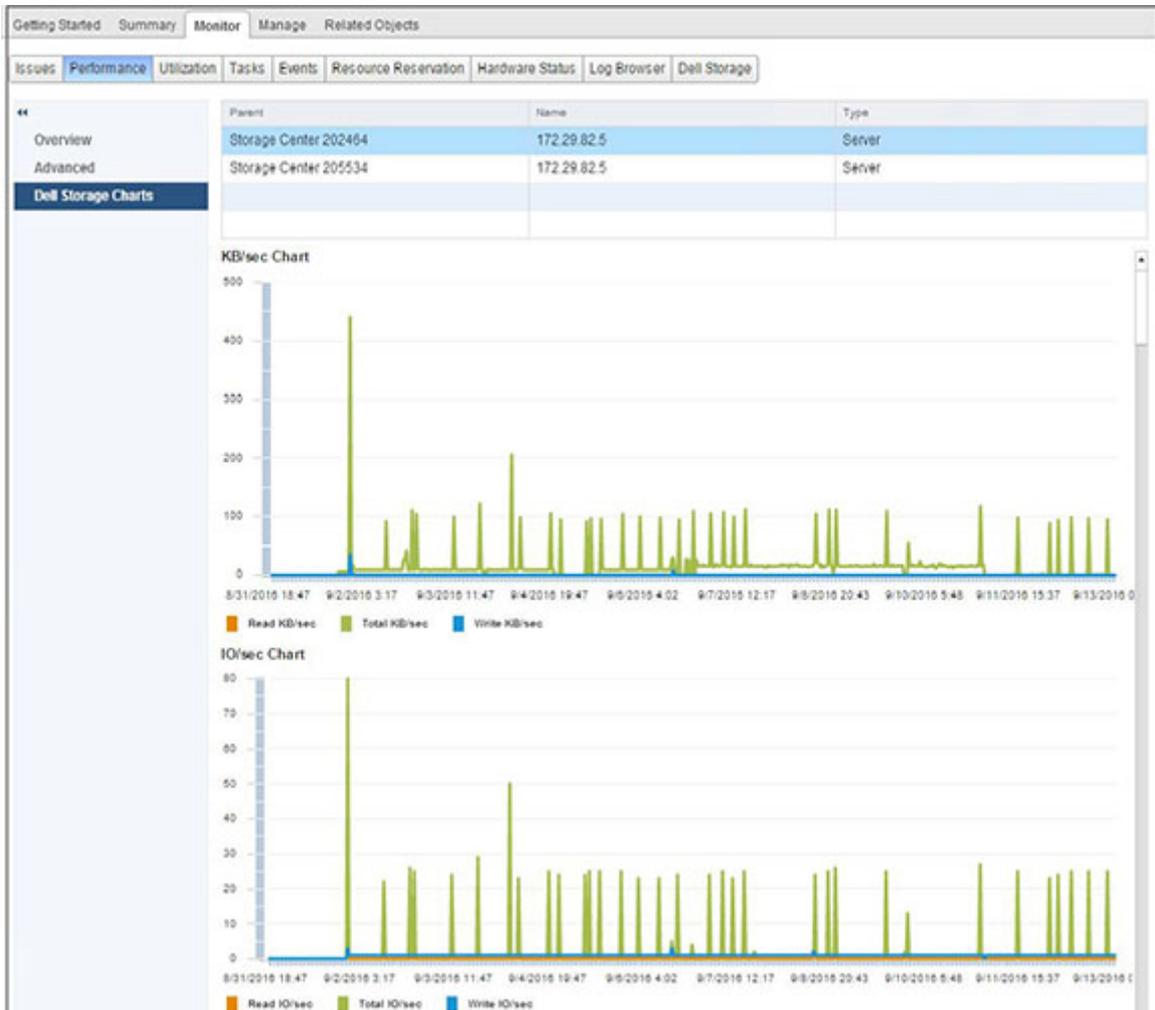


Figure 20. Example of KB/sec Chart and IO/sec Chart for a Storage Center

The following figure shows an example of a latency chart for a Storage Center.

