Dell PowerVault DL Backup To Disk Appliance Powered By CommVault Simpana User's Guide

Notes, Cautions, and Warnings

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

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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Contents

Introduction

The Dell PowerVault DL Backup to Disk Appliance is the latest generation of backup to disk protection powered by CommVault Simpana software. The DL Backup to Disk Appliance allows:

- Scalable storage capabilities to support organizations of any size.
- Faster backups, as well as quicker recovery scenarios over conventional tape devices and backup methodologies.
- Optional deduplication capability.
- Simplified and unified management for disk and tape.
- Continuous data protection for data center and remote office servers.
- Quick and easy deployment experience that reduces the time required to begin protecting critical data.

The DL Backup to Disk Appliance includes the following hardware and software:

- Dell PowerVault DL2*x*00 system
- Optional Dell PowerEdge RAID Controllers (PERC)
- Optional Dell PowerVault MD1*x*00 storage enclosures

NOTE: If the appliance configuration does not include PowerVault MD1*x*00 storage enclosures, ignore any references to PowerVault MD1*x*00 and storage enclosures in this document.

NOTE: The MD1x00 systems refer to the MD1000, MD1100, and MD1200 storage enclosures and DL2x00 systems refer to the DL2000, DL2100, DL2200, and DL2300 systems.

- Support for optional tape libraries and devices
- Preinstalled operating system and Dell OpenManage system and storage management software
- CommVault Simpana Backup and Recovery software

The initial requirements unique to the IT environment must be entered the first time you use the system.

NOTE: For documents and recovery media referenced in this document, see Additional References.

For a list of supported external drives, see the *Dell PowerVault MD1x00 Systems Support Matrix* at **support.dell.com/ manuals**.

For a list of supported tape devices, firmware, and driver versions, see the *Dell PowerVault Compatibility Matrix* at **dell.com/pvmatrix**.

NOTE: CommVault Simpana software uses the OEM-supported drivers listed in the *Dell PowerVault Compatibility Matrix*.

The following table lists the terms used in this document to refer to various components of the DL Backup to Disk Appliance hardware and software.

Table 1. DL Backup to Disk Appliance Hardware and Software Components

Component	Type
DL Backup to Disk Appliance	Appliance
PowerVault DL2x00 system	DL2x00 system
PowerVault MD1x00 storage enclosure	Storage enclosure
CommVault Simpana Backup and Recovery	Simpana Backup and Recovery

Compatibility Matrix

	DL2000	DL2100		DL2200	DL2300	
OS Versions	Windows 2008 x64 Windows 2008 R2	Windows 2008 x64 Windows 2008 R2	Windows 2008 x64 Windows 2008 R2	Windows 2008 x64 Windows 2008 R2	Windows 2008 R2 (DL Value Edition)	Windows 2008 R2 (DL Enterprise Edition)
Internal RAID Controller	SAS6i/R	SAS6i/R	PERC6/i	PERC H700	PERC H710	PERC H710
Internal RAID Configurations	RAID 1 (0, 1)	RAID 1 (0, 1)	RAID 1 (0, 1) and RAID 5 (2-5)	RAID 1 (12, 13) for all configurations. Optional configurations to choose from: Hot Spare (0), RAID 5 (1-5), (6-11) RAID 6 (0-5) and (6-11) RAID 6 (0-11)	RAID 1 (12, 13) RAID 10 for DDB (0-5) and RAID 6 for Backup Data (6-11)	RAID 1 (12, 13) RAID 10 for DDB (0-5) and RAID 10 for DDB (6-11)
External RAID Controller	PERC6/e	PERC6/e	PERC6/e	PERC H800	PERC H810	PERC H810
External RAID Configurations	Hot Spare (0), RAID 5 (1-7), (8-15)	Hot Spare (0), RAID 5 (1-7), (8-15)	Hot Spare (0), RAID 5 (1-7), (8-15)	Same as internal selection	Single RAID 6 (0-11)	Single RAID 6 (0-11)
External Storage	MD1000	MD1000	MD1000	MD1200	MD1200	MD1200
Compatibility Manager	No	Yes	Yes	Yes	Yes	Yes

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Setting Up DL Backup To Disk Appliance

Installation Prerequisites

Network Requirements

The Dell PowerVault DL Backup to Disk Appliance requires the following network environment:

- Active network with available Ethernet cables and connections
- A static IP address and DNS server IP address, if not provided by the Dynamic Host Configuration Protocol (DHCP)
- At least one IPv4 address (for licensing purposes)
- A Microsoft Windows Domain Controller to set up a CommVault CommServe system
- User name and password with administrator privileges

Licenses

See the *Register Your Software* document in the enclosed media kit for instructions on registering your software and obtaining additional licenses. You can also visit **commvault.com/dell/support** to register your software. Registered users have access to the latest software patches, downloadable service packs, and CommVault's knowledge base.

Before adding a DL Backup to Disk Appliance to an existing CommVault CommCell purchased from Dell:

- E-mail **dellreg@commvault.com** and include the ID number of the CommCell to acquire additional required licenses. You must receive a response within 24 hours.
- Follow the instructions provided in the e-mail response to install the supplied licenses to CommCell. If you need assistance, contact your Dell sales representative.

> ✍ **NOTE:** If the appliance is deployed as a media agent, verify that the CommServe Simpana version is the same version supplied with the appliance. If the CommServe version is older, you must upgrade the CommServe version before deploying the appliance as a media agent.

Setting Up The Hardware

The appliance ships with a single PowerVault DL2*x*00 system and, optionally, one or more PowerVault MD1*x*00 storage enclosures.

> ✍ **NOTE:** The software is pre-installed on the appliance. Any media included with the system must be used only in the event of a system recovery.

Before setting up the appliance hardware, locate the *Getting Started Guide* for your PowerVault DL2*x*00 system and the optional PowerVault MD1*x*00 storage enclosure(s) that came with the appliance. Unpack and set up the DL Backup to Disk Appliance hardware.

To set up the DL Backup to Disk Appliance hardware:

1. Rack and cable the PowerVault DL2x00 system and storage enclosure(s).
2. Configure the PowerVault MD1x00 storage enclosure(s) to unified mode.
3. Connect the storage enclosure(s) to the PowerVault DL2x00 system.
4. Turn on the PowerVault DL2x00 system and the storage enclosure(s).

Installing The Appliance In A Rack

If the PowerVault DL2x00 system and the optional storage enclosure include a rail kit, locate the *Rack Installation Instructions* supplied within the rack kit. Follow the instructions to install the rails in the rack unit and to install the PowerVault DL2x00 system and the storage enclosure in the rack.

NOTE: Repeat the rail installation procedure in the rack unit for each storage enclosure.

Cabling The Appliance

Locate the PowerVault DL2x00 and PowerVault MD1x00 *Getting Started Guides* that shipped with the appliance and follow the instructions to:

- Attach the keyboard, mouse, monitor, power, and network cables to the PowerVault DL2x00 system
- Attach the power cables to each storage enclosure

NOTE: Do not turn on the PowerVault DL2x00 system or the storage enclosure(s).

NOTE: If the appliance configuration does not include one or more storage enclosures, proceed to Connecting The Cable Management Arm (Optional).

Setting The Storage Enclosure Configuration Switch

Set the storage mode for each storage enclosure to unified mode as indicated in the following figures.

NOTE: The configuration switch must be set before turning on the storage enclosure. Changing the configuration mode after turning on the storage enclosure has no effect on enclosure configuration until the system is power cycled. For more information, see the Dell PowerVault MD1x00 *Hardware Owner's Manual* at **support.dell.com/ manuals**.
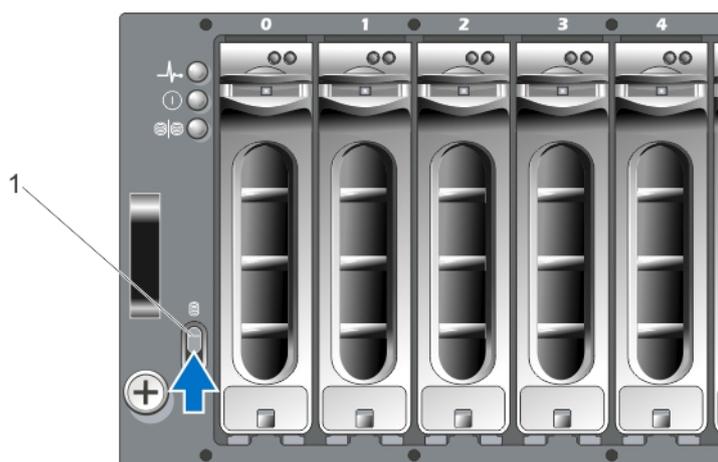
Figure 1. Setting the PowerVault MD1000 Storage Enclosure Configuration Switch

1. configuration switch
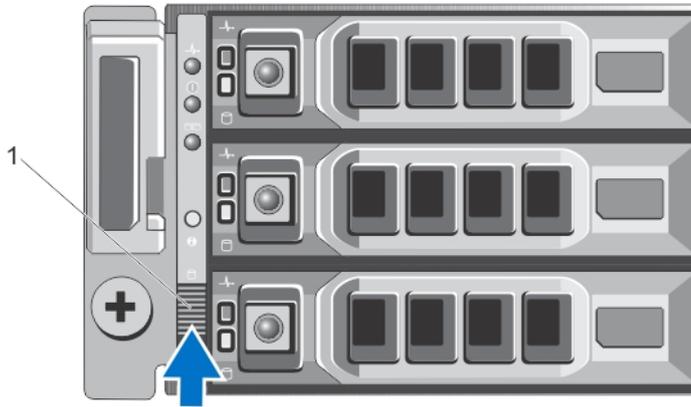
Figure 2. Setting the PowerVault MD1200 Storage Enclosure Configuration Switch

1. configuration switch

Connecting The Storage Enclosure To The PowerVault DL2x00 System

Connect the SAS data cable from the PowerEdge RAID Controller (PERC) installed in the PowerVault DL2x00 system to the primary Enclosure Management Module (EMM) SAS **In** port of the storage enclosure. For more information, see the figures below.

NOTE: Do not connect tape devices to the PERC adapter. For more information about the proper configuration, see figure Connecting the PowerVault DL2x00 System to the Storage Enclosure and Optional Tape Library.
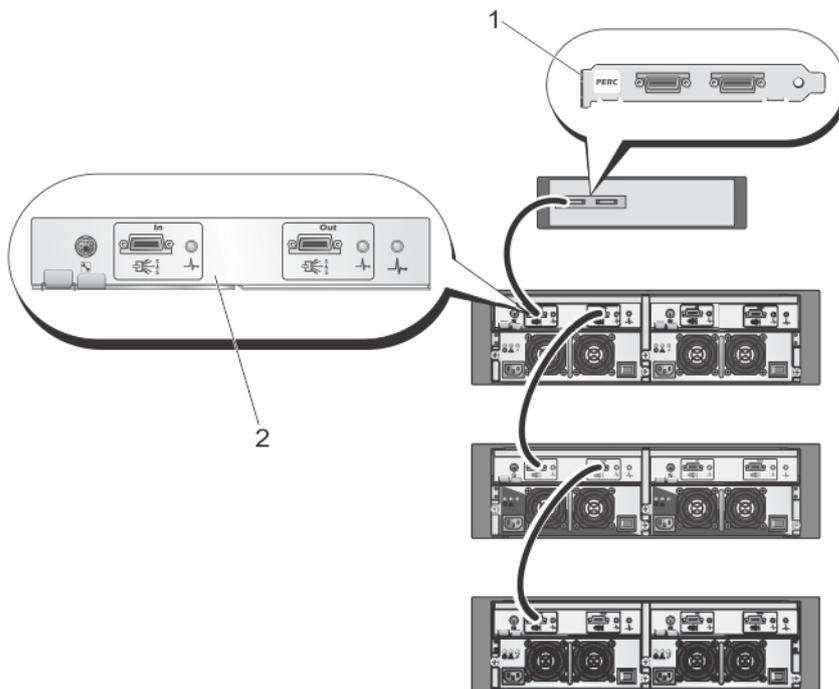
Figure 3. Connecting the SAS Cable From the PowerVault DL2x00 System to the PowerVault MD1000 Storage Enclosure
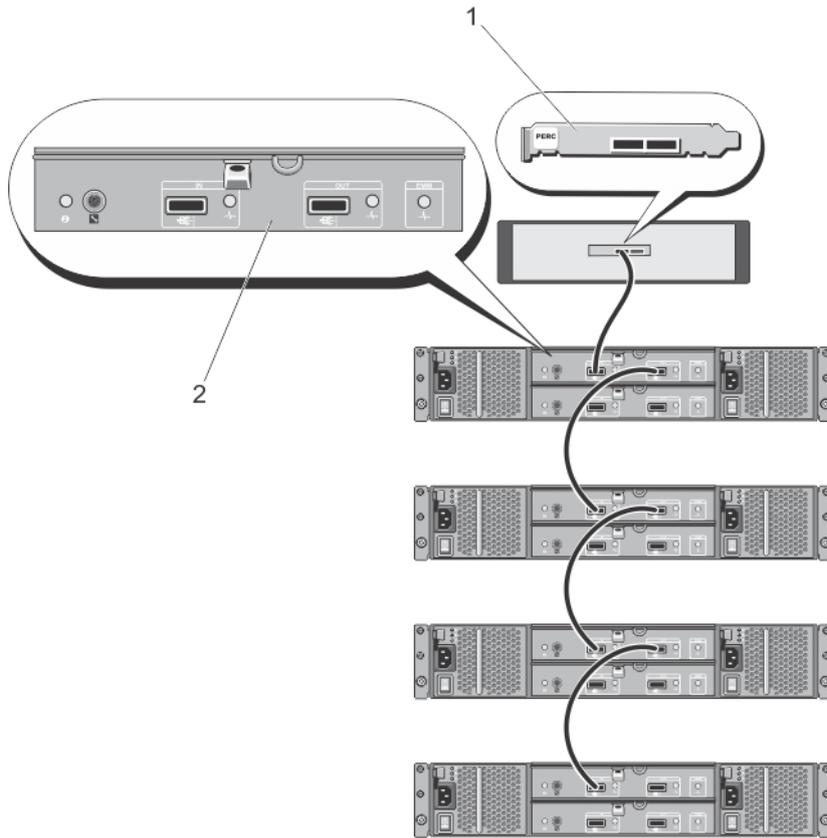
1. PERC
2. EMM

