Dell PowerVault DL Backup to Disk Appliance Powered by Symantec Backup Exec 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.

Contents

Introduction

The **Dell PowerVault DL Backup to Disk Appliance** is the latest generation of backup-to-disk protection powered by the Symantec Backup Exec 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 than conventional tape devices and backup methodologies
- Simplified and unified management for disks and tapes
- 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

Supported Hardware And Software

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

- Dell PowerVault DL2*xxx* system
- Optional Dell PowerEdge RAID Controllers (PERC)
- Optional Dell PowerVault MD*xxxx* storage enclosures

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

- Support for optional tape libraries and devices
- Pre-installed operating system and Dell OpenManage system and storage management software
- Symantec Backup Exec backup and recovery software

NOTE: Starting with Symantec Backup Exec 2012, the Dell PowerVault DL Backup to Disk Appliance Powered by Symantec Backup Exec is not factory installed from Dell. However, the DL Backup to Disk Appliance can be upgraded to Backup Exec 2012 using the Dell PowerVault Recovery and Update Utility (RUU) 3.5.

NOTE: References to the Intelligent Disaster Recovery (IDR) and Deduplication Storage Folder (DSF) are applicable only to appliances running Symantec Backup Exec 2010. DSF or IDR does not apply to appliances running Backup Exec 12.5 or Backup Exec 2012.

NOTE: In Backup Exec 2012, DSF is referred to as Deduplication Disk Storage (DDS). Also, IDR is replaced by Simplified Disaster Recovery (SDR).

Additional Information

- You must enter the initial requirements unique to your IT environment the first time you use the appliance.
- For documents and recovery media referenced in this document, see Additional References.
- For a list of supported external drives, see the *Dell PowerVault MDxxxx 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: By default, Symantec Backup Exec uses a device driver that is installed with the software.

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 DL2*xxx* system	DL2*xxx* system
PowerVault MD*xxxx* storage enclosure	storage enclosure
Symantec Backup Exec	Backup Exec

2

Setting Up The DL Backup To Disk Appliance

The following sections describe how to set up the **Dell PowerVault DL Backup to Disk Appliance**.

Network Requirements

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

- An 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)
- Microsoft Windows Domain Controller if the appliance is configured as either a Managed Media Server (MMS) or Central Admin Server Option (CASO)
- User name and password with administrative privileges

Setting Up The Hardware

The appliance includes the PowerVault DL2*xxx* system and, optionally, one or more PowerVault MD*xxxx* storage enclosures.

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

Follow the steps below to set up the **DL Backup to Disk Appliance** hardware:

1. Locate the *Getting Started Guide* for the PowerVault DL2*xxx* system and the optional PowerVault MD*xxxx* storage enclosure(s) that came with the appliance.

2. Unpack the **DL Backup to Disk Appliance** hardware.

3. Rack and cable the PowerVault DL2*xxx* system and storage enclosure(s).

4. Configure the PowerVault MD*xxxx* storage enclosure(s) to unified mode.

5. Connect the PowerVault MD*xxxx* storage enclosure(s) to the PowerVault DL2*xxx* system.

6. Turn on the PowerVault DL2*xxx* system and the storage enclosure(s).

Installing The Appliance In A Rack

Follow the steps below if the PowerVault DL2*xxx* system and the optional storage enclosure include a rail kit:

1. Locate the *Rack Installation Instructions* supplied in the rack kit.

2. Follow the instructions to install the rails in the rack unit.

3. Install the PowerVault DL2*xxx* system and the PowerVault MD*xxxx* storage enclosure in the rack.

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

Cabling The Appliance

1. Locate the PowerVault DL2*xxx* and PowerVault MD*xxxx Getting Started Guides* that shipped with the appliance and follow the instructions to attach the keyboard, mouse, monitor, and power and network cables to the PowerVault DL2*xxx* system.
2. Attach the power cables to each storage enclosure.

📝 **NOTE:** Do not turn on the PowerVault DL2*xxx* system or storage enclosure(s).

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

Setting The Storage Mode

1. Locate the configuration switch for the storage enclosure.
2. Set the storage mode for each storage enclosure to **unified mode** .

📝 **NOTE:** The configuration switch must be set to **unified mode** 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 MDxxxx Hardware Owner's Manual* at **support.dell.com/manuals**.
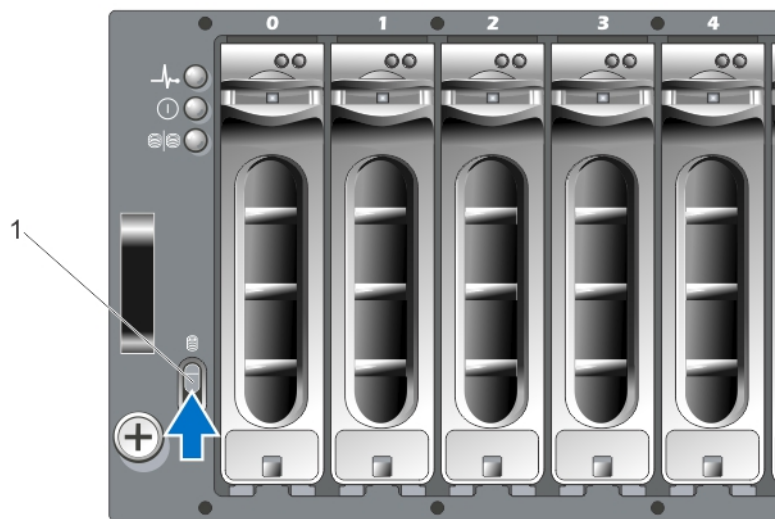
Figure 1. Setting the PowerVault MD1000 Storage Enclosure Configuration Switch