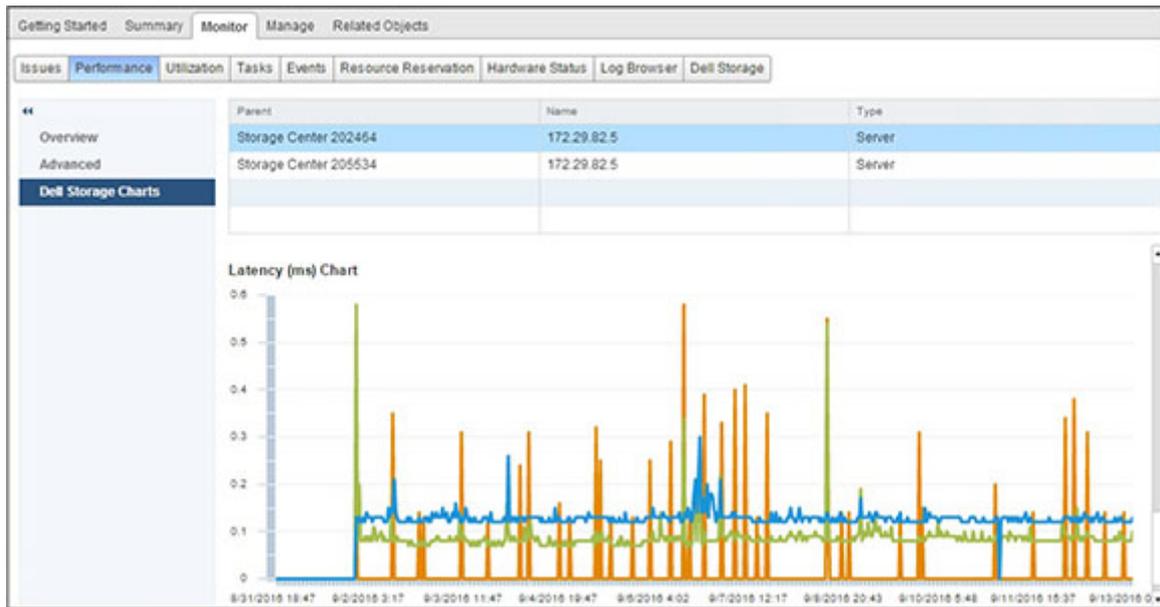


Figure 21. Example of Latency Chart for a Storage Center

For each Storage Center connected to the ESXi host, the header includes information described in the following table.

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

Charts

The following table describes the type of Storage Center performance data displayed in charts.

Label	Description
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
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
IO Size Chart	Average IO Size – Average size of I/O operations in kilobytes
Latency (ms) Chart	Read Latency – Latency of read operations in milliseconds
	Write Latency – Latency of write operations in milliseconds
	Transfer Latency – Latency of data transfer operations in milliseconds

Wizard Page Reference

Add Storage (Storage Center)

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

Select Action Type

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

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

Back Next Finish Cancel

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

Compatibility Mode

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

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

Compatibility

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

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

Back Next Finish Cancel

- **Physical**—Select this option to allow the guest operating system direct access to the hardware. VMware snapshots of the virtual machine do not include this disk.
- **Virtual**—Select this option to provide the guest operating system virtual access to the disk. As such, the VMware snapshots and other advanced VMware features can be used. Note, however, that only providing virtual access might cause incompatibility issues with some Dell applications.

Create Multiple Datastores

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

Create Multiple Datastores

Number of Datastores: Start numbering at:

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

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

Customization

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

Customize virtual machine settings:

Name

- New Virtual Machine 1
- New Virtual Machine 2
- New Virtual Machine 3
- New Virtual Machine 4
- New Virtual Machine 5

Virtual Machine Settings

Name:

CPU:

Memory (MB):

Network:
VM Network

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

Customization For Clone Virtual Machine

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

Use Customization Spec.

Select a customization spec from the list to continue.

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

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

Datastore Lookup

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

Select a datastore in which to store the virtual machine files

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

Back Next Finish Cancel

Datastore Name

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

Recovery Datastore

Datastore Name:

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

Location:

- Datacenter
 - Storage Folder

Back Next Finish Cancel

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

Datastore Options

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

Select Datastore Option

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

Back Next Finish Cancel

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

Device Configuration

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

The screenshot shows a 'Virtual Machine Properties' dialog box. The top section, 'Virtual Machine Properties', lists: VM Name: Virtual Machine11, DNS Name: win2k12a-m380, Guest OS Name: Microsoft Windows Server 2008 R2 (64-bit), Host: ESXHost1.domain, and State: running. The bottom section, 'Add Raw Device Mapping', has two radio button options. The first, 'Add New Raw Device Mapping to Virtual Machine', is selected and includes a description: 'This option gives the Virtual Machine direct access to the Dell SAN.' Below it is a 'Virtual Device Node' dropdown menu set to 'SCSI (0, 3)'. The second option is 'Map Existing Raw Device Mapping to Hosts and Clusters', with a description: 'This option allows you to map existing Raw Device Mappings on this Virtual Machine to other Hosts and/or Clusters to enable vMotion of Virtual Machine to target Hosts.' At the bottom are 'Back', 'Next', 'Finish', and 'Cancel' buttons.