Figure 4. Connecting the SAS Cable From the PowerVault DL2x00 System to the PowerVault MD1200 Storage Enclosure

1. PERC
2. EMM
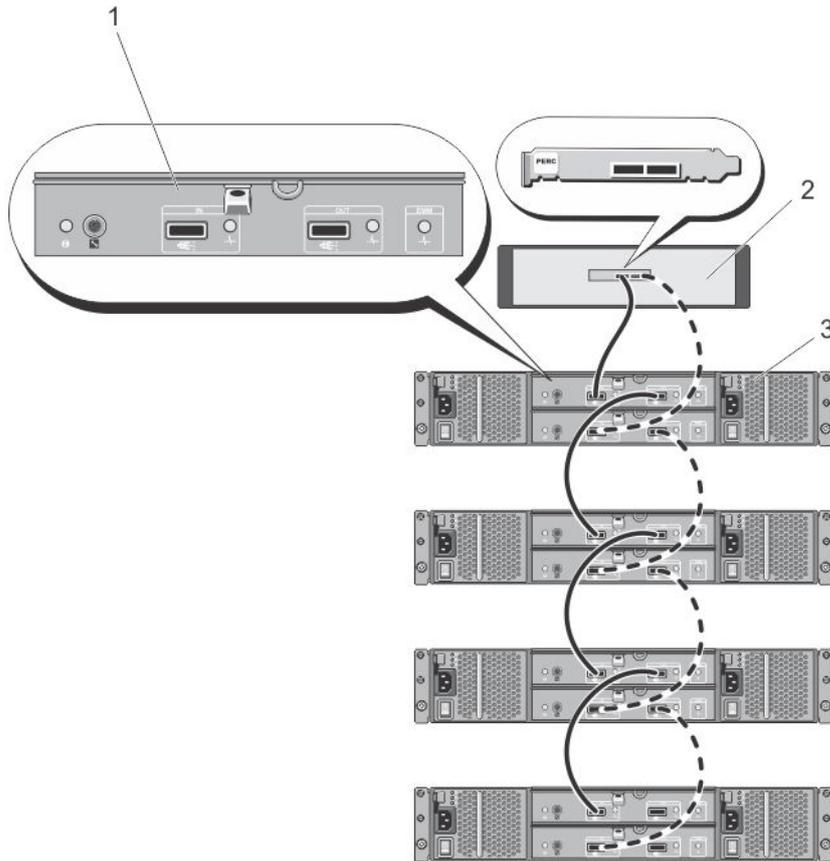
Figure 5. Connecting the SAS Cable From the PowerVault DL2x00 System to the PowerVault MD1200 Storage Enclosure (Redundant Configuration)

1. Primary EMM
2. DL2x00 system
3. Optional MD1200 storage enclosures (4)
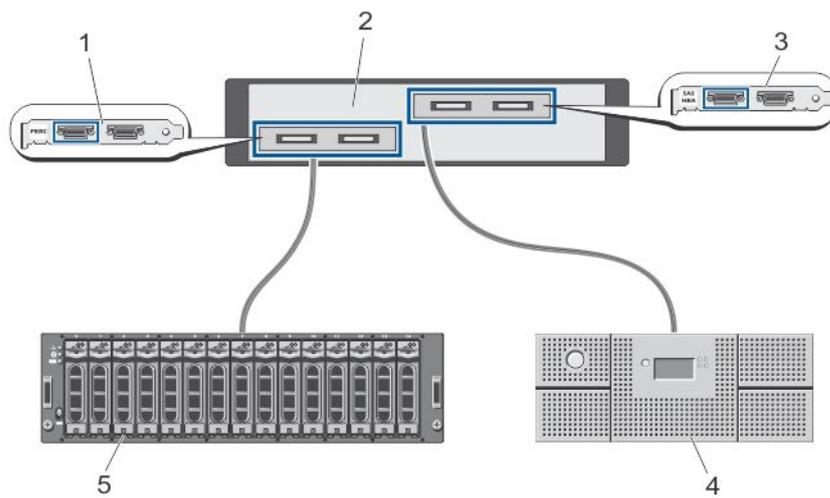
Figure 6. Connecting the PowerVault DL2x00 System to the Storage Enclosure and Optional Tape Library

1. PERC (optional)
2. PowerVault DL2*x*00 system
3. SAS HBA (optional)
4. tape backup (optional)
5. storage enclosure (optional)

> **NOTE:** If a SCSI, SAS, or Fibre Channel host adapter is installed for use with an optional tape device, see <u>Adding An Optional Tape Library</u>.

Connecting The Cable Management Arm (Optional)

If the appliance includes a cable management arm (CMA), locate the CMA *Installation Instructions* that shipped with the CMA kit and follow the instructions to install the CMA.

Turning On The DL Backup To Disk Appliance

After cabling the appliance, turn on each storage enclosure and then the PowerVault DL2*x*00 system.

> **NOTE:** It is recommended that you connect the appliance to an uninterrupted power supply (UPS) for maximum reliability and availability. For more information, see your system's Hardware Owner's Manual at **support.dell.com/ manuals**.

Configuring The Software

All software necessary to deploy the appliance is pre-installed on the PowerVault DL2*x*00 system. When you turn on the system for the first time, the **PowerVault DL Backup to Disk Appliance Configuration Wizard** runs automatically. The wizard guides you through a series of questions to configure the software on the appliance.

> **NOTE:** The **PowerVault DL Backup to Disk Appliance Configuration Wizard** may take up to 30 seconds to appear on the system console.

> **NOTE:** Complete all steps of the **PowerVault DL Backup to Disk Appliance Configuration Wizard** before using Microsoft Windows Update.

After logging on to Microsoft Windows Server 2008, the system automatically launches the **PowerVault DL Backup to Disk Appliance Configuration Wizard**, which configures the appliance based on the information provided. To continue with the **PowerVault DL Backup to Disk Appliance Configuration Wizard**, ensure that:

- At least one network interface is connected.
- All storage enclosures are turned on and connected to the PowerVault DL2*x*00 system.
- The optional tape device is turned on and connected to the PowerVault DL2*x*00 system.

Cable Connection Verification

The **PowerVault DL Backup to Disk Appliance Configuration Wizard** verifies if the PowerVault DL2*x*00 system is connected correctly to the external disk storage and tape devices. If the SAS cables are not connected correctly, you must turn off the PowerVault DL2*x*00 system. With the PowerVault DL2*x*00 turned off, correct the indicated cable(s) by connecting the following:

- PowerVault MD1*x*00 storage controllers to a PERC adapter
- Tape device to a SAS, SCSI, or Fibre Channel HBA

Reboot the PowerVault DL2*x*00 and log on to resume the **PowerVault DL Backup to Disk Appliance Configuration Wizard**.

Configuring SNMP Settings

Simple Network Management Protocol (SNMP) is a network protocol used to manage TCP/IP networks. In Windows, the SNMP service, known as the SNMP agent, provides status information about an SNMP host. You can add the appliance to an SNMP community. In addition, you can add the name of other SNMP host(s) or an SNMP management system.

A community name acts as a password shared by one or more SNMP hosts. When adding additional host(s), the system can accept either host names or an IP address.

An SNMP alert or SNMP trap is an event notification message sent by the SNMP trap service running on an SNMP host. The SNMP trap is sent to other SNMP hosts or to an SNMP management system, which are known as trap destinations.

If SNMP alerts are required, one or more community names must be specified.

- Community name — The name of the community used by the trap destination. The SNMP agent can only send SNMP trap messages to SNMP hosts that use a known community name.
- Trap Destination — Lists trap destinations, which are SNMP management systems that receive SNMP trap messages from any SNMP host in the selected community.

Disk Configuration Settings

Disk Subsystem States

The appliance operates in one of the following configurations:

- Standard — In this state, the backup application automatically configures available disk drives in the PowerVault DL2*x*00 system and optional storage enclosures and uses them for backup storage. You can set the disk configuration policy to automatically configure the available disks by selecting either of the automatic settings. See Disk Configuration Policies.
- Advanced — In this state, automatic disk configuration is disabled and the disk configuration policy automatically switches to **Manual**. In this state, you must manually configure disk storage to be used by the backup application.

The appliance determines the disk subsystem state by inspecting the storage subsystem. You cannot set the disk subsystem state. The appliance disk subsystem state is standard if you use the predefined configurations for the DL2*x*00 system and any attached storage enclosures as shown in the following sections. If the predefined configurations are not used, the disk subsystem state is advanced. Disk groups must include a drive in each of the indicated system and storage enclosure slots except in the case when a failed drive has been temporarily removed for replacement. Automatic disk configuration does not begin on a given disk group until every slot in the disk group is occupied by a disk. The optional hot spares, if present, must reside in the indicated slot.

PowerVault DL2000 Disk Configurations

The PowerVault DL2000 supports SATA drives only. The operating system resides on a RAID 1 (mirrored) virtual disk using slots 0 and 1. Slots 2 through 5 are not available for automatic configuration but can be manually configured (if required).

Figure 7. Dell PowerVault DL2000 and DL2100 Disk Slots

PowerVault DL2100 Disk Configurations

The PowerVault DL2100 supports SATA drives only. The operating system resides on a RAID 1 (mirrored) virtual disk using slots 0 and 1. See the figure above. If the DL2100 system shipped with a SAS 6i/R internal storage controller, slots 2 through 5 are not available for automatic disk configuration but can be manually configured.

If the DL2100 system shipped with a PERC 6/i internal storage controller, the standard configuration is comprised of a single disk group occupying slots 2 through 5. Automatic disk configuration creates one or more RAID 5 virtual disks on this disk group.

PowerVault MD1000 Storage Enclosure Disk Configurations

The PowerVault MD1000 supports SATA drives only. The standard configuration is comprised of a hot spare in slot 0, a disk group occupying slots 1 through 7, and a disk group occupying slots 8 through 14. Automatic disk configuration creates one or more RAID 5 virtual disks on each disk group.

Figure 8. Dell PowerVault MD1000 Storage Enclosure Disk Slots

PowerVault DL2200 Disk Configurations Running Windows Server 2008 Standard x64 Edition

The PowerVault DL2200 supports SAS and nearline SAS drives only. The operating system resides on a RAID 1 (mirrored) virtual disk located within the system. These disks appear as slots 12 and 13 in Dell OpenManage Server Administrator. For information on these disks, see the *Dell PowerVault DL2200 Hardware Owner's Manual* at **support.dell.com/manuals**.

The standard configuration is comprised of hot spare in slot 0, a disk group occupying slots 1 through 5, and a disk group occupying slots 6 through 11. Automatic disk configuration creates one or more RAID 5 virtual disks on each disk group.

The standard configuration of the optional PowerVault MD1200 storage enclosure is identical to the DL2200's slots 0 through 11.

Slot 0	Slot 3	Slot 6	Slot 9
Slot 1	Slot 4	Slot 7	Slot 10
Slot 2	Slot 5	Slot 8	Slot 11

Figure 9. Dell PowerVault DL2200, DL2300, and MD1200 Disk Slots

PowerVault DL2200 Disk Configurations Running Windows Server 2008 R2

In addition to the RAID 5 standard configuration supported under Windows Server 2008 Standard x64 Edition, the DL2200 and MD1200 storage enclosures support alternative RAID 6 standard configurations, if the following conditions are met:

- The appliance software stack version must be version 3.3 or higher
- CommVault Simpana must be version 9.0 SP2 or higher

The two RAID 6 standard configuration is comprised of a disk group occupying slots 0 through 5 and a disk group occupying slots 6 through 11. Automatic disk configuration creates one or more RAID 6 virtual disks on each disk group.