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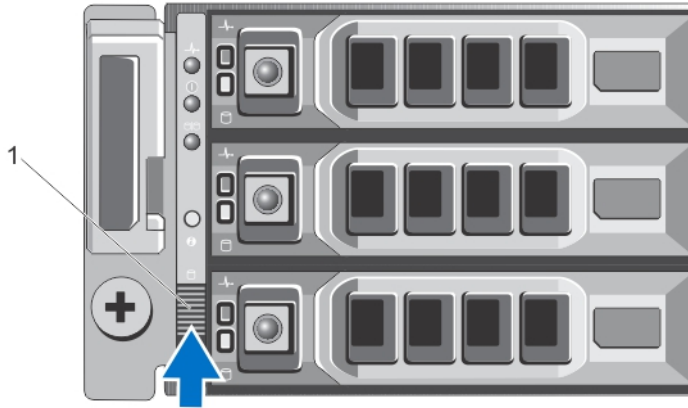
Figure 2. Setting the PowerVault MD1200 Storage Enclosure Configuration Switch

1. configuration switch

Connecting The Storage Enclosure To The PowerVault DL2*xxx* System

Follow one of the steps below to connect the storage enclosure.

1. Connect the SAS data cable from the PowerEdge RAID Controller (PERC) installed in the PowerVault DL2*xxx* system to the primary Enclosure Management Module (EMM) SAS In port of the storage enclosure.
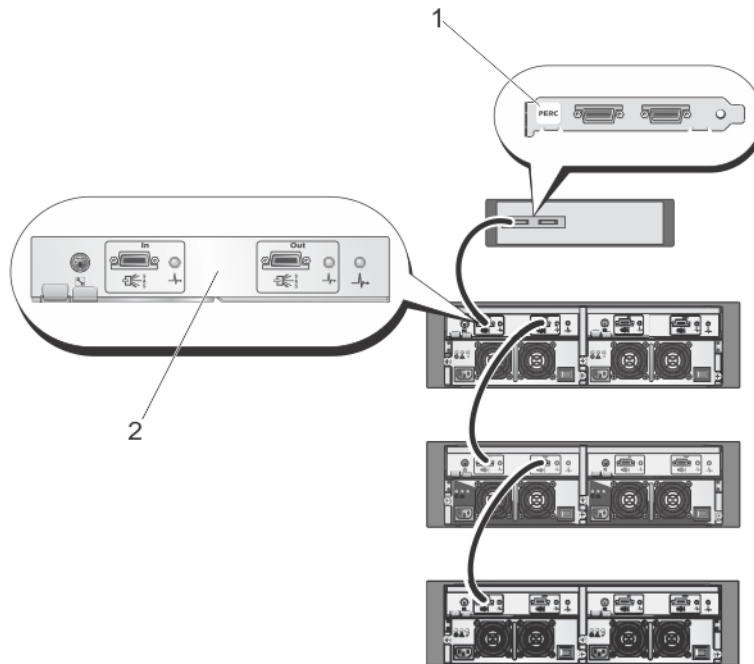
Figure 3. Connecting the SAS Cable From the PowerVault DL2*xxx* System to the PowerVault MD1000 Storage Enclosure

1. PERC adapter
2. primary EMM
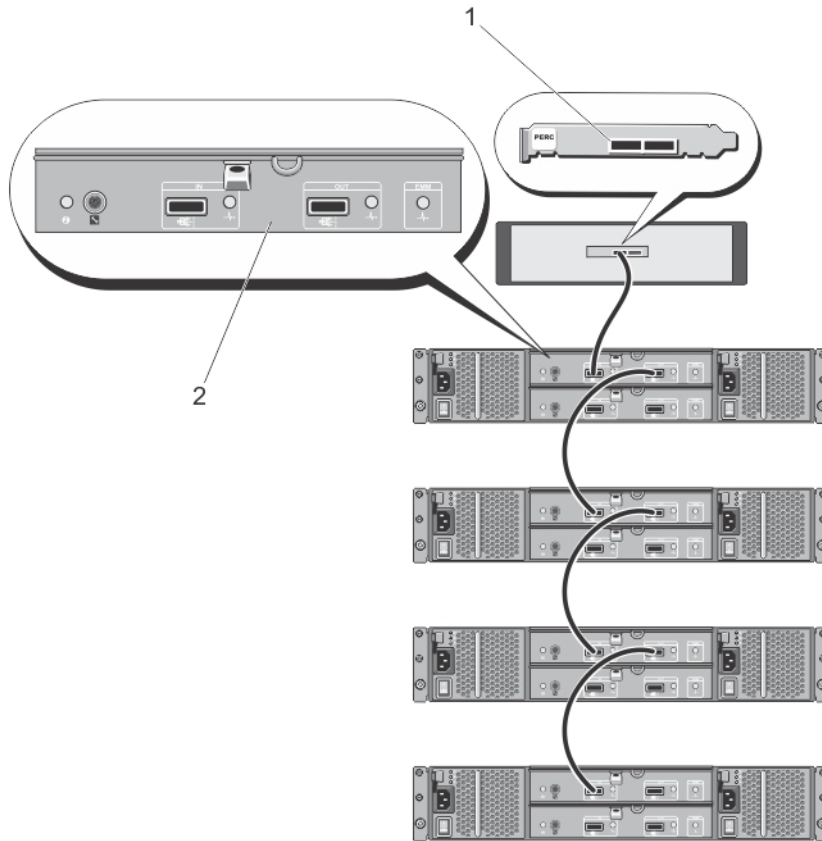
Figure 4. Connecting the SAS Cable From the PowerVault DL2*xxx* **System to the PowerVault MD1200 Storage Enclosure**

1. PERC adapter
2. primary EMM

NOTE: If more than one storage enclosure is used, connect the SAS Out port on the primary EMM to the SAS In port on the next down-chain enclosure. See the *Dell PowerVault DL Backup to Disk Appliance Interoperability Guide* at **support.dell.com/manuals** to determine the maximum number of storage enclosures supported by the PERC adapter.