- **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.

Edit Activate Disaster Recovery Settings

Use the **Edit Activate Disaster Recovery Settings** page to specify properties for the Disaster Recovery operations.

The screenshot shows an 'Edit Activate Disaster Recovery Settings' dialog box. It displays the following information: State: No Source Volume; Last Validated Time: Sun Jul 10 20:05:33 GMT+0530 2016; Sync Mode: High Consistency; Sync Data Status: Current; Last Sync Time: Sun Jul 10 20:05:33 GMT+0530 2016. A checked checkbox indicates 'The data in the destination volume is in sync with the source volume'. The 'Volume Settings' section includes a 'Name' field with 'DR of ck-vol1', a 'Server' field with 'CServer' and a 'Change' button, and two unchecked checkboxes: 'Use Original Volumes Folder' and 'Use Active Snapshot'. The 'Snapshot Profile List' is set to 'Daily' with a 'Change' button. At the bottom right are 'Cancel' and 'OK' buttons.

- **Server**—Allows you to change the server.
- **Use Original Volumes Folder**—Select this option to indicate that the original volume folder should be used for the Disaster Recovery operations.
- **Use Active Snapshot**—Select this option to indicate that active snapshots should be used in the Disaster Recovery operations.
- **Snapshot Profile List**—Opens a list of snapshot profile to be used.

Edit Volume

Use the **Edit Volume Settings** page to modify settings for a datastore.

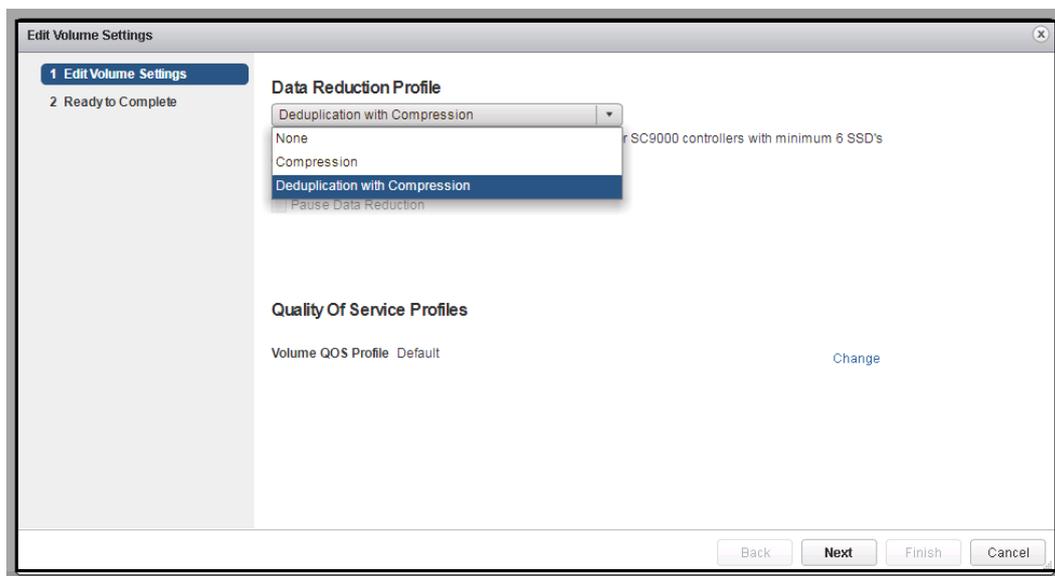
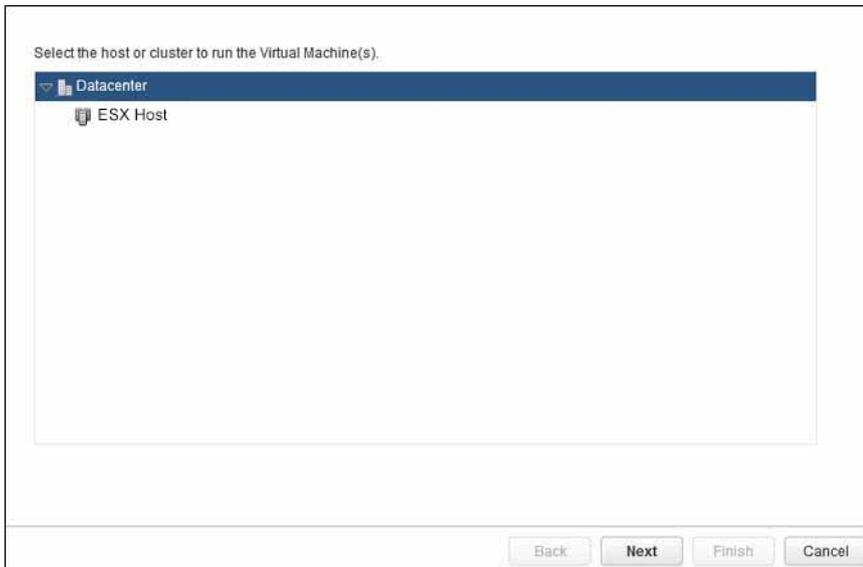