The single RAID 6 standard configuration is comprised of a single disk group occupying slots 0 through 11. Automatic disk configuration creates one or more RAID 6 virtual disks on the disk group.

PowerVault DL2300 Disk Configurations

The PowerVault DL2300 supports SAS and nearline SAS drives only. The operating system resides on a RAID 1 (mirrored) virtual disk located located in the rear facing hotplug slots. These disks appear as slots 12 and 13 in Dell OpenManage Server Administrator. (See the figure Dell PowerVault DL2200, 2300 and MD1200 Disk Slots). For information on these disks, see the *Dell PowerVault DL2300 Hardware Owner's Manual* at **support.dell.com/manuals**.

The following are the DL2300 system configurations: Value and Enterprise configuration.

- Value configuration — The DL2300 Value configuration is comprised of SAS drives in slots 0 through 5 and nearline SAS drives in slots 6 through 11. Automatic disk configuration creates a single RAID 10 disk group on the SAS drives in slots 0 through 5. This virtual disk is used for the Deduplication Database for the CommVault backup application. Automatic disk configuration also creates a single RAID 6 disk group on the nearline SAS drives in slots 6 through 11 with one or more virtual disks in that disk group. These virtual disks will be used to store the backup data. Capacity expansion using an MD1200 is optional.
- Enterprise configuration — The DL2300 Enterprise configuration is comprised of all SAS drives in slots 0 through 11 for enhanced performance. Automatic disk configuration creates a RAID 10 disk group with a single virtual disk in slots 0 through 5 as well as another RAID 10 disk group with a single virtual disk in slots 6 through 11. These two internal virtual disks are used for the Deduplication Database for the CommVault backup application. Since all the drives within the DL2300 Enterprise configuration are used for the Deduplication Database, additional MD1200(s) are required to store the backup data if automatic disk configuration is used.

Both Enterprise and Value configurations can expand storage capacity by adding MD1200 enclosures. When additional MD1200s are attached, Automatic disk configuration creates a single RAID 6 disk group with one or more virtual disks in slots 0 through 11. These virtual disks are used to store the backup data.

Advanced Disk Subsystem State

If any of the conditions above are not met, the disk subsystem state is advanced. After the condition(s) that caused the disk subsystem state to advance is corrected, the disk subsystem state automatically reverts to the standard state.

NOTE: Under certain circumstances, a physical disk failure can cause the configuration state to transition from advanced to standard. In this case, the disk subsystem reverts to advanced after the failed physical disk is replaced and the copy back operation is complete.

Disk Configuration Policies

You can select one of the following disk configuration policies on the **Settings** tab in the **DL Backup To Disk Appliance Console** if the disk subsystem state is standard.

NOTE: If the disk subsystem state is advanced, the disk configuration policy is automatically set to **Manual**.

Automatic With Confirmation Policy

The backup application automatically configures available physical disks. You must accept or reject the proposed disk configuration.

NOTE: It is recommended that you use the **Automatic with confirmation** policy.

Automatic Without Confirmation Policy

The backup application automatically configures available physical disks.

NOTE: Automatic configuration occurs only when the system is in a standard configuration state.

Manual Disk Policy

This policy disables automatic disk configuration. You must manually configure the physical disks using OpenManage Server Administrator. This disk policy is recommended only for advanced users.

If you select manual disk policy, see Configuring The Storage Manually after configuring the appliance.

Installing CommVault Simpana

The **PowerVault DL Backup to Disk Appliance Configuration Wizard** collects information to install and configure the Simpana Backup and Recovery software.

To designate the role of Simpana Backup and Recovery:

1. In **CommVault software setup** screen, select either **CommServe system and Media Agent** or **Media agent only**.
2. If you select:
   – **CommServe system and Media Agent** — enter the details in **E-mail server** and **E-mail address for alerts**.
   – **Media agent only** — enter the details in **Name of the CommServe system to connect to**.
3. Click **CommVault End User License Agreement** to read the terms and conditions of the agreement.
4. Select the **Accept** check-box to continue the installation.
5. Click **Finish**.

   NOTE: Setup takes 10 to 15 minutes to complete.

6. Click **Exit**.

   NOTE: Do not turn off the appliance until automatic disk configuration is complete. Automatic disk configuration runs in the background and configures the storage attached to the PowerVault DL2x00 system. The time required for disk configuration depends on the amount of storage attached to the PowerVault DL2x00 system. Check the Automatic Disk Configuration status in the **DL Backup to Disk Appliance Console** and the **Event Viewer** window in the CommCell console.

Configuring The PowerVault DL2*x*00 System With NIC Teaming

The Broadcom Advanced Control Suite (BACS) is preinstalled on the appliance. You use BACS to configure, manage, and team Network Interface Controllers (NICs) on the PowerVault DL2*x*00 system. The benefits of teaming include traffic load balancing and fault tolerance.

If the **Team Management** button is not present in the lower left corner of the BACS management tool, you must install the Broadcom teaming software. Run **setup.exe** at **C:\Install\BroadcomAdvanced\Driver_Management_Apps_Installer**. Follow the installation instructions and when prompted, select the **Broadcom Advanced Server Program (BASP)** driver to be installed on the local hard drive.

For more information about configuring NIC teaming, see Configuring Teaming in the *Broadcom NetXtreme II Network Adapter User Guide* at **support.dell.com/manuals**.

For optimal backup performance, use the CommVault Data Interface Pairs tool. For more information, go to **documentation.commvault.com/dell** and click **Simpana** → **Index** → **Network** → **Data Interface Pairs**.

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Using The DL Backup To Disk Appliance Console

You can use the Dell PowerVault DL Backup to Disk Appliance Console to:

- Manage the DL Backup to Disk appliance
- Launch the CommVault Simpana Backup and Recovery software
- Display appliance information
- Report appliance status
- Display the available disk space
- Add or remove tape devices
- Configure network and SNMP settings

> **NOTE:** After the system boots, the **PowerVault DL Backup to Disk Appliance Console** may take up to three minutes to report appliance status.

> **NOTE:** If **Dell OpenManage Server Administrator** is not installed, the **DL Backup to Disk Appliance Console** prompts you to install it. System and disk subsystem status is unknown if Server Administrator is not installed.

Automatic Disk Configuration

The **Automatic Disk Configuration** tool manages disk group configuration operations. Automatic disk configuration runs automatically when:

- A new storage enclosure containing a sufficient number of physical disks is added to the appliance.
- A sufficient number of physical disks are added to the existing storage enclosure.

> **NOTE:** Automatic disk configuration does not launch, if disk configuration policy is set to **Manual**.

When the backup application is configuring disk storage, the **Automatic Disk Configuration status** indicator on the DL Backup to Disk Appliance Console blinks yellow and the system displays the message `In Progress`. Do not shut down the DL2x00 system until automatic disk configuration is complete.

During automatic disk configuration, if the disk configuration policy is set to **Automatic with Confirmation,** the **Automatic Disk Group Configuration** window is displayed. If the Disk Configuration Policy is set to **Automatic without Confirmation**, the **Automatic Disk Group Configuration** is displayed only if there is an error condition detected with the new physical disks. In the **Automatic Disk Group Configuration** window, you can select:

- **Continue with disk group configuration** — to configure the disks.
- **Cancel disk group configuration** — to cancel disk configuration. You can use the Automatic Disk Configuration tool at a later time to complete the configuration.
- **Change physical disks and retry** — to correct the error and instruct the Automatic Disk Configuration tool to re-examine the physical disks or storage enclosure. This option is available only if an error occurs during automatic disk configuration. To determine the error conditions detected by the Automatic Disk Configuration tool, review the event viewer in the CommVault CommCell console.

Depending on the error condition, automatic disk configuration may or may not be able to proceed. The following table lists the error conditions that can occur during automatic disk configuration and recommends you can proceed with automatic disk configuration.

Table 2. Automatic Disk Configuration Error Conditions

Error Condition	Description	Solution/Workaround
Unconfigured physical disks are not all the same size	One or more physical disks vary in capacity. You can proceed with automatic disk configuration, but, the RAID group is formed as if all physical disks are the size of the smallest physical disk. Additional space on the larger disk(s) is not usable.	To avoid losing storage capacity, all physical disks must be of the same size.
Slot 0 is empty (applies to DL2200, DL2100, DL2000)	If the selected standard configuration is RAID 5 and a disk is available in slot 0, automatic disk configuration assigns it as a global hot spare. You can proceed with automatic disk configuration, but, a global hot spare is not created.	You can add a physical disk in slot 0 at a later time and automatic disk configuration assigns that disk as a global hot spare.
Slot 0 disk size is smaller than other disks (applies to DL2200, DL2100, DL2000)	A physical disk in slot 0 to be configured as a global hot spare is smaller than one or more physical disks in the remaining slots in the storage enclosure. You can proceed with automatic disk configuration, but, this global hot spare does not provide failover support for larger physical disks.	Replace this physical disk with a disk whose capacity is at least as large as the remaining physical disks in the storage enclosure.
The new disk is a SAS disk	Automatic disk configuration is disabled when any SAS disk drive is detected. You cannot proceed with automatic disk configuration.	Either remove the SAS drive or replace the SAS drive with a SATA drive.
The new disk is a SATA disk	Automatic disk configuration is disabled when any SATA disk drive is detected. You cannot proceed with automatic disk configuration.	Either remove the SATA drive or replace the SATA drive with a SAS or nearline SAS drive.

Adding An Optional Tape Library

For a list of supported tape devices, see the *Dell PowerVault Compatibility Matrix* at **dell.com/pvmatrix**. For information about initial setup and configuration of the tape device, see the tape documentation.

NOTE: The tape device is not configured automatically by the CommVault Simpana Backup and Recovery software.

To add a supported tape device to the appliance:

1. Launch the **CommCell Console** from the **Appliance Console** link.
2. From the **Tools** menu, select **Control Panel**.
3. In the **Control Panel**, double-click **Library and Drive Configuration**.
4. Click **Start**.
5. Select:
   - **SCSI Devices**

– **Detect on Selected MediaAgents in Parallel**
– **Automatically Create DOS Drivepools**
– **Exhaustive Detection (Only for Libraries without Drive IDs Support)**

6. Click **OK.**

Adding The Tape Device To The Disk Appliance Console

To add a tape device to the disk appliance console:

1. On the **PowerVault DL Backup to Disk Appliance Console**, click the **Settings** tab.
2. Under **Tape Devices**, click **Add**.
3. Enter the **model**, **description**, and the **IP address** of the tape device.
   For tape description, enter a name to identify the tape device.
4. After the tape device is added, click **Launch**.
5. Log on using the user name and password for the tape device. For more information, see the tape documentation.

Configuring The Storage Manually

> **NOTE:** If you select automatic disk configuration policy (with or without confirmation), the following steps are not required. See <u>Launching Simpana Software</u>.

> **NOTE:** Manual disk configuration is recommended only for advanced users.

To create virtual disks manually using OpenManage Server Administrator, select Manual disk configuration policy within the DL Backup to Disk Appliance Console. Server Administrator provides:

- Systems and storage management for the appliance.
- System hardware and peripherals monitoring for fault conditions, providing advance warning of potential system failures.
- An easy-to-use graphical user interface allowing the administrator to configure the storage subsystem, such as, virtual disks and RAIDs.

To manually create a virtual disk using Server Administrator:

1. In **PowerVault DL Backup to Disk Appliance Console**, click **Settings → Launch Dell OpenManage Server Administrator**.
2. If you see a certificate error, click **Continue to this website**.
   The log on window is displayed.
3. Log on to OpenManage Server Administrator with the user name and password created using the **PowerVault DL Backup to Disk Appliance Configuration Wizard**.

Creating Virtual Disks

In Server Administrator, you can create a virtual disk using either the Express Wizard or the Advanced Wizard.

- **Express Wizard** — The Express Wizard requires minimal user input and is recommended for novice users. It calculates an appropriate virtual disk configuration based on the available space and controller considerations. When using the Express Wizard, select the RAID level and size for the virtual disk. The Express Wizard selects a recommended disk configuration that matches your RAID level and size selection.
- **Advanced Wizard** — The Advanced Wizard is recommended for advanced users having good knowledge of RAID levels and hardware. It allows you to specify the read, write, and cache policy for the virtual disk. You can also select physical disks and the controller connector to be used.

To launch the **Express** and **Advanced Create Virtual Disk** wizards:

1. In **Dell OpenManage Server Administrator Storage Management**, expand the storage tree object to display the controller objects.
2. Select the PERC adapter object for which the physical disks must be configured.
3. In the **Properties** tab of the PERC adapter, select **Information/Configuration**.
4. Locate **Controller Tasks**, select **Create Virtual Disk,** and then select **Execute**.
5. Create the number of virtual disks that you require for your configuration.