2. Connect the PowerVault DL2xxx system to the storage enclosure and optional tape library
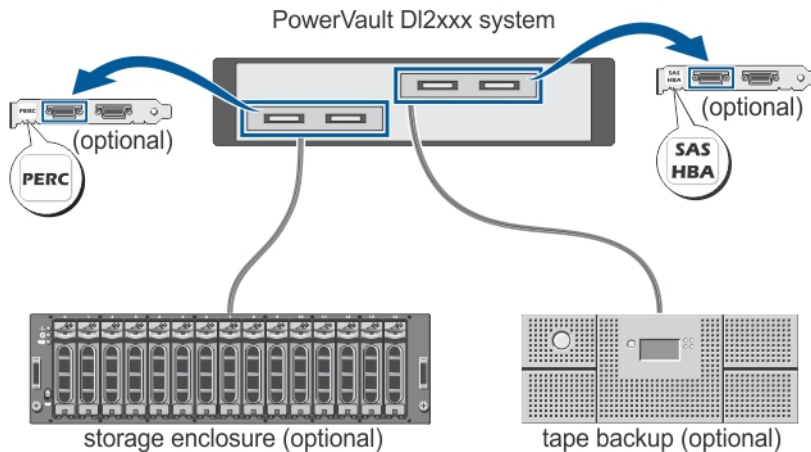
Figure 5. Connecting the PowerVault DL2*xxx* System to the Storage Enclosure and Optional Tape Library

📝 **NOTE:** If a SCSI, SAS, or Fibre Channel host adapter has been installed for use with an optional tape device, see the topic "Adding An Optional Tape Library".

📝 **NOTE:** Do not connect tape devices to the PERC adapter. See Figure "Connecting the SAS Cable From the PowerVault DL2xxx System to the PowerVault MD1200 Storage Enclosure".

Connecting The Cable Management Arm (Optional)

This procedure is applicable if the appliance includes a cable management arm (CMA).

1. Locate the *CMA Installation Instructions* that shipped with the CMA kit.
2. Follow the instructions to install the CMA.

Turning On The DL Back Up To Disk Appliance

After cabling the appliance, turn on each storage enclosure and then the PowerVault DL2*xxx* 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 the system's *Owner's Manual* at **support.dell.com/manuals**.

Configuring The Software

All software necessary to deploy the appliance are pre-installed on the PowerVault DL2*xxx* system. To run the **PowerVault DL Backup to Disk Appliance Configuration Wizard**, ensure the following:

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

1. Turn on the system for first use.
2. Log on to Microsoft Windows Server 2008.
   The **PowerVault DL Backup to Disk Appliance Configuration Wizard** runs automatically.

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

3. Complete all steps of the **PowerVault DL Backup to Disk Appliance Configuration Wizard**.

   ✏ **NOTE:** Run Microsoft Windows Update only after you complete all the steps of the **PowerVault DL Backup to Disk Appliance Configuration Wizard**.

Verifying Cable Connection

The **PowerVault DL Backup to Disk Appliance Configuration Wizard** verifies if the PowerVault DL2xxx system is connected correctly to the external disk storage and tape devices.

If the SAS cables are not connected correctly, follow the steps below:

1. Shut down the PowerVault DL2xxx system.
2. Correct the indicated cable(s) by connecting the PowerVault MDxxxx storage controllers to a PERC adapter.
3. Connect the tape device to a SAS, SCSI, or Fibre Channel HBA.
4. Reboot the PowerVault DL2xxx 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 that is 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 you want the trap destination to use. The SNMP agent can only send SNMP trap messages to SNMP hosts that use a known community name.

Trap Destination Lists trap destinations, which is an SNMP management system that receives SNMP trap messages from any SNMP host in the selected community.

Disk Configuration Settings

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*xxx* 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 the topic 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*xxx* 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 6. 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 figure "Dell PowerVault DL2000 and DL2100 Disk Slots".

- 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 7. 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 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 8. Dell PowerVault DL2200 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 enclosure support alternative RAID 6 standard configurations, provided the disk subsystem state is standard. For more information on disk subsystem states, see the topic "Disk Subsystem States".

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. See figure "Dell PowerVault DL2200 and MD1200 Disk Slots".

Disk Subsystem States

The disk subsystem state is **standard** under the following conditions:

- The appliance software stack version must be at version 3.3 or higher.
- Symantec Back Exec must be version 2010 R3 or higher.

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 **PowerVault DL Backup To Disk Appliance Console**, if the disk subsystem state is standard. For more information on disk subsystem states, see the topic "Disk Subsystem States".

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 **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 Server Administrator to be used by the backup application. This disk policy is recommended only for advanced users.
If you select manual disk policy, see the topic Launching Symantec Backup Exec after configuring the appliance.