Figure 22. Edit Volume Settings

- **Data Reduction Profile**—Allows you to modify the data reduction Compression settings:
 - **None**—Do not use Compression
 - **Compression**—Use Compression
 - **Deduplication with Compression**—Use Deduplication with Compression
 - **Pause Data Reduction**—If selected, pauses compression
- **NOTE:** The Compression option is enabled only if the Allow Compression option has been set on the Storage Center. Otherwise, the Compression option is not enabled, and cannot be selected. For information about managing the Allow Compression option, see the *Dell Storage Manager Administrator's Guide*
- **Quality of Service Profiles**— To set a Volume QoS Profile, either accept the default QoS Profile or click **Change** across from **Volume QoS Profile**. Then, select a Volume QoS profile from the resulting list, and click **OK**

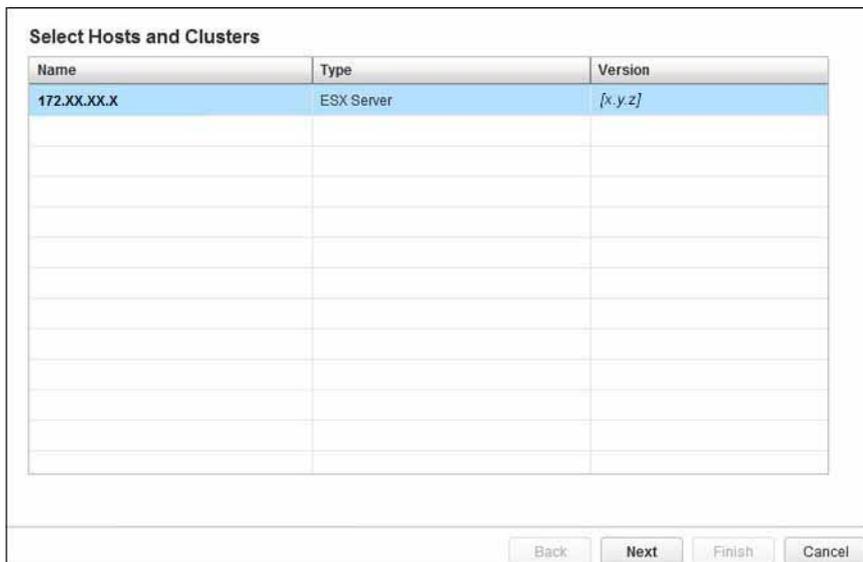
Host/Cluster

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



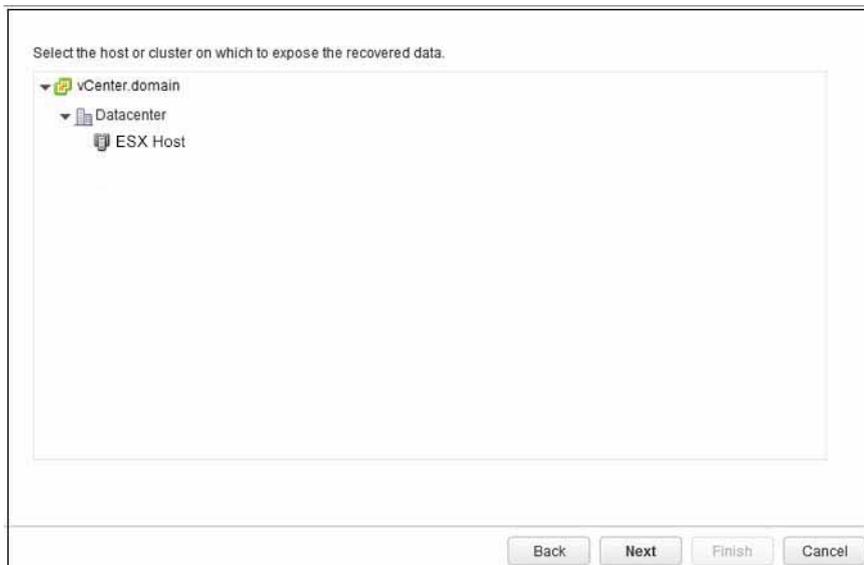
Hosts and Clusters

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



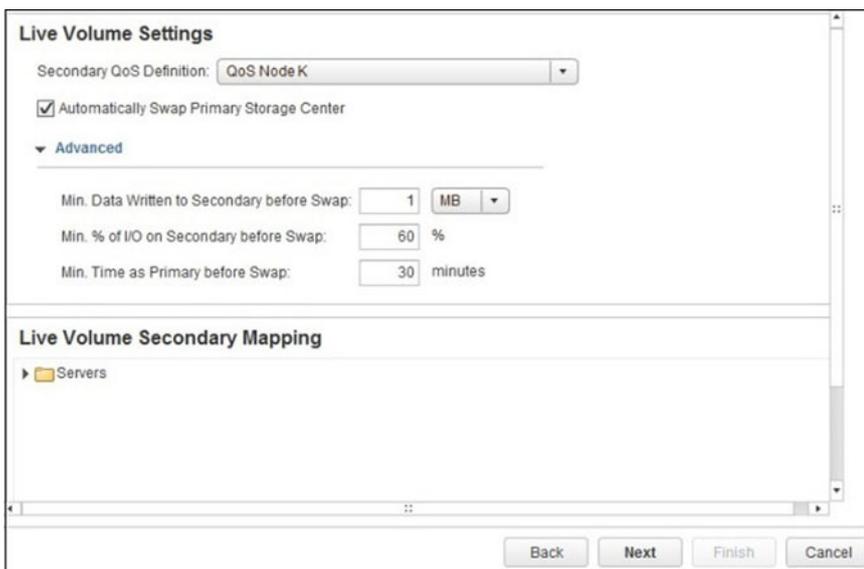
Host Selection for Snapshot Recovery

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



Live Volumes

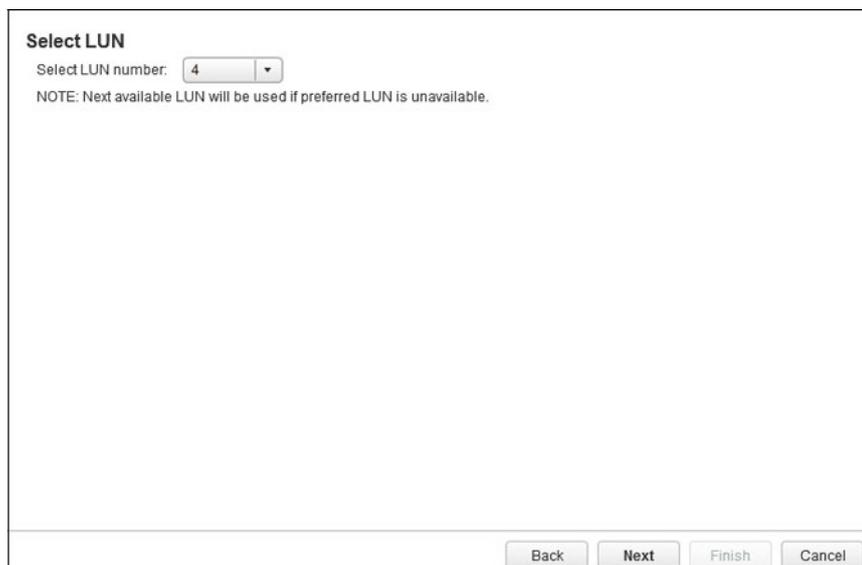
Use the **Live Volumes** page to specify the values for Live Volume replication.



- **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.



The screenshot shows a wizard window titled "Select LUN". At the top left, the text "Select LUN" is displayed. Below it, there is a label "Select LUN number:" followed by a text input field containing the number "4" and a dropdown arrow. Underneath the input field is a note: "NOTE: Next available LUN will be used if preferred LUN is unavailable." At the bottom of the window, there are four buttons: "Back", "Next", "Finish", and "Cancel".

Name and Location

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



The screenshot shows a wizard window titled "Name and Location". It contains several sections: "Base Name:" with a text input field containing "New Virtual Machine"; a note stating "Virtual machine names may contain up to 80 characters and they must be unique within each vCenter Server VM folder. The entered name will be used as a base for each VM and can be modified later."; "Number of VMs to create:" with a spinner control set to "1"; and "Inventory Location:" with a list box containing "Datacenter" which is highlighted. At the bottom, there are four buttons: "Back", "Next", "Finish", and "Cancel".