Preparing Manually Created Virtual Disks For Use With CommVault Simpana

To prepare manually created virtual disks for use with CommVault Simpana:

1. After you create the virtual disks using Server Administrator, click **Start** → **Administrative Tools** → **Server Manager** and select **Disk Management in Storage**.
2. Initialize the new virtual disks as GUID Partition Table (GPT) format.
3. Create a simple volume on each new virtual disk using **Disk Management**.
   The **New Simple Volume Wizard** displays the **Assign Drive Letter or Path** screen.
4. Select **Mount in the following empty NTFS folder,** and click **Browse**.
5. Browse to **C:\DiskStorage** and click **New Folder**.
6. Enter a unique folder name for the new virtual disk.
7. Perform a quick NTFS format of the volume.
8. Enter a unique volume name for this virtual disk.

   NOTE: Do not select **Enable file and folder compression**.

9. In the **CommCell Console**, click **Tools** and select **Control Panel**.
10. Launch **Library and Drive Configuration**.
11. Select and add the **MediaAgent** that represents this appliance.
12. Select the **Libraries** tab in the **Library and Drive Configuration** wizard. The new virtual disk can be added to an existing Magnetic Library or to a new Magnetic Library.

    NOTE: To simplify disaster recovery, all virtual disks that reside on a given PERC adapter must reside within the same Magnetic Library.

    – To add the new virtual disk to a new Magnetic Library, right-click **Libraries** and select **Add a Magnetic Library**. Add the local mount path by browsing to **C:\DiskStorage** and select the folder name entered in step 6.
    – To add the new virtual disk to an existing Magnetic Library, right-click **Libraries** and select **Add a Magnetic Library**. Add the local mount path by browsing to **C:\DiskStorage** and select the folder name entered in step 6.

After the mount path is configured, the disk library can be viewed under **Storage Resources**.

Launching Simpana Software

To launch the Simpana Backup and Recovery application using the **PowerVault DL Backup to Disk Appliance Console**, click **Home** → **Launch CommVault Software**.

Logging On To The CommCell

For versions of Simpana prior to 9.0, the default user name and password to log on to the CommCell is `cvadmin`. For Simpana versions 9.0 and later, the default user name and password is `admin`. It is recommended that you change the password after you first log on.

You receive a reminder if you do not activate the license. For more information about using the CommCell console including licensing, see **documentation.commvault.com/dell**. Click **Simpana** → **Dell PowerVault DL Backup To Disk Appliance** → **Getting Started.**

Capturing Support Log Files

If log files are required by the Dell support representative, they can be automatically collected by clicking the **Support** tab in the **PowerVault DL Backup to Disk Appliance Console**.

To generate log files, click the link **Click here to collect appliance information and logs for Dell Support**.

Changing Automatic Disk Configuration

If the appliance supports RAID 5 and RAID 6 standard disk configurations (see <u>Disk Configuration Settings</u>), the standard disk configuration setting is displayed on the **Settings** tab of the **DL Backup to Disk Appliance Console**.

1. Choose standard disk configuration when the appliance is first configured using the **DL Backup to Disk Appliance Configuration Wizard**.

   After selecting the standard disk configuration and configuring the automatic disk configuration for one or more virtual disks, this setting should not be changed. Otherwise, the disk subsystem state changes from standard to advanced.

2. If during a disaster recovery an incorrect standard configuration was selected, click **Change Automatic RAID configuration** to reset the standard disk configuration back to the value prior to the system failure.

   If in doubt, use Server Administrator to determine the RAID type and slots using the existing virtual disks. Under Server Administrator, expand the **Storage** section of the **System** device tree.

3. Verify the virtual disks for each PERC adapter in the appliance noting the layout type (RAID 5 or RAID 6). Click each virtual disk to determine the physicals disks and slots used by that virtual disk.

> **NOTE:** Changing the standard disk configuration setting sets the storage configuration policy to **Manual** and reboots the system. Do not perform this operation when backup jobs are running. After the system reboots, enable automatic disk provisioning by setting the configuration policy to **Automatic**.

Compatibility Manager

The Compatibility Manager provides a notification if a software component is below the minimum supported version. Click the **Compatibility** tab in the Appliance Console to view the Compatibility Manager. This screen displays the currently installed version(s) of BIOS, firmware, drivers, operating system, and appliance applications.

- A warning level indicates that the appliance continues to operate but the software component needs to be updated to the minimum required level as soon as possible.
- A critical level indicates an incompatibility with the installed software component version. When a critical level is reported, the appliance stops backup application jobs to prevent unexpected errors.

When all the critical software components have been updated to a supported version, backup application jobs resume. See Updating DL Backup To Disk Appliance Applications for instructions on how to update the software components on the DL appliance.

> **NOTE:** The Compatibility Manager feature is available on versions 3.2 and later of the appliance software stack. See the Dell PowerVault DL Backup to Disk Appliance Interoperability Guide for supported DL2x00 platforms.

About Enclosure Numbers

The backup application and Server Administrator refer to the MD1x00 storage enclosures by enclosure numbers. Windows storage management applications refer to the enclosure by the bus number. The enclosure number and bus number refer to the same enclosure.

The first enclosure attached to port 0 of the PERC 6/E adapter is 0. Additional enclosures daisy-chained off the first enclosure are numbered 1 and 2 respectively. The first enclosure attached to port 1 of the PERC 6/E adapter is 3. Additional enclosures attached to this enclosure are numbered 4 and 5 respectively.

The first enclosure attached to port 0 of the PERC H800 and PERC H810 adapter is 0. Additional enclosures daisy-chained off the first enclosure are numbered 1, 2, and 3 respectively. The first enclosure attached to port 1 of the PERC H800 and H810 adapter is 4. Additional enclosures attached to this enclosure are numbered 5, 6, and 7 respectively.

Internal PERC adapters such as the PERC 6/i, PERC H700, and PERC H710 are assigned the enclosure number 255.

Updating DL Backup To Disk Appliance Software

Dell PowerVault DL Backup to Disk Appliance software is updated periodically to correct problems, improve performance, introduce new capabilities, and support additional hardware. It is recommended that you apply these updates to keep the appliance running optimally. See the *Dell PowerVault DL Backup to Disk Appliance Interoperability Guide* at **support.dell.com/manuals** to determine the minimum software versions supported on the appliance. Software updates may be available in one or more of the following categories:

- System software — This includes the DL2*x*00 system BIOS, firmware, and device drivers for the PowerVault DL2*x*00 system and PowerVault MD1*x*00 storage enclosures.
- Operating System — Microsoft Windows Server 2008 Standard x64 Edition or Microsoft Windows Server 2008 R2 including service packs.
- DL Backup to Disk Appliance applications — This includes the Dell PowerVault DL Backup to Disk Appliance Configuration Wizard and the Dell PowerVault DL Backup to Disk Appliance Console.
- Systems and Storage Management — Dell OpenManage Server Administrator.
- Backup and Recovery Application — CommVault Simpana Backup and Recovery.

NOTE: You must ensure that you provide the system Service Tag or system model while searching for system software updates on **support.dell.com**. After entering the Service Tag or the system model, select the correct operating system from the drop-down menu on the **Drivers and Downloads** page.

Updating System Software

Updates for the system BIOS, firmware, and device drivers are available at **support.dell.com/support/downloads**.

You can update system software using:

- **Server Update Utility** — Dell OpenManage Server Update Utility (SUU) is a DVD-based application that identifies and applies updates to the DL2*x*00 system. SUU compares the versions of components currently installed on the system with update components packaged on the server update medium. SUU then displays a comparison report of the versions and provides the option of updating the components, such as the BIOS, firmware, and drivers. The Dell server updates medium is published periodically. For more information, see the *Dell OpenManage Server Update Utility User's Guide* at **support.dell.com/manuals**.
- **Dell Update Packages** — Dell Update Package (DUP) is a self-contained executable in a standard package format. Each update package is designed to update a single software component such as a specific device driver on your system. DUPs are published when updates are available. For more information, see the *Dell Update Packages for Microsoft Windows User's Guide* at **support.dell.com/manuals**.

Receiving System Software Update Notifications

Dell technical update subscriptions e-mails critical product alerts, updates to files, drivers, and utilities for your system. To register for these notifications, go to **support.dell.com** and click the **Technical Subscriptions** link under the **Drivers and Downloads** section.

Updating The Operating System

To acquire and run the latest security patches, fixes, and updates for the operating system, click the **Windows Update** link in the **PowerVault DL Backup to Disk Appliance Console**.

Updating DL Backup To Disk Appliance Applications

Use the **Dell PowerVault DL Backup to Disk Appliance Recovery and Update Utility** to update DL Backup to Disk Appliance Applications. Download the latest version of the DL Backup to Disk Appliance Recovery and Update Utility from **support.dell.com/support/downloads**. The utility is located under the IDM category on the **Drivers and Downloads** page.

> **NOTE:** Running the **DL Backup to Disk Appliance Recovery and Update Utility** may require an appliance reboot. Run this utility during a time that does not impact production backup jobs.

> **NOTE:** The **DL Backup to Disk Appliance Recovery and Update Utility** is specific to the system model. Ensure that you download the appropriate utility for your system.

> **NOTE:** For the PowerVault DL2100 and DL2200, the **DL Backup to Disk Appliance Recovery and Update Utility** is also specific to the operating system. Ensure that the correct version of the application is downloaded for the operating system.

Updating Server Administrator

You can download updates to Server Administrator from **support.dell.com/support/downloads**. Select **OpenManage Server Administrator Managed Node** under the systems management category. Follow the installation instructions provided on the download page.

Updating CommVault Simpana Backup And Recovery

Use the **Automatic Updates** feature of the CommVault Simpana Backup and Recovery software to obtain and apply updates. See the Automatic Updates section in the *CommVault Books Online* documentation at **documentation.commvault.com/dell**.

Disaster Recovery

You can recover the Dell PowerVault DL Backup to Disk Appliance from a number of hardware or software failures. Depending on the type of failure, you may need to:

- Recover from internal server disk failures
- Recover from external storage enclosure disk failures
- Reinstall the operating system
- Reinstall Dell OpenManage system management applications
- Reinstall Dell PowerVault DL Backup to Disk Appliance applications
- Reinstall CommVault Simpana Backup and Recovery software and database

NOTE: Before you perform the recovery steps, see the *Dell PowerVault DL2x00 Systems Powered by CommVault Simpana Release Notes* at **support.dell.com/manuals** for the latest information.

Using The iDRAC Virtual Media

PowerVault DL2*x*00 systems that include the Integrated Dell Remote Access Controller 7 (iDRAC7) Enterprise support iDRAC7 virtual media. The iDRAC virtual media feature allows a management station's DVD drive to be accessed by the managed server. The appliance operating system and applications can be installed using the iDRAC7 virtual media and is an alternative to using an internal or USB DVD drive.

NOTE: If your appliance does not have an internal DVD drive, connect either a USB DVD drive or use the iDRAC virtual media to reinstall the operating system and the applications from the media.

Configuring The iDRAC Enterprise For Remote Access

Before virtual media can be enabled, the iDRAC Enterprise card must be configured for remote access. For more information, see Configuring Your System to Use an iDRAC7 in the *Integrated Dell Remote Access Controller 7 (iDRAC7) User's Guide* at **support.dell.com/manuals**.

Accessing The Web Interface And Configuring Virtual Media

Virtual media is configured using the iDRAC Enterprise web interface. For more information on accessing the web interface, see Accessing the Web Interface in the *Integrated Dell Remote Access Controller 7 (iDRAC7) User's Guide* at **support.dell.com/manuals**.

After the web interface has been accessed the virtual media can be configured. For specific instructions, see Configuring and Using Virtual Media in the *Integrated Dell Remote Access Controller 7 (iDRAC7) User's Guide* at **support.dell.com/manuals**.

Recovery Solution Map

Keep the following guidelines in mind:

- Reinstallation of the operating system requires you to reinstall all the applications on the appliance.
- A non-recoverable failure of the disk group containing the operating system requires reinstallation of the operating system and all applications.
- A non-recoverable failure of the disk group containing one or more CommVault Simpana Backup and Recovery backup sets requires restoration of the backup sets on that disk group from tape or secondary disk.
- For all non-disk related hardware failures, see the *Hardware Owner's Manual* for PowerVault DL2*x*00 system and PowerVault MD1*x*00 storage enclosure at **support.dell.com/manuals**.

Table 3. System Recovery Map

	Potentially Affected System Components						
	Hardware		Software				
Failure Type	**Server Disk Group**	**Storage Enclosure Disk Group**	**Operating System**	**Dell PowerVault DL Appliance Application**	**Server Administrator**	**CommVault Simpana Backup and Recovery**	**Recovery Methods** Use the following steps to resolve these issues.
Server RAID Group Failure (Internal Disk Failure)	X		X	X	X	X	1, 2, 3
Storage Enclosure RAID Groups (External Disk Failure)		X					1
Operating System			X	X	X	X	2, 3
Dell PowerVault DL Appliance Applications				X			3
Server Administrator					X		4
CommVault Simpana Backup and Recovery Application						X	5

1—Recovering From Disk Failures
2—Reinstalling The Operating System
3—Reinstalling Dell PowerVault DL Backup To Disk Appliance Applications
4—Repairing Server Administrator
5—Reinstalling CommVault Simpana Backup And Recovery During Disaster Recovery

Completing A Full Recovery Of The DL Backup To Disk Appliance

To complete a full recovery of the appliance, you must:

- Recover the operating system. See Using The Dell Unified Server Configurator - Lifecycle Controller Enabled To Recover The Operating System.
- Update the BIOS, firmware, and drivers. See Updating BIOS Firmware And Driver.
- Recover the DL Backup to Disk Appliance applications. See Using The Dell PowerVault DL Backup To Disk Appliance Recovery And Update Utility During Disaster Recovery.