Selecting Deduplication Controller

If you select either of the automatic disk configuration policies, the **PowerVault DL Backup to Disk Appliance Configuration Wizard** prompts you to select the storage controller type (external or internal) indicating where Backup Exec creates the depulication storage folder (DSF) or the deduplication disk storage (DDS).
The **deduplication** option is a value-add feature of Backup Exec 2010 and later versions. The option requires a license. If you purchased the **deduplication** option with the system, the **deduplication** option and license key are pre-installed. You can evaluate the **deduplication** option for 60 days by selecting the **deduplication** option during the Backup Exec software installation without entering a deduplication license key.
If the **deduplication** option is enabled and the disk configuration policy is set to **Automatic**, Backup Exec creates a DSF or DDS on the first virtual disk available on the controller type selected. The DSF or DDS virtual disk is created based on one of the standard configurations as shown in the topic "Disk Subsystem States".

Recommended Deduplication Controller Settings
- On the DL2100, the recommended controller for deduplication is the external controller. On the DL2200, the recommended controller for deduplication is the internal controller.
- If the appliance configuration does not contain an external PERC adapter, the default controller type is internal. The internal data drives, if present, are used to create a single virtual drive to contain the DSF or DDS. If the appliance configuration only supports the automatic creation of a single virtual disk to contain the DSF or DDS, no additional virtual disks are created.

To support DSF or DDS and one or more backup to disk virtual disks, you may either choose one of the following options:
- Add additional physical disk storage to the appliance.
- Return to the **Disk Configuration Policy** screen by clicking on the **Back** button in the **PowerVault DL Backup to Disk Appliance Configuration Wizard** and select the **manual disk configuration policy**. Using the PowerVault

DL2*xxx* internal hard drives in slots 2 through 5, manually configure the desired number of virtual disks as described in the topic "Configuring Storage Manually".

Installing Symantec Backup Exec Software

✎ **NOTE:** Starting with Symantec Backup Exec 2012, the Dell PowerVault DL Backup to Disk Appliance Powered by Symantec Backup Exec is not factory installed from Dell. However, the DL Backup to Disk Appliance can be upgraded to Backup Exec 2012 using the Dell PowerVault Recovery and Update Utility (RUU) 3.5.

The **PowerVault DL Backup to Disk Appliance Configuration Wizard** launches the installer for the Symantec Backup Exec software.

Entering License Keys For Versions Prior To Backup Exec 2012

Backup Exec license keys are required to enable the Backup Exec options installed on the DL Backup to Disk Appliance.

✎ **NOTE:** For systems shipped with Backup Exec 12.5 or Backup Exec 2010, one or more licenses may be pre-installed. When prompted to enter the license keys by Backup Exec, do not enter the pre-installed licenses.

1. Locate the Backup Exec license keys on the enclosed Dell Software License Key product card.

2. Enter the license key following one of the procedures below:

    –   Enter each license key in the **Enter License Keys** window that is displayed during the Backup Exec installation.
    –   To add or modify licenses after installing Backup Exec, launch the Backup Exec console. In the **Tools** menu, click **Install Options** and **License Keys on this Media Server**.

✎ **NOTE:** You can add licenses or activate additional agents or options at any time after you configure the **PowerVault DL Backup to Disk Appliance Configuration Wizard**. If the evaluation period expires for an agent or option, you need to enter a license key to continue using it.

✎ **NOTE:** To purchase additional license keys for agents and options, contact your Dell representative.

Entering License Keys For Version Backup Exec 2012 And Later

Backup Exec 2012 and later uses Symantec Enterprise Licensing System (ELS). Backup Exec licenses are required to activate the Backup Exec options installed on the **DL Backup to Disk Appliance**. The licenses must be entered during the RUU 3.5 prompt when you are upgrading Backup Exec 2010 or Backup Exec 12.5 to Backup Exec 2012. If not, the system can be run in trial mode for up to 60 days. If you do not enter licensing information within 60 days of installation, the product stops working.

You can add licenses or activate additional agents or options at any time after you update the **PowerVault DL Backup to Disk Appliance Configuration Wizard** using RUU 3.5 or higher. If the evaluation period expires for an agent or option, you need to enter a license to continue using it.

1. Locate the Backup Exec license keys on the enclosed Dell Software License Key product card.

2. Enter the license key following one of the procedures below:

    –   Enter each license key in the RUU 3.5 window that is displayed during the Backup Exec upgrade.
    –   To add or modify licenses after installing Backup Exec, launch the Backup Exec console, click on the **Backup Exec** button, select **Installation and Licensing**, and then **Install Options and Licenses on this Backup Exec Server**.

Setting Options In Symantec Backup Exec

By default, Backup Exec installs the system as a stand-alone media server. For more information, see the *Backup Exec Administrator's Guide* at **symantec.com**. The following options are available:

Standalone Media Server	This is the default server installed by Symantec Backup Exec and is recommended if you are installing in a standalone environment and independent of other Backup Exec media servers.
Central Administration Server	This server is a Backup Exec media server on which the Central Admin Server Option (CASO) is installed. The CASO environment provides load balancing functionality, centralized administration, and delegates job processing in your storage environment.
Managed Media Server	Managed media servers are only available with the Backup Exec CASO. These servers are managed by a central administration server and are responsible for the processing of backup and restore jobs in a CASO environment.

Creating A Service Account

As part of the Backup Exec configuration process, you must create a Backup Exec services account. All Backup Exec services operate in the context of a user account, which is configured for the Backup Exec system services. You can create this new account or you can use an existing user account.

To create a service account, follow the steps below:

1. If the media server is a member of a domain, follow the steps below:
   a) Enter a domain administrator account.

      You can enter an equivalent account that is part of the domain administrators group.
   b) In the domain list, select or enter a domain name.

2. If the media server is a member of a workgroup, follow the steps below:
   a) Enter the administrator account.

      You can enter an equivalent account that is part of the administrators group on the media server.
   b) In the domain list, select or enter the computer name.