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

Protocol Selection

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

The following options are available if Front-End SAS is not supported on the Storage Center selected.

Mapping Protocol:

Fibre Channel
Only use Fibre Channel paths for mapping.

iSCSI
Only use iSCSI paths for mapping.

Any Available
Use any available paths between host and storage.

Back Next Finish Cancel

The following options are available if Front-End SAS is supported on the Storage Center selected.

Mapping Protocol:

SAS
Only use FE SAS paths for mapping.

Any Available
Use any available paths between host and storage.

Back Next Finish Cancel

- **SAS**—Select this option to use the Front-End SAS protocol.
- **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.

Recover/Restart Disaster Recovery Warning

Use the **Recover/Restart Disaster Recovery Warning** page to select recovery options.

The screenshot shows a dialog box titled "Restart Warning" and "Recovery Warning". The "Restart Warning" section states: "If the source Volume is available and the destination Volume has not been activated this just re-creates the original Replication or Live Volume". The "Recovery Warning" section states: "If the RestorePoint has been activated from the DR or the source Volume is no longer available, the data will be replicated back from the Destination. If not just mirroring back the original replication will be re-created. You must deactivate the destination Volume before the recover will finish. A managed Replication or managing Live Volume will be restored as a standard Replication or Live Volume respectively." Below the warnings are two checkboxes: "Mirror Back Only" and "Automatically Deactivate Destination". At the bottom right are four buttons: "Back", "Next", "Finish", and "Cancel".

- **Mirror Back Only**—Skip the step of recreating the replication in the original direction and use the Disaster Recovery site as the source.
- **Automatically Deactivate Destination**—Automatically remove server mappings from the activated volume without requiring administrator intervention. If this option is selected, I/O to the activated volume should be halted before performing the restore.

Replication Delete Options

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

The screenshot shows a dialog box titled "Remove Options". It contains three checkboxes: "Recycle Destination Volume", "Delete Destination Volume", and "Delete Restore Point". The "Delete Restore Point" checkbox is checked. At the bottom right are four buttons: "Back", "Next", "Finish", and "Cancel".

- **Recycle Destination Volume**—Select this checkbox if you want to move the destination volume to the Recycle Bin on the destination Storage Center.

- **Delete Destination Volume**—Select this checkbox if you do not want to retain the deleted destination volume in the Recycle Bin—not recommended.

CAUTION: If you delete the destination volume, you cannot recover the volume on the destination (target) Storage Center. The volume is permanently deleted.

- **Delete Restore Point**—Select this checkbox if you want to delete the restore point for the replication.

Replication Modification Options

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

- **Replication Type**—Select the type of replication to be used:
 - Live Volume, Asynchronous
 - Live Volume, Synchronous — High Availability
 - Live Volume, Synchronous — High Consistency
- **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*.
- **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 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.

Select the new size for datastore 'Volume'.

Original Size: 50.00 GB

Resize to:

Storage Size Type: GB

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

Select RDM

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

Select RDM

Name	Storage Center Volume	Size	Compatibility Mode
Hard disk 2	Volume_A	5 GB	Physical
Hard disk 3	Volume_B	10 GB	Virtual

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Select Replications

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

Select Replication

Name	Source Storage Center	Destination Storage Ce...	Replication Type
svdc_5ds	Rack8 SC-3 64293	Rack8 SC-1 64505	Replication, Asynchronous
svdc_5ds	Rack8 SC-3 64293	Rack8 SC-2 64506	Replication, Synchronous - High A

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Select Restore Points

Use the **Select Restore Points** page to select the datastores identified as restore points for Disaster Recovery operations.

Available Restore Points							
Datastore name	Source Volume	Destination SAN Array	Destination Volume	Live Volume	Status	DR Activated	State
BDC-Test2	BDC-Test2	Storage Center 205534	Repl of BDC-Test2	false	Down	false	Source and Destination Storage Centers Down
Replica3	Secondary-Vol1	Storage Center 205534	Repl of Secondary-Vol1	false	Down	false	Source and Destination Storage Centers Down
23er	23er	Storage Center 205534	Repl of 23er	false	Down	false	Source and Destination Storage Centers Down
abod2	abod2	Storage Center 205534	Repl of abod2	false	Down	false	Source and Destination Storage Centers Down
2343rt	2343rt	Storage Center 205534	Repl of 2343rt	false	Down	false	Source and Destination Storage Centers Down

Select Source/Destination Pair

Use the **Select Source/Destination Pair** page to select the array pairs to be used in a Disaster Recovery operation.