Recovering From Disk Failures

About RAID Types

The internal disk storage containing the operating system and applications in the DL2*x*00 system is preconfigured as RAID 1. RAID 1 is a mirrored disk group that provides uninterrupted operation of the appliance if a single disk fails within that disk group.

⚠ **CAUTION: A failed system disk must be replaced immediately to avoid data loss or complete failure of the appliance.**

The optional data disks in the PowerVault DL2100 and DL2200 systems and storage enclosures are automatically configured by the backup application in RAID 5 or RAID 6 disk groups. See Disk Configuration Settings.

✎ **NOTE:** Automatic configuration only occurs if the disk configuration state is **Standard** and if you select one of the automatic disk configuration policies. See Disk Subsystem States and Disk Configuration Policies.

RAID 5 provides uninterrupted operation of the appliance if a single disk fails within that disk group. The RAID 5 standard configuration includes a global hot spare in each storage enclosure and PowerVault DL2200 systems. If a single disk failure occurs, the hot spare is automatically assigned and rebuilt into that disk group. After the disk group is rebuilt, the RAID 5 disk group continues to operate normally.

⚠ **CAUTION: If another disk fails while the internal or external disk group is rebuilding, all data in that disk group is lost. Always monitor the status of the appliance's disk rebuild to ensure that the rebuild operation completes.**

When the failed disk is replaced, the data residing on the global hot spare is automatically copied back to the replacement disk. After the copy-back operation is complete, the global hot spare is once again available if another disk fails. For more information about using global hot spares, see the *Dell OpenManage Server Administrator User's Guide* at **support.dell.com/manuals**.

✎ **NOTE:** Only one disk group per storage enclosure can utilize a hot spare at a time.

✎ **NOTE:** There are no dedicated hot spares for internal disks in the DL2000, Dl2100 and DL2300 systems.

✎ **NOTE:** The DL2200 systems have dedicated hot spares for internal disks.

RAID 6 provides uninterrupted operation of the appliance if up to two disks fail within that disk group. Replacement of the failed disk(s) causes the disk group to rebuild. If a third disk fails before the disk group rebuild is complete, data loss occurs. The standard RAID 6 configurations do not include a hot spare.

RAID 10 provides high redundancy and throughput by combining RAID 1 and RAID 0 to stripe across four or more even numbered mirrored disks. The entire capacity of the internal auto-provisioned RAID10 disk group(s) is assigned for use as the CommVault Deduplication Database.

Detecting And Monitoring Disk Failures

To optimize the protection of RAID configured storage on the appliance, it is essential that you detect hard drive failures immediately. Replacing failed disks immediately reduces the risk of unplanned downtime and loss of critical data.

You can use the following methods to monitor the health of the disks:

- Hard drive LED indicators — Each drive in the server and storage enclosure contains status LEDs to indicate drive activity and certain failure status. See the *Hardware Owner's Manual* for the servers and storage enclosures at **support.dell.com/manuals**.
- Dell OpenManage Server Administrator — Server Administrator can monitor the health of both internal and external direct-attached disks. See Replacing Disks.

- Dell Management Console — The Dell Management Console (DMC) centrally monitors the status of Dell systems. For more information about installing and using DMC, see the *Dell Management Console User's Guide* at **support.dell.com/manuals**.

Recovering From Single Disk Failures

After you replace the failed disk drive within a RAID group, the appliance automatically rebuilds the disk group. The data on the virtual disks that reside on the disk group is still available to the appliance and the appliance runs without any interruption. The appliance operates in degraded mode until the rebuild operation is complete.

⚠ **CAUTION: If a disk fails in the same RAID 1 or RAID 5 disk group during the rebuild operation, data loss occurs.**

Use Server Administrator to monitor the progress and status of the RAID rebuild. If the rebuild does not begin automatically, see the *Dell OpenManage Server Administrator User's Guide* at **support.dell.com/manuals** to initiate the rebuild manually. Server Administrator reports the status and progress of a rebuilding RAID group.

Recovering From Multiple Disk Failures

Data loss occurs if both disks in the RAID 1 group fail, two or more disks in a RAID 5 group fail, or three or more disks in a RAID 6 group fail. After replacing the failed disks, depending on which RAID group failed, choose from the following methods, to complete the recovery:

- Server disk group failure — The server RAID 1 group contains the operating system, CommVault Simpana, and the DL Backup to Disk Appliance applications. See the System Recovery Map and follow the steps for the operating system failure type. If the optional internal backup data RAID disk group fails, follow the procedure below for storage array disk group failure.
- Storage array disk group failure — You can restore the backup sets archived to tape. Backup sets can also be restored from a secondary appliance protecting the primary appliance. For more information about disaster planning recovery procedures, see the CommVault Simpana Backup and Recovery documents.

Replacing Disks

When replacing disks, use only supported disks identified in the *Dell PowerVault DL Backup to Disk Appliance Interoperability Guide*. Ensure that you replace the failed disk with a new disk of the same or greater capacity. If drives of greater capacity are used, some usable disk space is lost in the RAID configuration. You can replace:

- Internal disks — To replace the appliance's internal disks, see the *Dell PowerVault DL2x00 Hardware Owner's Manual* at **support.dell.com/manuals**.
- Disks in a storage enclosure — To replace disk drives in a storage enclosure, see the storage enclosure's Hardware Owner's Manual at **support.dell.com/manuals**.

Reinstalling The Operating System

The operating system is preinstalled on the appliance. Perform the following procedure to reinstall the operating system.

Using The Dell Systems Build And Update Utility To Manually Recover The Operating System

To reinstall the operating system, use the Dell Systems Build and Update Utility (SBUU) on the Dell Systems Management Tools and Documentation media. The SBUU installs the operating system software and device drivers.

> ✎ **NOTE:** SBUU is only supported on the DL2000 appliance. For all other appliance models, see <u>Using The Dell Unified Server Configurator - Lifecycle Controller Enabled To Recover The Operating System</u>.

The SBUU requires the original Microsoft installation media to install the operating system.

> ✎ **NOTE:** The SBUU is shipped with the appliance and is also available at **support.dell.com**. When using the SBUU from **support.dell.com**, you must download the **Dell Windows Operating Systems install support pack** to a CD/DVD. Use the CD/DVD when prompted by the SBUU.

> ⚠ **CAUTION: Using the SBUU erases all data from the virtual disk where you install the operating system.**

To reinstall the operating system, perform the following steps:

1. Insert the SBUU media into the appliance.
2. Configure BIOS to boot from CD/DVD drive and boot the appliance using SBUU. The utility walks you through the preliminary steps before proceeding with the installation of the operating system.
3. Accept the End User Licensing Agreement.
4. Select **Install Operating System**.
5. Set the date and time.
6. Select **Windows Server 2008 X64**.
7. Select **Skip RAID Configuration**.
8. Review the summary of steps and click **Continue**.
9. If SBUU prompts you for the Windows Server Pack installation media, insert the media with the **Dell Windows OS install support pack** downloaded from **support.dell.com**.
10. Click **Finish**.
11. Remove the SBUU media and, when prompted, insert the Microsoft Windows Server 2008 Standard x64 Edition media that shipped with the system. Follow the instructions on the screen to complete the installation.

    The system reboots and asks for the Windows installation media to be inserted. The setup confirms that a valid Windows media is inserted.
12. Click **OK**.
13. When the system asks whether a core or full installation is desired, select a full installation.
14. Set localization options, then click **Next**.
15. Select **Custom Installation**.

    (The upgrade option is grayed out and not selectable.)
16. When the partitions or raw disk space is listed, select the former C: drive [not the MD1000 logical unit numbers (LUNs)] and click **New**.
17. Highlight the partition and select **Format**.
18. Click **Next**.

    The Windows installation begins.
19. Proceed to <u>Completing Operating System Reinstallation</u>.

Using The Dell Unified Server Configurator - Lifecycle Controller Enabled To Recover The Operating System

Use the Unified Server Configurator - Lifecycle Controller Enabled (USC-LCE) utility on the DL2*x*00 system to recover the operating system. For specific instructions, see Deploying the Operating System using the OS Deployment Wizard in the *Dell Unified Server Configurator - Life Cycle Enabler User Guide* at **support.dell.com/manuals**.

NOTE: USC LCE is not supported on the DL2000 appliance. See <u>Using The Dell Systems Build And Update Utility To Manually Recover The Operating System</u>.

Locate the Microsoft operating system media that came with the system to proceed with the installation.

After a multiple disk failure of the DL2*x*00 system boot disk, you must replace the failed disks, create a RAID 1 disk group, and then reinstall the operating system. See <u>Recovering From Disk Failures</u>.

The USC-LCE utility includes a RAID Configuration wizard to complete this task. When prompted select Configure RAID Now and configure the DL2*x*00 system drives in slot 0 and slot 1 as RAID 1.

⚠ **CAUTION: Reinstalling the operating system on existing disk drives removes all installed applications and erases all data.**

If the boot disk has not failed and you are reinstalling the operating system, you can skip the **Configure RAID Now** step and proceed directly to the **OS Deployment** step.

NOTE: In the **RAID Configuration Wizard**, ensure that you uncheck **Assign a HS if available** if it is checked by default.

Proceed to <u>Completing Operating System Reinstallation</u>.

Completing Operating System Reinstallation

1. On completing the Windows installation, change the password when prompted.
    The **Set Network Location** window is displayed.

2. Select the **Work** location and click **Cancel**.

    NOTE: Windows firewall may prevent a connection to the network. If connecting to network services, you may need to disable the firewall.

    The **Initial Configuration Tasks** window is displayed. Close this window. Proceed to Updating BIOS, Firmware, and Driver.

Updating BIOS, Firmware, And Driver

Before you install additional software on the appliance, such as the Dell PowerVault DL Backup to Disk Appliance applications, see the *Dell PowerVault DL Backup to Disk Appliance Interoperability Guide* at **support.dell.com/manuals** to determine the required BIOS, firmware, and driver versions for the appliance. For more information, see <u>Updating System Software</u>.

NOTE: Complete the installation of remaining software on the appliance before enabling Windows update on the DL2*x*00 system.

Reinstalling Dell PowerVault DL Backup To Disk Appliance Applications

The appliance is pre-installed with:

*   **PowerVault DL Backup to Disk Appliance Configuration Wizard** — This wizard is used to configure the appliance at first-time boot.
*   **PowerVault DL Backup to Disk Appliance Console** — This console is a single launch point for CommVault Simpana Backup and Recovery, as well as for standard and advanced hardware configuration utilities.
*   Other applications used by the appliance.

NOTE: Perform the following steps to either repair a corrupted application or during the system recovery process of a disaster recovery scenario.

Using The Dell PowerVault DL Backup To Disk Appliance Recovery And Update Utility During Disaster Recovery

In a disaster recovery scenario, download the Dell PowerVault DL Backup to Disk Appliance Recovery and Update Utility from **support.dell.com/support/downloads**. Use this utility to install the Dell PowerVault DL Backup to Disk Appliance Applications after installing the Windows operating system.

To install the Dell PowerVault DL Backup to Disk Appliance Applications using the Dell PowerVault DL Backup to Disk Appliance Recovery and Update Utility:

1. Run the executable file.

2. Select **Install Windows Server Roles and Features**, **Dell PowerVault DL Appliance Applications**, then select **Dell Open Manage Server Administrator** applications and **Reinstall backup application**.

   NOTE: Installing the **Windows Server Roles and Features** and the **PowerVault DL Backup to Disk Appliance** applications may require an appliance reboot. In such a scenario, re-launch the DL Backup to Disk Appliance Recovery and Update Utility once the appliance has completed the reboot.

3. Click **Go** to proceed with the installation.

4. The Dell PowerVault DL Backup to Disk Appliance Recovery and Update Utility prompts you to insert the *Dell Systems Management Tools and Documentation* media.

5. If the *Dell Systems Management Tools and Documentation* media is not available, download the Server Administrator Managed Node application from **support.dell.com/support/downloads**.
   a) Run the application to extract the Server Administrator installation files.
   b) When prompted by the Dell PowerVault DL Backup to Disk Appliance Recovery and Update Utility for the *Dell Systems Management Tools and Documentation* media, browse to the location where you have extracted the Server Administrator installation files.

   The Server Administrator installer runs a compatibility check to confirm that there are no conditions preventing a successful installation.

6. Click **Finish**.

   The system launches the **DL Backup to Disk Appliance Configuration Wizard in Recovery Mode**, which guides you through the setup of the network and domain settings, and reinstallation of CommVault Backup and Recovery software.

7. When prompted, insert disk 1 of the CommVault Backup and Recovery installation media. Follow the instructions on the screen to complete the installation.