3. After you enter the required information, click **Install**.

   NOTE: Do not shut down the appliance until automatic disk configuration is complete. Automatic disk configuration runs in the background and configures the storage attached to the PowerVault DL2*xxx* system. The time required for disk configuration depends on the amount of storage attached to the PowerVault DL2*xxx* system.

You can check the **Automatic Disk Configuration** status in the **DL Backup to Disk Appliance Console** and the **Job Monitor** window in the **Backup Exec Administrator Console**.

Configuring The PowerVault DL2*xxx* System With NIC Teaming

The Broadcom Advanced Control Suite (BACS) is pre-installed on the appliance. You use BACS to configure, manage, and team network interface controllers (NICs) on the PowerVault DL2*xxx* 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, install the Broadcom teaming software. Run **setup.exe** available 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, configure the network adapters into a smart load balancing team using BACS.

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 Symantec Backup Exec 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 3 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. If Server Administrator is not installed, you cannot access the status of the system and disk subsystem.

Launching Symantec Backup Exec

To launch the Symantec Backup Exec using the **PowerVault DL Backup to Disk Appliance Console**, follow the steps below:

1. Click **Home → Launch Symantec Backup Exec**.

NOTE: For systems running Backup Exec 2010 or older, it is recommended that you use the **Intelligent Disaster Recovery** (IDR) wizard to create a system recovery image. IDR is part of Backup Exec designed to recover the system in the event of a software or hardware failure.

2. If you select the disk policy **Automatic With Confirmation**, an alert is created.
3. To view this alert, click the **Alert** tab.
   The disk configuration is displayed in the dialog box.
4. Click **Yes** to proceed with the **Storage Provisioning Option** (SPO).
   The virtual disks are created automatically.
5. Click on the **Devices** tab to view the virtual disks.

NOTE: 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 displays `In Progress`. Do not shut down the PowerVault DL2*xxx* system until automatic disk configuration completes.

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 at **support.dell.com/manuals**.

To add a tape library, follow the steps below:

1. Click **Launch Symantec Backup Exec** .

   The **Symantec Backup Exec** window is displayed.

2. Click the **Devices** tab on the **Symantec Backup Exec** window.

   The library is automatically configured and ready for use.

3. If you have media in the library with bar codes and the media is not showing, right-click the selected library and click **Scan**.

4. If the media is displayed in the right window with the status as **unknown**, right-click the slots under the selected library and click **Inventory**.

   NOTE: The time required to perform an inventory increases depending on the number of slots and media loaded in the library.

5. After completing the library inventory, right-click the media in the right window pane to perform tape functions.

Adding The Tape Device To The Appliance Console

To add the tape device to the disk appliance console, follow the steps below:

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** located next to the tape device IP address.

5. Log on using the user name and password for the tape device.

   For more information, see the tape documentation at **support.dell.com/manuals**.

Configuring Storage Manually

NOTE: If you select **automatic disk configuration policy** (with or without confirmation) the following steps are not required. See the topic "Launching Symantec Backup Exec".

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

To create virtual disks manually using Server Administrator, select **manual disk configuration policy** in the **DL Backup to Disk Appliance Console**. To manually create a virtual disk using Server Administrator, follow the steps below:

1. In the **PowerVault DL Backup to Disk Appliance Console**, click **Settings** → **Launch Dell OpenManage Server Administrator** .

2. If an error certificate is delayed, click **Continue to this website**.

   The log on window is displayed.

3. Log on to Server Administrator using the user name and password created using the **DL Backup to Disk Appliance Configuration Wizard**.

Creating Virtual Disk Wizards

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 users with a 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 the physical disks and the controller connector to be used.

To launch the Express and Advanced Create Virtual Disk wizards, follow the steps below:

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 you require for your configuration.

Configuring Manually Created Virtual Disks As Backup To Disk Folders

NOTE: The virtual disk is automatically displayed in Symantec Backup Exec as an unconfigured disk. Before the disk can be used by Backup Exec, it must be configured.

NOTE: For Backup Exec 2010, to create a Deduplication Storage Folder (DSF), see the topic "Creating A New DSF Manually".

NOTE: For Backup Exec 2012 and later, to create a Deduplication Disk Storage (DDS), see the topic "Manually Configuring Virtual Disk For Deduplication".

To configure the virtual disk, follow the steps below:

1. Navigate to the **Devices** tab.
2. Right-click the unconfigured disk and select **Configure**.
3. Click **OK**.

NOTE: The progress of the **Configure Virtual Disk** job can be viewed under the **Job Monitor** tab in Backup Exec.

Converting Storage Role Of Virtual Disk

In order to convert the storage role of a virtual disk from **Backup to Disk** to **Deduplication** or vice versa, follow the step below:

1. For Backup Exec 2012 or later, navigate to the **Storage Tab** view in the **Backup Exec Console**. For older versions, navigate to the **Device Tree**.
2. Right-click the selected device and click **Disable**.
3. Right-click the selected device and click **Delete**.
4. Stop the Backup Exec Services.
5. Login to the Dell OpenManage Server Administrator.
6. Click on **Storage** and then select **Virtual Disk Details** from the selected PERC controller.
7. Locate the desired virtual disk to be converted.

⚠ **CAUTION: Ensure that the correct virtual disk is selected before proceeding. Data loss occurs if the wrong disk is selected for step 8.**

8. Select **Fast Initialize** from the **Available Tasks** drop-down menu, and then click **Execute**.

9. Start the Backup Exec services and navigate to **Storage** or **Device Tree** in the Backup Exec Console.
10. Delete the offline virtual disk.
11. Right-click the unconfigured virtual disk and select **Configure**.