Select SAN array source/destination pair		
Source SAN Array	Destination SAN Array	Number of Restore Points
Storage Center 65221	Storage Center 65229	42
Storage Center 65229	Storage Center 65221	20
Storage Center 202464	Storage Center 205534	83
Storage Center 205534	Storage Center 202464	26
Storage Center 64920	Storage Center 202464	2

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Select Volume

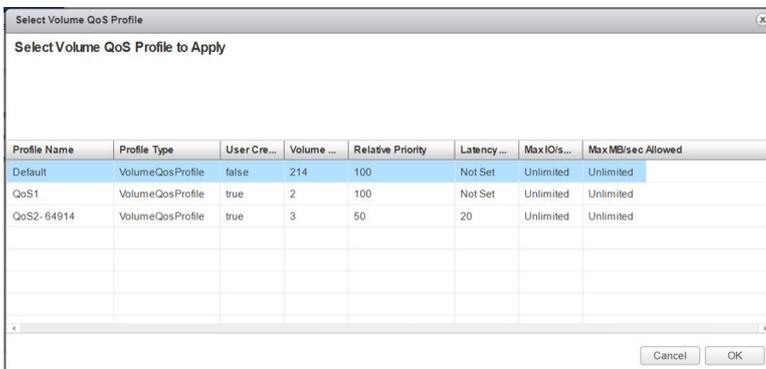
Use the **Select Volume** page to search for and select an existing Dell volume to map as storage. The selected volume must already be formatted as a VMFS datastore.



Select Volume QoS Profile to Apply

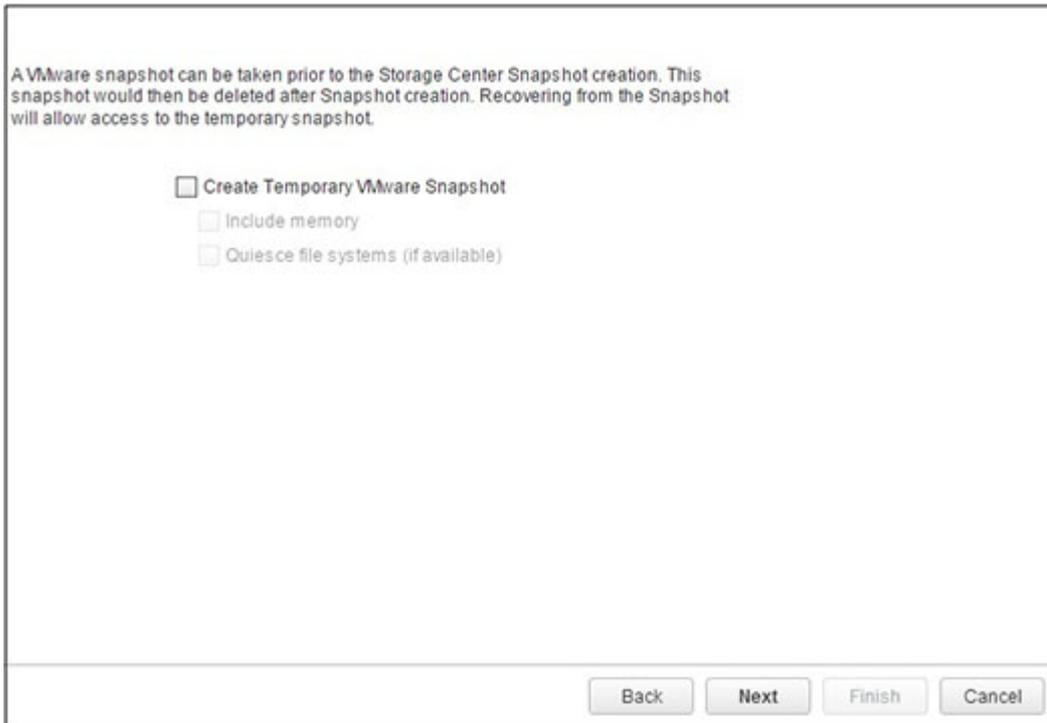
Use the Select Volume QoS Profile to Apply page to select a QoS profile to apply to the volume.

Select a QoS profile for the volume. For information about creating or modifying QoS definitions, see the *Storage Manager Administrator's Guide*.



Snapshot Options

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



- **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 Replay.
- **Quiesce file systems (if available)**—Select this checkbox to pause running processes in the guest operating system before taking the Replay. Pausing the processes ensures that the file system is in a known, consistent state when the Replay is taken. (This option requires that VMware tools are installed.) See VMware help for information about VMware Replay options.