   NOTE: During the installation, a reboot may be required.

8. After the system reboots, log on to Windows.

9. Click **Finish**.

   The CommVault Simpana service starts, recovers, and remounts all volumes in the disk array under **C: \DiskStorage_Recovered** directory. The DL Backup to Disk Appliance Console launches automatically.

10. From the DL Backup to Disk Appliance Console **Home** tab, click **Launch CommServe Disaster Recovery**.

    The **CommServe Disaster Recovery GUI** window is displayed.
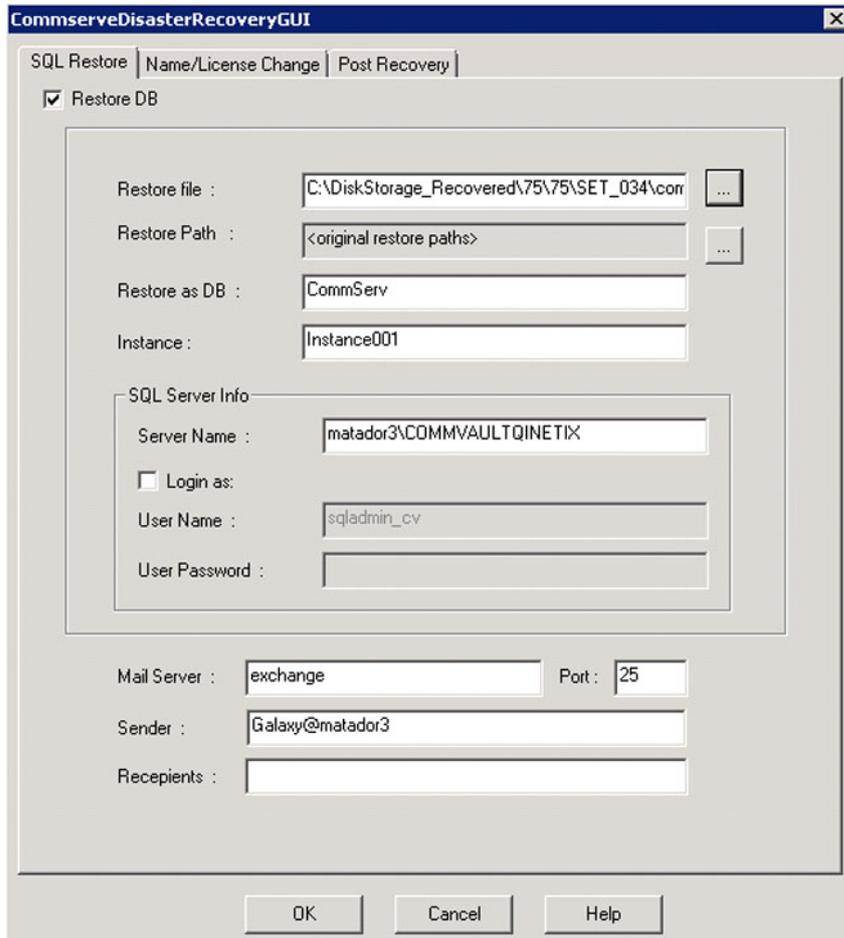
Figure 10. Commvault Simpana 8.0 SQL Restore
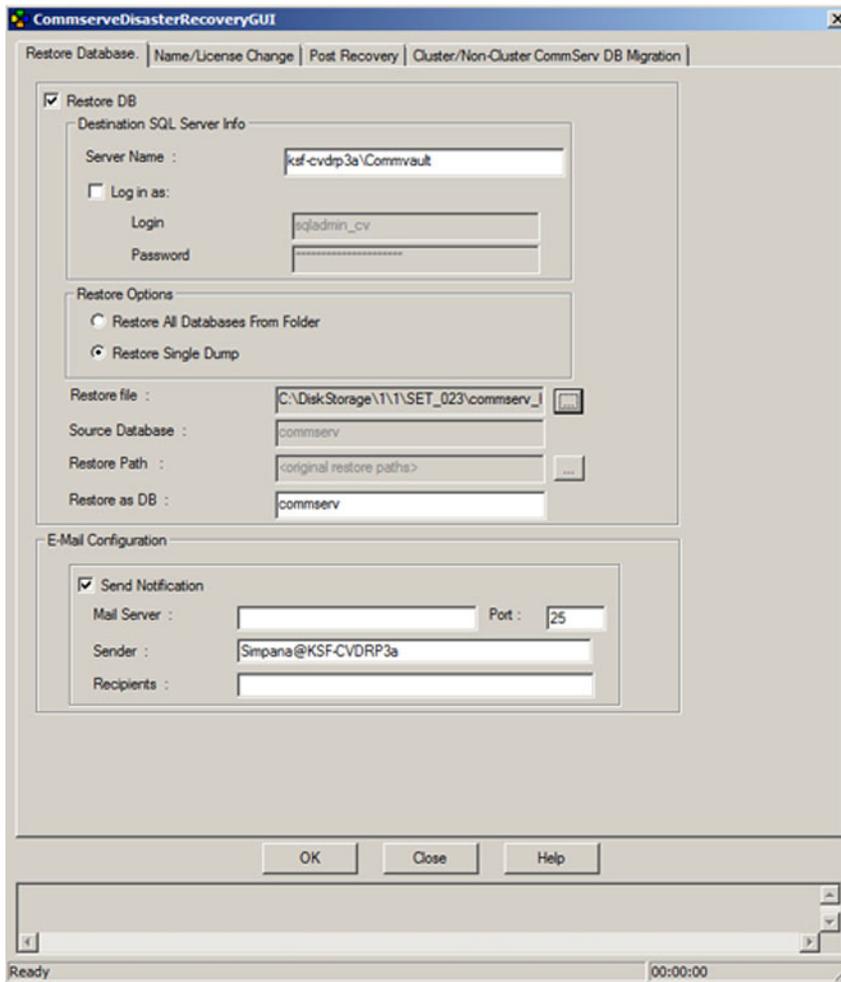
Figure 11. CommVault Simpana 9.0 Database Restore
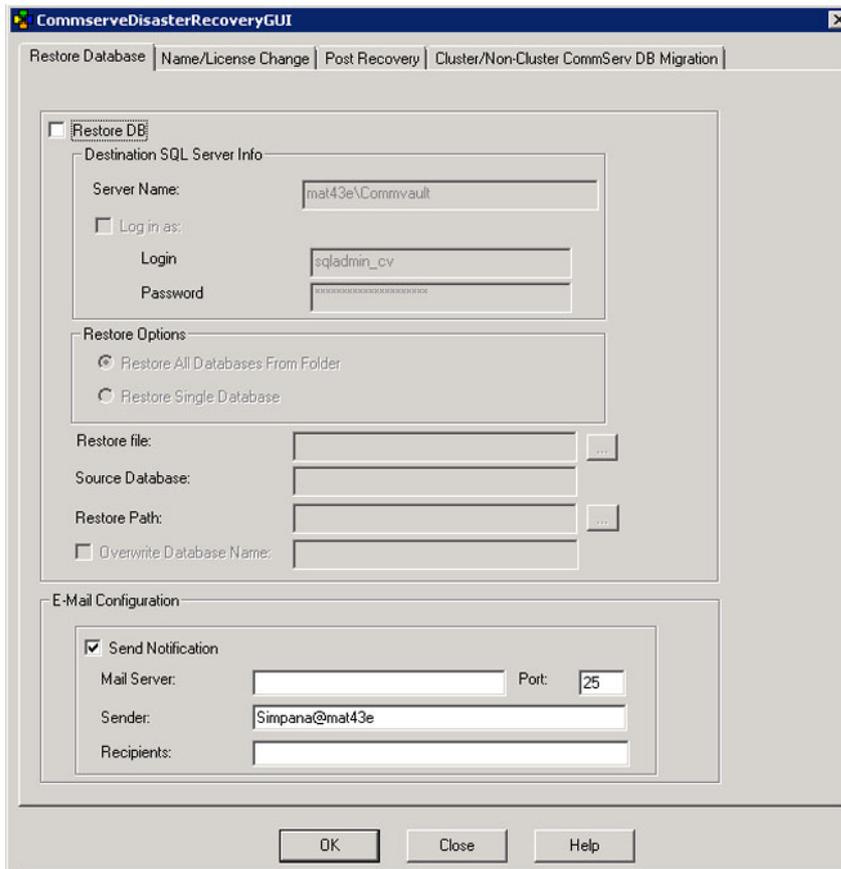
Figure 12. Database Restore for CommVault Simpana 9.0 SP4 and Later

11. For Simpana versions prior to 9.0, on the **SQL Restore** tab in the **CommServeDisasterRecoveryGUI**, select **Restore DB** and provide the DR dump location for the database restore in the **Restore file** field.

12. For Simpana version 9.0 and later, on the **Database Restore** tab in the **CommServeDisasterRecoveryGUI**, select **Restore DB** and **Restore Single Dump** or **Restore Single Database** radio button. Browse the **Restore File** field to locate the database DR dump file.

   📝 **NOTE:** By default, the CommServe DR dump location is the first mountpath on the disk array. For example, if **C: \DiskStorage\1\1\SET_XY** is the DR dump location, this location is available under **C:\DiskStorage_Recovered \1\1\SET_XY** upon recovery. Thus, the DR dump is available to use in the CommServe Database Disaster recovery operation.

   📝 **NOTE:** The CommVault disaster recovery backup is automatically created. By default, the disaster recovery backup runs daily at 10:00 a.m. local time.

13. For Simpana versions prior to 9.0, select the **Post Recovery** tab and select:

   – **Perform Post Recovery operations**
   – **Delete all Active jobs**
   – **Reset index cache timestamps**
   – **Disable scheduler**

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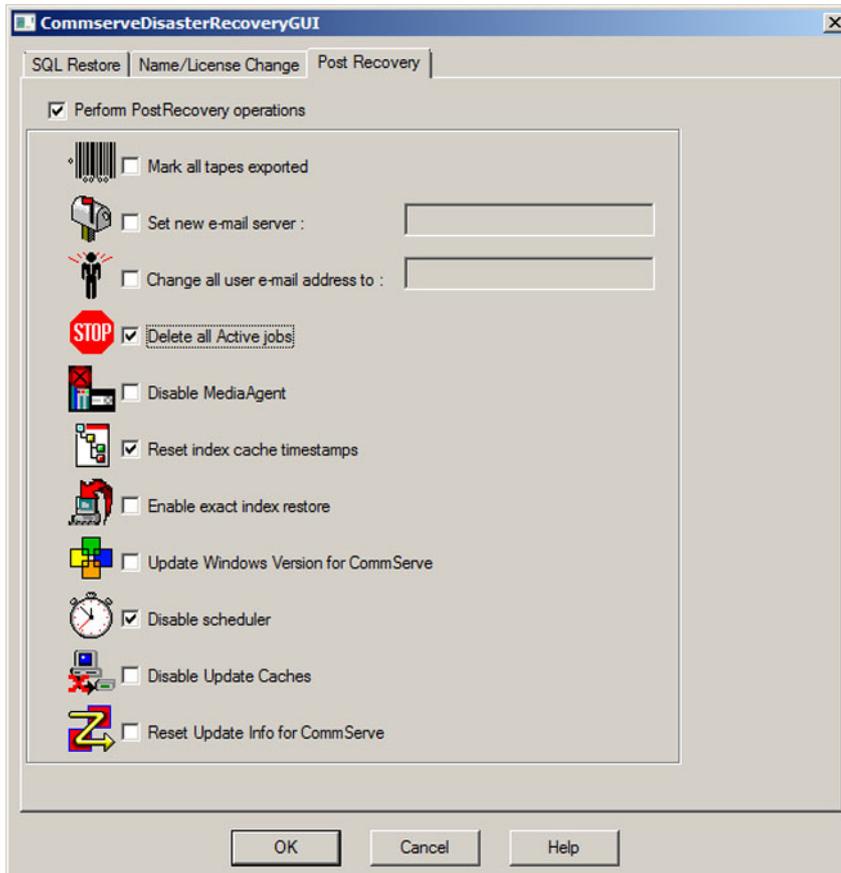
Figure 13. Simpana 8.0 Post Recovery

For Simpana versions 9.0 and later, select the **Post Recovery** tab and select:

- **Perform Post Recovery operations**
- **Reset index cache timestamps**
- **Disable scheduler**
- **Suspend Running Jobs**
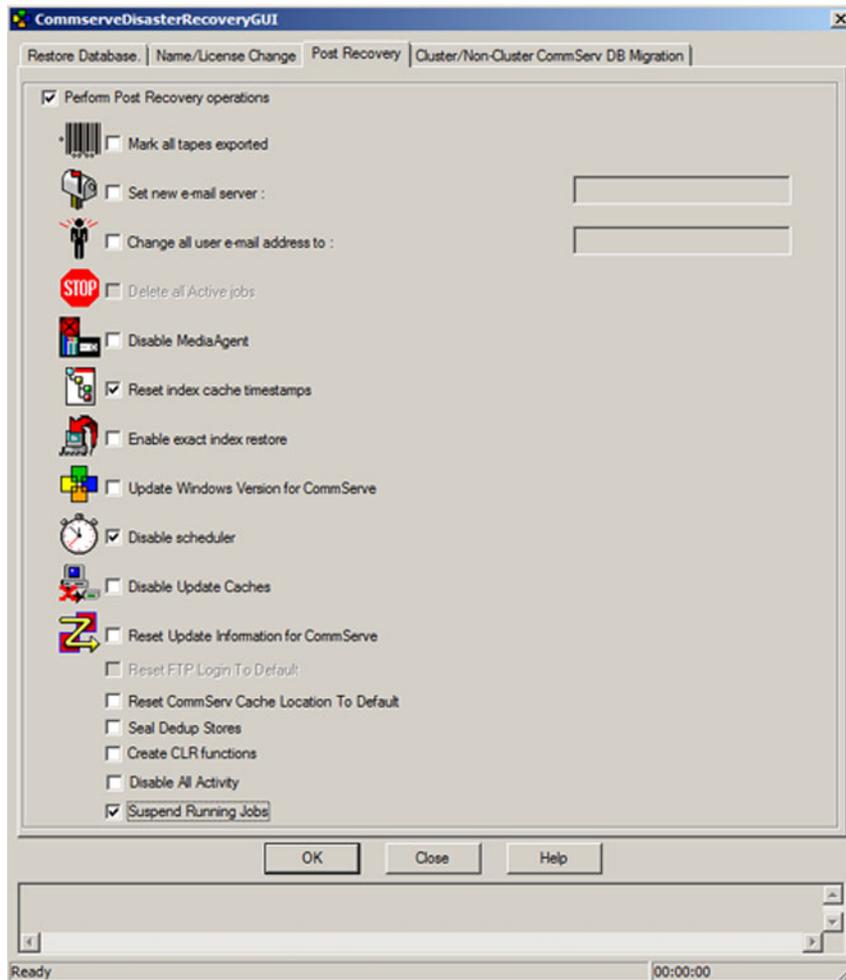
Figure 14. Simpana 9.0 Post Recovery

14. Click **OK** to continue with the restore.

15. If prompted to stop the Simpana services to proceed with the restore, click **Yes**.

16. When the restore is complete, close the **CommServeDisasterRecoveryGUI**.

17. Click **Launch the Service Control Manager** from the **Home** tab of the appliance management console to start the services.

18. Close the **Service Control Manager**.

    ✎ **NOTE:** When the restore operation is complete, CommVault Simpana services are started. As a result, volumes on the storage enclosure(s), which were configured using automatic disk configuration are available under the original location of **C:\DiskStorage**. All volumes from the **C:\DiskStorage_Recovered** directory are unmounted and no longer visible at that location.

    ✎ **NOTE:** Wait until all volumes from the **C:\ DiskStorage_Recovered** directory are unmounted and no longer visible at that location before proceeding to the next step. This process can take upto five minutes.

    ✎ **NOTE:** The CommVault license key is stored in the CommServe database. After importing the database, all features and licenses are restored.

19. From the **CommCell** console, navigate to the CommCell browser tree view.

20. Right-click the CommServe system name at the top of the tree view and select **Properties**.

21. Select all the options in the **Activity Control** tab.
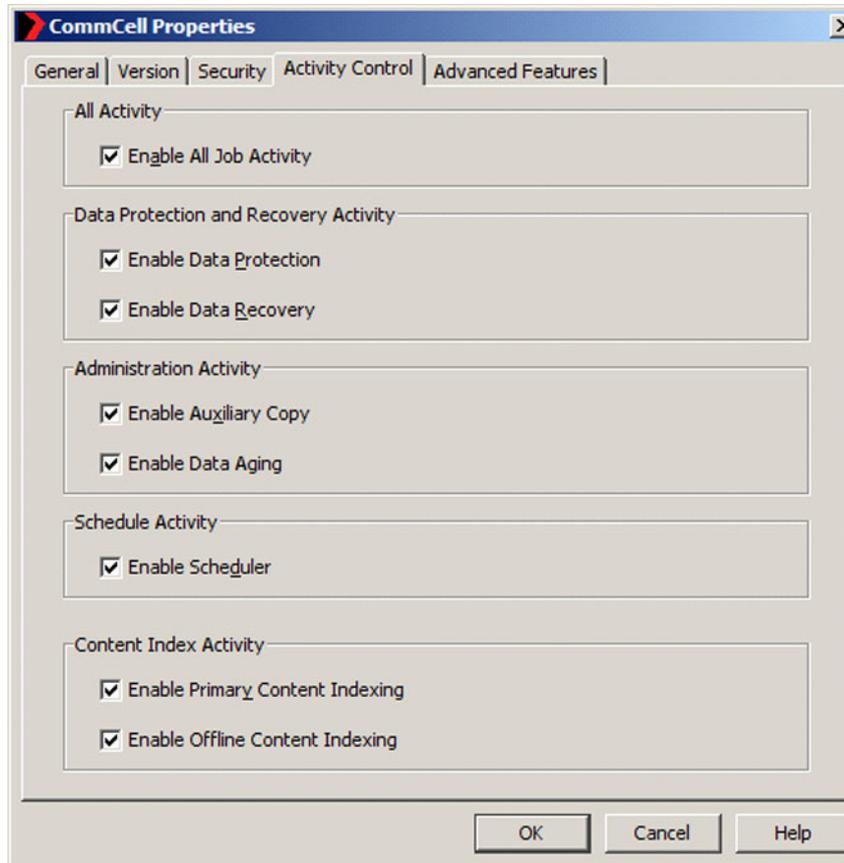
22. Click **OK**.

23. For Simpana version prior to 9.0, right-click the CommServe system name and select **All Tasks and Schedules**.

24. For Simpana version 9.0 and later, right-click the CommServer system name and select **View** then **Schedules**.

25. Enable all the available **Schedule Policies** and click **Close**.

> 📝 **NOTE:** Install the latest CommVault service packs, updates, and patches on the PowerVault DL2*x*00 appliance after recovering the CommServe database.

Disaster recovery is complete and the backup data can be restored from the disk subsystem.

> 📝 **NOTE:** It may take up to 15 minutes for the magnetic library drives to display as ready in the CommCell console.

Installing Windows Server Roles And Features Manually

The PowerVault DL Backup to Disk Appliance Recovery and Update Utility can be used to automatically install all the required **Windows Server Roles and Features**. To install the required roles and features manually:

1. Launch **Server Manager**.

2. Click Add features to display the **Select Features** window in the **Add Features Wizard**.

3. Select the following features depending on which operating system is being restored on the PowerVault DL2*x*00.

Table 4. List of Windows Server 2008 Roles and Features in the Add Features Wizard

Features	Notes
.NET Framework 3.0 Features	A dialog box may display the required roles and features for .NET 3.0. Click **Add Required Role Services** to continue.
Remote Server Administration Tools	A dialog box may display the required roles and features for **Remote Server Administration Tools**. Click **Add Required Role Services** to continue.
SNMP Services	
Windows Process Activation Service	
.NET Framework 3.5 Features	A dialog box may display the required roles and features for .NET 3.5. Click **Add Required Role Services** to continue.
Remote Server Administration Tools	Expand the **Remote Server Administration Tools** node and then expand the **Role Administration Tools**. Select **Remote Desktop Services Tools**. A dialog box may display the required roles and features for **Remote Server Administration Tools**. Click **Add Required Role Services** to continue.
SNMP Services	
Windows Process Activation Service	

4. Click **Next**.

   The **Web Server (IIS)** window is displayed.

5. Click **Next** to display the **Select Role Services** window and select the following **Role Services** and sub-options for Web Server (IIS):

   Table 5. List of Role Services

Role Services	Sub Options
Common HTTP Features	– Static Content – Default Document – Directory Browsing – HTTP Errors
Application Development	– NET Extensibility – ASP (A dialog box may display the required roles and features for Application Development. Click **Add Required Role Services** to continue.) – CGI – ISAPI Extensions
Health and Diagnostic	– HTTP Logging – Request Monitor
Security	– Request Filtering
Performance	– Static Content Compression

Role Services	Sub Options
Management Tools	– IIS Management Console – IIS 6 Management Compatibility (select all sub-options)

6. Click **Next**.

   The **Confirm Installation Selection**s window is displayed.

7. Click **Install** to proceed with the installation of the selected roles and features.

If required, the system reboots after the installation is complete.

Using The Dell PowerVault DL Backup To Disk Appliance Recovery And Update Utility For System Repair

The Dell PowerVault DL Backup to Disk Appliance Recovery and Update Utility can be used to repair or update the Dell PowerVault DL Backup to Disk Appliance applications in a non-disaster recovery scenario. For more information, see Updating DL Backup To Disk Appliance Applications.

Repairing OpenManage Server Administrator

Dell OpenManage Server Administrator is a system management application that is helpful in viewing overall system hardware health. It monitors the health of the appliance's internal and external disk groups.

> NOTE: In a disaster recovery scenario, Server Administrator is installed in the steps defined in Using the Dell PowerVault DL Backup to Disk Appliance Recovery and Update Utility During Disaster Recovery; therefore, the following steps would not be necessary.

To repair server administrator:

1. Verify that the version is supported in the *Dell PowerVault DL Backup to Disk Appliance Interoperability Guide*, before installing Server Administrator.
2. Install Server Administrator using the *Dell Systems Management Tools and Documentation* media that shipped with the system.
3. If the Server Administrator installation process does not begin automatically, run **autorun.exe** located in the root folder of the media and proceed to step 5.
4. If you have misplaced the media, download the Server Administrator Managed Node application from **support.dell.com/support/downloads** and follow the installation instructions on the download page.
5. Select **Dell OpenManage Server Administrator** for standalone server management and click **Install**.

   The Server Administrator installer runs a compatibility check to confirm that no conditions prevent installation.
6. Select **Repair or Modify Installation**.

   The installer completes the repair.

Reinstalling CommVault Simpana Backup And Recovery During Disaster Recovery

The Dell PowerVault DL Backup to Disk Appliance Recovery and Update Utility guides you through the installation of CommVault Simpana Backup and Recovery software, in a disaster recovery scenario.

The following prerequisites must be met before reinstallation:

- Locate the CommVault Simpana Backup and Recovery installation media that came with the appliance.

- Verify the functionality to be installed on the appliance. CommVault Simpana Backup and Recovery can be installed as a CommServe system including the Media Agent, or as a Media Agent only.
- Windows network domain information is required for installation. Check with the network administrator for these settings.
- Confirm that Windows Disk Manager can access the external disk.
- Ensure that the CommVault Backup and Recovery software is not already installed on the DL2*x*00 system.

   ✐ **NOTE:** If the CommVault Backup and Recovery software is already installed, the Recovery and Update Utility does not allow the reinstallation of the backup application. The option to reinstall the backup application is inactive.

To reinstall the CommVault Simpana Backup and Recovery software:

1. Launch the Dell PowerVault DL Backup to Disk Appliance Recovery and Update Utility.
2. Select **Re-install Backup Application** and follow the instructions on the screen to complete the reinstallation.

Repairing CommVault Simpana Backup And Recovery

If the CommVault Simpana Backup and Recovery software gets corrupted or unusable and must be reinstalled, you must:

1. Uninstall the CommVault Simpana Backup and Recovery software using **Programs and Features** located in the Windows Server 2008 control panel.

   ✐ **NOTE:** When uninstalling the CommVault software use the SQL administrator SA password: `2StrongPassword!`
2. Follow the steps in Reinstalling CommVault Simpana Backup And Recovery During Disaster Recovery.
3. Restore the Disaster Recovery Backup data using the CommServe Disaster Recovery Tool.

✐ **NOTE:** For additional information, see disaster planning in the CommVault Simpana book online documentation at **documentation.commvault.com/dell**. Click **Simpana** → **Dell PowerVault DL Backup To Disk Appliance** → **Disaster Recovery.**

Solution Map

Depending on the version of CommVault Simpana software installed on the DL2*x*00 system, select the appropriate documentation link at **documentation.commvault.com/dell**.

Deployment Planning

What do You Want to do?	Documents and Resources Available
Learn about system requirements for the DL Backup to Disk Appliance	For a list of Dell-supported hardware and software, see the *Dell PowerVault DL Backup to Disk Appliance Interoperability Guide* at **support.dell.com/manuals**.
Learn about known issues	For information about potential issues and workarounds for your Dell PowerVault DL Backup to Disk Appliance, see the *Dell PowerVault DL2x00 Systems Powered by CommVault Simpana Release Notes* at **support.dell.com/manuals**.
Learn about supported backup agent requirements	Visit **documentation.commvault.com/dell**. Click **Simpana → System Requirements → Backup & Recovery Agents**.
Learn about pre-installation setup and requirements	See [Installation Prerequisites].
Determine what type of data can be backed up	Visit **documentation.commvault.com/dell**. For Simpana 8.0, click **Simpana → Getting Started → Install Components.** For Simpana 9.0, click **Simpana → Getting Started → Setup Clients to Manage Data**.