The device can now be configured for **Backup to Disk** or **Deduplication**.

Capturing Support Log Files

If log files are required by your Dell support representative, they can be automatically collected.

Follow the steps below to capture support log files.

1. Click the **PowerVault DL Backup to Disk Appliance Console**.
2. Click on the **Support** tab.
3. Click the link **Click here to collect appliance information and logs for Dell Support**.

The support log files are generated.

Changing Automatic Disk Configuration

If the appliance supports RAID 5 and RAID 6 standard disk configurations (see the topic "Disk Configuration Settings"), the standard disk configuration setting is displayed on the **Settings** tab of the **DL Backup to Disk Appliance Console**. Choose standard disk configuration when the appliance is first configured using the **DL Backup to Disk Appliance Configuration Wizard**.

> NOTE: 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.

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. Inspect 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 the topic 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* at **support.dell.com/manuals** for supported DL2*xxx* platforms.

Enclosure Numbers

The backup application and Server Administrator refer to the MD*xxxx* 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.

PERC 6/E

- 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.

PERC H800

- The first enclosure attached to port 0 of the PERC H800 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 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 and H700 are assigned the enclosure number 255.

4

Updating DL Backup To Disk Appliance Software

The **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 PowerVault DL2*xxx* system BIOS, firmware, and device drivers for the PowerVault DL2*xxx* system and PowerVault MD*xxxx* 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 **PowerVault DL Backup to Disk Appliance Configuration Wizard** and the **PowerVault DL Backup to Disk Appliance Console**.
- **Systems and Storage Management**—Dell OpenManage Server Administrator.
- **Backup and Recovery Application**—Symantec Backup Exec.

> **NOTE:** You must ensure that you provide the Service Tag or system model of the PowerVault DL2*xxx* system prior to 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 list on the **Drivers and Downloads** page based on the PowerVault DL2*xxx* system model.

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 PowerVault DL2*xxx* system. SUU compares the versions of components currently installed on the system with update components packaged on the server update DVDs. 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 media 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 the 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**.

Subscribing To System Software Update Notifications

Dell technical update subscriptions e-mails critical product alerts, updates to files, drivers, and utilities for the 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 **PowerVault DL Backup to Disk Appliance Recovery and Update Utility** to update DL Backup to Disk Appliance applications. Download the latest version of the 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:** The **Dell PowerVault DL Backup to Disk Appliance Recovery and Update Utility** is specific to the system model. Ensure that you download the correct version of the application for the appropriate system.

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

> **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.

Updating Dell OpenManage Server Administrator

Updates to Dell OpenManage Server Administrator can be downloaded 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 Symantec Backup Exec

Use the **LiveUpdate** feature of Backup Exec to obtain and apply updates. For more information, see the topic "About Updating Backup Exec With LiveUpdate" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.

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 **PowerVault DL Backup to Disk Appliance** applications.
- Reinstall Symantec Backup Exec.
- Recover a Symantec Backup Exec deduplication storage folder.

✎ **NOTE:** Before you perform the recovery steps, see *Dell PowerVault DL2xxx System Powered by Symantec Backup Exec Release Notes* at **support.dell.com/manuals**.

Using the iDRAC Virtual Media

PowerVault DL2*xxx* systems that include the Integrated Dell Remote Access Controller 6 (iDRAC6) Enterprise support iDRAC6 virtual media.

iDRAC virtual media feature allows you to access the DVD drive on a management station from the managed server. The appliance operating system and applications can be installed using the iDRAC6 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, configure the iDRAC Enterprise card for remote access. For more information, see the topic "Configuring Your System To Use an iDRAC" in the *Integrated Dell Remote Access Controller 6 (iDRAC6) User 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 the topic "Accessing The Web Interface" in the *Integrated Dell Remote Access Controller 6 (iDRAC6) User Guide* at **support.dell.com/manuals**. After the web interface has been accessed, you can configure the virtual media. For specific instructions, see the topic "Configuring And Using Virtual Media" in the *Integrated Dell Remote Access Controller 6 (iDRAC6) User Guide* at **support.dell.com/manuals**.

Disaster Recovery Planning Using IDR

NOTE: This section applies to DL appliances running Backup Exec versions prior to Backup Exec 2012. For disaster recovery planning for Backup Exec 2012 and later see the topic "Disaster Recovery Planning Using SDR".

The primary role of the **PowerVault DL Backup to Disk Appliance** is to protect the files, databases, and critical applications of other computer systems. Steps must be taken to ensure that the appliance can be recovered should a disaster strike. When a hardware failure, software error, or a natural disaster affects the appliance, you must reinstall the following:

- The appliance operating system
- Backup Exec
- Appliance updates
- Other applications

If the Backup Exec database is lost or corrupted, you must manually recreate backup jobs, policies, and schedules. You cannot run backup and recovery jobs until the appliance is fully operational. To adequately prepare the appliance, you must perform the following:

- Configure Backup Exec Intelligent Disaster Recovery (IDR) on the appliance.
- Schedule a full backup of the appliance to run on a regular basis.
- Schedule a backup of the optional deduplication storage folder (DSF) to run on a regular basis.
- Maintain the Backup Exec and optional deduplication services passwords.

Backup Exec IDR Option

Backup Exec IDR is a bare metal recovery solution that allows you to recover the appliance in the event of a complete catastrophic software or hardware failure. IDR restores the appliance system software to the state of the last full backup set. This includes all files and software installed on the appliance. For more information on the Backup Exec IDR option, see the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.