Snapshot Profile

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

Select Snapshot Profiles to be used for this volume

Selected Snapshot Profiles	
<input checked="" type="checkbox"/>	Consistency Group
<input checked="" type="checkbox"/>	Daily
<input checked="" type="checkbox"/>	Sample

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

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

Snapshot Properties

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

Snapshots expire after a set amount of time in order to limit the load on the Dell system. Please enter the time after which you would like the created Snapshot to expire.

Expiration:

Never Expire

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

Description:

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

Snapshot Selection

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

Select Snapshots to Expire:

Volume	Freeze Time	Expire Time	Size	Description
▼ MKTVOL1				
	09/13/2016 12:01:06 AM	09/20/2016 12:01:06 AM	4 MB	Daily at 12:01 AM
	09/12/2016 12:01:06 AM	09/19/2016 12:01:06 AM	4 MB	Daily at 12:01 AM
	09/11/2016 12:01:05 AM	09/18/2016 12:01:05 AM	4 MB	Daily at 12:01 AM
	09/10/2016 12:01:09 AM	09/17/2016 12:01:09 AM	4 MB	Daily at 12:01 AM
	09/09/2016 12:01:08 AM	09/16/2016 12:01:08 AM	4 MB	Daily at 12:01 AM
	09/08/2016 12:01:07 AM	09/15/2016 12:01:07 AM	4 MB	Daily at 12:01 AM
	09/07/2016 12:01:07 AM	09/14/2016 12:01:07 AM	178 MB	Daily at 12:01 AM

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

Storage Center

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

Select Storage Center

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

Select Active Controller

Auto-Select

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

Controller SN476

Controller SN479

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- **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 Storage Manager only has volume manager privileges.

Storage Center for Replication

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

Name	Source Storage Center	Destination Storage Ce...	Replication Type
svdc_5ds	Rack8 SC-3 64293	Rack8 SC-1 64505	Replication, Asynchronous
svdc_5ds	Rack8 SC-3 64293	Rack8 SC-2 64506	Replication, Synchronous - High A

Template Selection

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

Select Virtual Machine template

Select Virtual Machine template

Microsoft Windows 7 (64-bit)

Details

Guest OS: Microsoft Windows 7 (64-bit)

VM Version: 10

CPU: 1 vCPU

Memory: 4096 MB

Network: VM Network

Annotations

Type: VM Template

Status: N/A

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

Template Selection for Clone Virtual Machine

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

Select the VMS or VM template

Select Virtual Machine template

Select Virtual Machine

ajlth-clonevm-template

Details

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

VM Version 10

CPU 1 vCPU

Memory 4096 MB

Network VM Network

Annotations

Type VM

Status Powered Off

aj-nfs-vm

nfs-vm

aj-em

aj

aj-multids

Analytics VM

VM31

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- **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.

VM Selection

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

Customize virtual machine settings:

Name

New Virtual Machine1

New Virtual Machine2

New Virtual Machine3

New Virtual Machine4

New Virtual Machine5

Virtual Machine Settings

Name: New Virtual Machine 1

CPU: 1

Memory (MB): 4096

Network: VM Network

Update

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- **Name**—Name of the selected virtual machine
- **CPU**—The CPU to be associated with the virtual machine
- **Memory**—The amount of memory to be allocated
- **Network**—The network to use for the virtual machine

Volume

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

Create Dell Storage Volume

Volume name:

Size: ▾

Volume Folder:

Select Volume Folder

File Explorer view showing a tree structure with a folder named 'Volumes'.

Buttons:

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

Volume Retention

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

Storage Center volume options:

Unmap volume
Unmap volume from selected hosts.

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

Permanently delete
Unmap volume from all hosts and permanently delete.

Buttons:

- **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 later—unless the Recycle Bin is emptied. To recover a volume from the Recycle Bin, use the Storage 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.

Volume Settings

Use the **Volume Settings** page to specify the options for a datastore.

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

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

Select the Storage Profile for this volume
Storage Profile
Storage Profiles control the RAID types and disk tiers used by the volume. Select the Storage Profile to be used by the volume.
Storage Profile:

NOTE: The values for **Storage Profile** and **Disk Folder** can be modified only if the preferences for the **Storage Center** have been set to **Allow**. For information about managing the preferences, see the *Dell Storage Manager Administrator's Guide*

- **Pagepool**—Select a pagepool from the drop-down list.
- **Storage Profile**—Select a storage profile from the drop-down list:
 - **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.
- **Disk Folder**—Select a disk folder from the drop-down list.