Setup

What do You Want to do?	Documents and Resources Available
Set up the DL Backup to Disk Appliance	See [Setting Up DL Backup To Disk Appliance] or *Setting Up Your Dell PowerVault DL Backup to Disk Appliance* supplied with the DL2*x*00 system.
Add tape devices to the DL Backup to Disk Appliance	For information on adding tapes to your system, see [Adding The Tape Device To The Disk Appliance Console].
Manage and monitor the system and storage hardware	For information on monitoring the system for hardware and software faults and managing storage, see the *Dell OpenManage Server Administrator User's Guide* at **support.dell.com/manuals**.
Configure NIC teaming	For more information on configuring NIC teaming, see Configuring Teaming in the *Broadcom NetXtreme II Network Adapter User Guide* or Configuring the PowerVault DL2x00 System With NIC Teaming.

Deployment And Maintenance

What do You Want to do?	Documents and Resources Available
Learn more about system requirements for the DL Backup to Disk Appliance	For a list of Dell-supported hardware and software, see the *Dell PowerVault DL Backup to Disk Appliance Interoperability Guide* at **support.dell.com/manuals**.
Learn about supported backup agent requirements	Visit **documentation.commvault.com/dell**. For CommVault Simpana 8.0 software requirements, click **Simpana → System Requirements → Backup & Recovery Agents**. For CommVault Simpana 9.0 software requirements, click **Simpana → Backup & Recovery Agents**.
Learn about known issues	For late-breaking information about the DL Backup to Disk Appliance and potential issues and workarounds, see the *Dell PowerVault DL2x00 Systems Powered by CommVault Simpana Release Notes* at **support.dell.com/manuals**.
Understand the CommVault CommCell architecture (CommServe system and Media Agent)	Visit **documentation.commvault.com/dell**. Click **Simpana → CommCell Overview.**
Understand the CommVault Simpana software storage provisioning features for the DL Backup to Disk Appliance	Visit **documentation.commvault.com/dell**. Click **Simpana → Dell PowerVault DL Backup To Disk Appliance → Getting Started.**
Set up and schedule a disaster recovery solution in CommVault Simpana	Visit **documentation.commvault.com/dell**. Click **Simpana → Common Technology Engine → Disaster Recovery**.
Set up and schedule backup jobs	Visit **documentation.commvault.com/dell**. For Simpana 8.0, click **Simpana → Getting Started → Protect Your Data.** For Simpana 9.0, click **Simpana → Popular Features → All Features... → Scheduling.**
View your backup job status	Visit **documentation.commvault.com/dell**. Click **Simpana → Getting Started → Where to Go from Here → Where to Go from Here → Schedule Data protection, reports, and other jobs**.
Configure automatic alerting in CommVault Simpana	Visit **documentation.commvault.com/dell**. Click **Simpana → Getting Started → Where to Go from Here → Configure Alerts.**
Recover the system using disaster recovery	See [Disaster Recovery](#).
Add an optional tape library in CommVault Simpana	Visit **documentation.commvault.com/dell**. For Simpana 8.0, click **Simpana → Getting Started → Configure Libraries and Drives.** For Simpana 9.0, click **Simpana → Getting Started → Configure Storage Devices.**

What do You Want to do?	Documents and Resources Available
Understand and set up a media management strategy for the optional tape library in CommVault Simpana	Visit **documentation.commvault.com/dell**. Click **Simpana → Common Technology Engine → Media Management**.
Recover backup data	Visit **documentation.commvault.com/dell**. For Simpana 8.0, click **Simpana → Getting Started → Recover Your Data.** For Simpana 9.0, click **Simpana → Popular Features → All Features... → D → Restore Backup Data.**
Upgrade the DL Backup to Disk Appliance Software	See Updating DL Backup To Disk Appliance Software.
Upgrade the CommVault Simpana backup application	Visit **documentation.commvault.com/dell**. Click **Simpana → Upgrades.**
Deduplication configuration and features	Visit **documentation.commvault.com/dell**. For Simpana 8.0, click **Simpana → Features → Support Information → Deduplication.** For Simpana 9.0, click **Simpana → Popular Features → Deduplication.**
Configure Data Interface Pairs	Visit **documentation.commvault.com/dell**. Click **Simpana → Index → N → Network → Data Interface Pairs**.

Storage Expansion And Migration

What do You Want to do?	Documents and Resources Available
Add a PERC adapter to the PowerVault DL2x00 system	See Expansion Cards in the *Hardware Owner's Manual* of your Dell PowerVault DL2x00 system at **support.dell.com/manuals**. Also, see the *Dell PERC 6/i, PERC 6/E, PERC H700, PERC H710, PERC H800, and PERC H810* User's Guides at **support.dell.com/manuals**.
Add a PowerVault MD1x00 storage enclosure to a newly installed PERC adapter in the PowerVault DL2x00 system	See Setting Up The Hardware.
Add a PowerVault MD1x00 storage enclosure to an existing PowerVault MD1x00	See Setting Up The Hardware. Also see the *Dell PowerVault MD1x00 Storage Enclosure Hardware Owner's Manual* at **support.dell.com/manuals**.
Add additional disk storage capacity to the PowerVaultMD1x00 storage enclosure	See Installing Enclosure Components in the *Dell PowerVault MD1x00 Storage Enclosure Hardware Owner's Manual* at **support.dell.com/manuals**.
Incorporate recently added storage into the PowerVault DL2x00 system	Visit **documentation.commvault.com/dell**. Click **Simpana → Dell PowerVault DL Backup to Disk Appliance → Getting Started → Automatic Disk Group Configuration**.
Migrate or copy backup data from one PowerVault DL2x00 system to another	Visit **documentation.commvault.com/dell**. For Simpana 8.0, click **Simpana → Dell PowerVault DL Backup to Disk Appliance → Other Features → Disk**

What do You Want to do?	Documents and Resources Available
	Management , and type **migrate a magnetic library** in the search tool. For Simpana 9.0, click **Simpana** → **Dell PowerVault DL Backup to Disk Appliance** → **Other Features** → **Disk Management** → **Migrate Libraries.**
Create an advanced RAID group on the PowerVault DL2*x*00 system	See Configuring The Storage Manually.

Troubleshooting And Getting Help

What do You Want to do?	Documents and Resources Available
Contact Dell for support	Visit **support.dell.com** or contact your Dell Support representative.
Recover from a system hardware failure	See Disaster Recovery.
Get troubleshooting information for CommVault Simpana software	Visit **documentation.commvault.com/dell**, click **Simpana** → **Search,** and type **CommCell Troubleshooting**.
Learn about CommVault Simpana software licensing	Visit **documentation.commvault.com/dell**. Click **Simpana** → **Index** → **License Administration**.

7

Additional References

✎ **NOTE:** Depending on the version of CommVault Simpana software installed on the PowerVault DL2*x*00, select the appropriate documentation link at **documentation.commvault.com/dell**.

Software Documents

Table 6. DL Backup to Disk Appliance Documents

Document	Description	Location
Setting Up Your Dell PowerVault DL Backup to Disk Appliance	Helps you set up the appliance hardware and configure the software before using the system for the first time.	**support.dell.com/manuals** (also supplied with your system)
Dell PowerVault DL Backup to Disk Appliance Interoperability Guide	Lists the Dell supported hardware and software compatible with the appliance.	**support.dell.com/manuals**
Dell PowerVault DL2x00 Systems Powered by CommVault Simpana Release Notes	Contains late-breaking information about the appliance.	**support.dell.com/manuals**

Table 7. CommVault Simpana Software Documents

Document	Description	Location
CommVault Simpana Books Online	Contains information about setup, system administration, and troubleshooting for CommVault Simpana Backup and Recovery software.	**documentation.commvault.com/ dell** ✎ **NOTE:** Select the appropriate documentation link depending on the version of CommVault Simpana software installed on the PowerVault DL2*x*00.

Hardware Documents

Document	Description	Location
Dell PowerVault DL2xxx Getting Started With Your System	Helps you get started with the Dell PowerVault DL2*x*00 systems.	**support.dell.com/manuals**
Dell PowerVault DL2000 Hardware Owner's Manual	Contains information specific to your Dell hardware.	**support.dell.com/manuals**

Document	Description	Location
Dell Serial-Attached SCSI 6/iR Integrated and Adapter User's Guide	Contains information on the Serial Attached SCSI (SAS) 6/iR adapter.	**support.dell.com/manuals**
Dell PERC 6/i, PERC 6/E, and CERC 6/i User's Guide	Contains information on the PERC 6-series adapters.	**support.dell.com/manuals**
Dell PERC H700 and H800 User's Guide	Contains information on the PERC H700 and H800 adapters.	**support.dell.com/manuals**
Dell PERC H710 and H810 User's Guide	Contains information on the PERC H710 and H810 adapters.	**support.dell.com/manuals**
Dell PowerVault MD1x00 Getting Started With Your System	Helps you get started with the Dell PowerVault MD1*x*00 storage enclosure.	**support.dell.com/manuals**
Dell PowerVault MD1x00 Storage Enclosure Hardware Owner's Manual	Contains information specific to your Dell PowerVault MD1*x*00 storage enclosure.	**support.dell.com/manuals**
Dell PowerVault Systems Compatibility Matrix	Contains information on supported software and hardware for the Dell PowerVault storage enclosures and tape library systems.	**support.dell.com/manuals**
Dell PowerVault TL2000/4000 Tape Library Getting Started Guide	Contains information on setting up an optional TL2000/4000 tape library.	**support.dell.com/manuals**
Dell PowerVault TL2000/4000 Tape Library User's Guide	Contains information on the optional TL2000/4000 tape library.	**support.dell.com/manuals**
Rack Installation Guide	Contains information on installing the system in a rack.	**support.dell.com/manuals**
Dell PowerVault ML6000 Tape Library User's Guide	Contains information on the optional ML6000 tape library.	**support.dell.com/manuals**
Dell PowerVault 122T Autoloader User's guide	Contains information on the optional 122T autoloader.	**support.dell.com/manuals**
Broadcom NetXtreme II Network Adapter User Guide	Contains information on configuring and diagnosing Broadcom NICs.	**support.dell.com/manuals**

Systems Management Documents

Document	Description	Location
Dell OpenManage Software Installation and Security User's Guide	Describes how to install the Dell OpenManage Server Administrator software.	**support.dell.com/manuals**
Dell OpenManage Server Administrator User's Guide	Describes how to use the OpenManage Server Administrator to manage your system.	**support.dell.com/manuals**

Document	Description	Location
Dell Unified Server Configurator and Unified Server Configurator - Lifecycle Controller Enabled User Guide	Describes how to deploy an Operating System, run diagnostics, and apply updates to the system.	**support.dell.com/manuals**
Dell OpenManage Server Update Utility User's Guide	Describes how to use the Server Update Utility to update system software.	**support.dell.com/manuals**
Dell Update Packages for Microsoft Windows Operating Systems User's Guide	Describes how to use Dell Update Packages to update individual devices on your system.	**support.dell.com/manuals**
Dell Management Console User's Guide	Describes how to install and use the Dell Management Console to remotely manage the DL Backup to Disk Appliance.	**support.dell.com/manuals**
Dell OpenManage IT Assistant	Contains information on how to install and use IT Assistant for centralized management of the system.	**support.dell.com/manuals**
Integrated Dell Remote Access Controller 7 (iDRAC7) User's Guide	Describes iDRAC7, which monitors your system and can be used for remote access.	**support.dell.com/manuals**
Dell Management Pack for Microsoft System Center Operations Manager 2007 User's Guide	Describes how to manage your PowerVault system using Microsoft System Center Operations Manager 2007.	**support.dell.com/manuals**
Dell Management Pack for Microsoft Operations Manager User's Guide	Describes how to manage your PowerVault system using Microsoft Operations Manager 2005.	**support.dell.com/manuals**

DL Backup To Disk Appliance Media

CD/DVD Media	Description	Location
Dell Systems Build and Update Utility DVD (DL2000 only)	Dell Systems Build and Update Utility is a bootable utility for server Operating System install, pre-OS firmware updates and pre-OS system configuration.	Supplied with the DL2000 (disk image can also be downloaded from **support.dell.com/support/downloads**)
Dell OpenManage Management Station	Contains IT Assistant, BMC management utility, Dell remote Access controller console, and the Microsoft Active Directory Snap-in utility.	**support.dell.com/support/downloads**
Dell Systems Management Tools and Documentation DVD	A DVD that includes OpenManage Server Administrator, Dell Online Diagnostics, and documentation.	Supplied with your system (disk image can also be downloaded from **support.dell.com/support/downloads**)

CD/DVD Media	Description	Location
Dell Management Console	DVD containing the installation software and documentation for the Dell Management Console.	Supplied with your system (disk image can also be downloaded from **support.dell.com/support downloads**)
CommVault Simpana software installation media	Contains setup files for the CommVault Simpana software.	Supplied with your system
Microsoft Windows Server 2008 Standard x64 Edition or *Microsoft Windows Server 2008 R2*	Contains setup files for your operating system.	Supplied with your system