IDR Restrictions And Limitations

IDR requires **Backup to Disk Folders** to backup the critical system files and system state. If the appliance configuration contains a DSF and no **Backup to Disk Folders**, you cannot use IDR to recover the operating system. See the topic "Recovery Solution Map" and follow the non-IDR recovery steps based on the failure type to recover the appliance. See the *Symantec Backup Exec Administrator's Guide* at **symantec.com** for additional information on **Backup Exec Deduplication** option and the DSF.

Preparing the System To Use IDR

To configure IDR on the appliance, follow the steps below:

1. Prior to configuring IDR, ensure that all internal and external storage has been configured including the DSF if the **Backup Exec Deduplication** option is enabled and licensed.
2. Navigate to the **Home** view in Backup Exec and select **Configure Intelligent Disaster Recovery** in the **Getting Started** section.
3. Select an alternative location to store the disaster recovery ***.DR** file.

   Ensure that the location does not reside on any of the appliance's internal physical disks.

NOTE: The location specified can be a network path or removable media such as a USB storage device.

4. Ensure that the **Backup Exec Database Maintenance** job has recently run.

   By default, the Database Maintenance job runs once a day at 4 am local time. See **Default Database Maintenance** options in the *Backup Exec Administrators' Guide* at **symantec.com**.

5. Perform a full backup of the appliance.

   If the appliance has been enabled with the **Deduplication** option, two separate backup jobs must be created to ensure a full recovery of the system files and the DSF. See the topic "Backing Up The Appliance For Disaster Recovery".

NOTE: The full backup includes the disk configuration policy setting. The recovery procedures may not function if the backup runs while the disk configuration policy is set to **Automatic without Confirmation**. Ensure that the disk configuration policy is set to either **Automatic with Confirmation** (recommended) or **Manual** each time the full backup job runs.

6. Run the **Intelligent Disaster Recovery Preparation Wizard** located under **Tools → Wizards** in Backup Exec.

7. Select the option to create a Bootable CD image.

   The IDR wizard prompts for a path to the Windows operating system installation files.

8. Locate the Windows 2008 DVD that was supplied with the appliance and insert in the appliance DVD drive.

9. Enter the drive letter of the appliance DVD drive (for example E:).

10. After the IDR wizard completes, an ISO image is created.

11. Using this ISO image, save the bootable IDR media using a CD writing application and store in a safe location.

    This media is required to initiate a recovery of the appliance.

NOTE: The DVD drive of the appliance can be used to save the media if a CD writing application is installed.

12. Copy this ISO image to a safe location on another computer system. If the bootable IDR media is lost or cannot be read during recovery, a new CD can be created using this image.

NOTE: You must re-run the **IDR Preparation Wizard** to create a new recovery CD when a hardware configuration change is made to the DL2*xxx* appliance storage controllers or network interface cards (NICs).

Backing Up The Appliance For Disaster Recovery Using IDR

NOTE: This section applies to DL appliances running Backup Exec versions prior to Backup Exec 2012. For disaster recovery planning for Backup Exec 2012 and later see the topic "Backing Up The Appliance For Disaster Recovery Using SDR".

Back up the appliance, including entire contents of the appliance system disk on a regular basis to protect the appliance software including the operating system, Backup Exec, and Dell applications from a potential disaster. Also, perform a backup of the DSF on a regular basis to protect it from a potential disaster. Use the **Backup Exec Shadow Copy** component for backup.

Backing Up The Appliance System Files

Back up the entire contents of the appliance system disk on a regular basis to protect the appliance software including the operating system, Backup Exec, and Dell applications from a potential disaster.

⚠ **CAUTION: The full system backup must not include the Backup Exec DSF virtual disk or any reference to the DSF within the Shadow Copy Components.**

To back up the appliance system files, follow the steps below:

1. In the Backup Exec console, go to the **Job Setup** → **Backup Tasks** and click **New Job**.
2. Under **Source** → **Selection**, click the **View by Resource** to locate the name of the appliance and click in the box next to the appliance.

   ✎ **NOTE:** Uncheck removable media or any lettered drive if that drive represents the DSF.

   A blue checkmark indicates that all data on the appliance has been enabled for backup. This typically includes the **C: drive**, **System State**, **Utility Partition**, and **Shadow Copy Components**.
3. If applicable, expand the resource tree of the appliance, expand the **Shadow Copy Components** → **User Data**, and uncheck the **Backup Exec Deduplication Storage**.
4. If the appliance configuration includes a DSF, exclude the DSF virtual disk from the system backup.

   – If the DSF was created using the **New Deduplication Storage Folder Wizard**, uncheck the DSF virtual disk drive letter or mount path from the full backup.
   – If the DSF was created by automatic disk configuration, expand **C:\Program Files\Symantec\Backup Exec** and uncheck the **PDDE_Volume** to exclude the DSF.

   ⚠ **CAUTION: The PDDE_Volume is the mount point of the DSF virtual disk created by automatic disk configuration. Deleting this folder results in loss of DSF data.**
5. Select an available backup to disk folder location under **Destination** → **Device and Media** .

   ✎ **NOTE:** Do not select the DSF as the destination for the system backup.
6. Under **Setting** → **General**, enter a name of this backup job.
7. Under **Frequency** → **Schedule**, configure this backup job to run on a regular basis.
8. Click **Run Now** to start the backup.

Backing Up The DSF

Back up the DSF on a regular basis to protect it from a potential disaster. Use the **Backup Exec Shadow Copy** component for backup.

✎ **NOTE:** Do not select the DSF virtual disk's drive letter or mount point as the DSF source.

To back up the DSF, follow the steps below:

1. In the Backup Exec console, go to the **Job Setup** → **Backup Tasks** and click **New Job**.
2. Under **Source** → **Selection**, click **View by Resource**.
3. Expand the resource tree of the appliance, expand the **Shadow Copy Components** → **User Data** , and select **Backup Exec Deduplication Storage**.

   A blue checkmark indicates that the DSF has been enabled for backup.
4. Select an available backup to disk folder location under **Destination** → **Device and Media** .

   ✎ **NOTE:** Do not select the DSF as the destination for the system backup.
5. Under the **Setting** → **General**, enter a name of this backup job.
6. Under **Frequency** → **Schedule** configure this backup job to run on a regular basis.
7. Click **Run Now** to start the backup.

Maintaining Backup Exec Passwords

The Backup Exec services password must be updated whenever the appliance system or domain account password that was used to install Backup Exec is changed. To update the Backup Exec services password, follow the steps below:

1. Click **Tools → Backup Exec Services → Services Credentials → Change service account information**.

   See **Changing service account information** in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.

2. Change the Deduplication services password if a DSF exists on the system. Run the following command from the **C:\Program Files\Symantec\Backup Exec**directory: **Spauser -c -u username**.

   Enter the user name that was used to install Backup Exec. For example: `administrator`.

   > **NOTE:** If the Deduplication services password is not updated, you cannot recover the DSF during a disaster recovery.

Disaster Recovery Planning Using SDR

Backup Exec 2012 introduces an improved method of disaster recovery called Simplified Disaster Recovery (SDR).

The primary role of the **PowerVault DL Backup to Disk Appliance** is to protect the files, databases, and critical applications of other computer systems. Steps must be taken to ensure that the appliance can be recovered should a disaster strike. When a hardware failure, software error, or a natural disaster affects the appliance, you must reinstall the following:

- The appliance operating system
- Backup Exec
- Appliance updates
- Other applications

If the Backup Exec database is lost or corrupted, you must manually recreate backup jobs, policies, and schedules. You cannot run backup and recovery jobs until the appliance is fully operational. To adequately prepare the appliance, you must perform the following:

- Schedule a full backup of the appliance to run on a regular basis.
- Maintain the Backup Exec and optional Deduplication services passwords.

Backup Exec SDR

Backup Exec SDR is a bare metal recovery solution that allows you to recover the appliance in the event of a complete catastrophic software or hardware failure. SDR restores the appliance system software to the state of the last full backup set. This includes all files and software installed on the appliance.

The DL Appliance Media kit includes a 32-bit and 64-bit system recovery DVD called the *Simplified Disaster Recovery Disk*. The 64-bit SDR DVD can be used to recover the DL Appliance. For more information on SDR, see the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.

SDR Restrictions and Limitations

SDR requires Backup to Disk virtual disks to backup the critical system files and system state. If the appliance configuration contains a deduplication disk storage (DDS) and no Backup to Disk virtual disks, you cannot use SDR to recover the operating system. See the topic "Recovery Solution Map" and follow the non-IDR or non-SDR recovery steps based on the failure type to recover the appliance. For more information on SDR, see the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.

Preparing The System To Use SDR

To prepare the system for using SDR, follow the steps below:

1. Prior to configuring SDR, ensure that all internal and external storage has been configured including the DDS if the **Backup Exec Deduplication** option is enabled and licensed.

2. In the Backup Exec Console, click on **Backup Exec** → **Configuration and Settings** → **Backup Exec Settings**.

3. Click on **Simplified Disaster Recovery**.

4. Under **disaster recovery alternate data path**, specify an alternate path for the ***.DR** disaster recovery file to be stored.

   NOTE: This location must be a network path or removable media such as a USB storage device. The Backup Exec logon account must have read-write privileges to this location.

5. Click on **Database Maintenance**.

6. Ensure that the **Backup Exec Database Maintenance** job has recently run.

   By default, the **Database Maintenance** job runs once a day at 4 am local time. See **Default Database Maintenance** options in the *Backup Exec Administrators' Guide* at **symantec.com**. Verify this job has run prior to performing the first full backup of the system.

7. Click **OK** to save the updated settings.

8. Click on the **Backup and Restore** tab.

9. Perform a full backup of the appliance.

   See the topic "Backing Up The Appliance For Disaster Recovery Using SDR".

10. Once the backup job completes, verify that the ***.DR** file is created in the alternate data path specified.

Backing Up The Appliance For Disaster Recovery Using SDR

NOTE: Back up the appliance, including entire contents of the appliance system disk on a regular basis to protect the appliance software including the operating system, Backup Exec, and Dell applications from a potential disaster.

To backup the appliance, follow the steps below:

1. In the Backup Exec Console, navigate to the **Backup and Restore** tab.

2. Right-click the appliance and select **Backup** → **Backup to Disk** .

3. Click **Edit**.

4. Uncheck **removable media**.

   A green circle indicates that all the necessary components for an SDR based recovery are selected. This typically includes the **C: drive**, **System State**, **Utility Partition**, and **Shadow Copy Components**.

   NOTE: If any of the backup to disk virtual disks have a drive letter assigned and are selected, the entire content of backup to disk virtual disk are also backed up as part of the backup job. If this is not required, uncheck the drive letter.

5. If the DDS is present, ensure that the content of the DDS is also selected.

   – If the DDS was created automatically using the **Storage Provisioning** option, or by configuring an unconfigured virtual disk in the Backup Exec console, it is configured under the **C:\Program Files\Symantec \Backup Exec\PDDE_Volume Mount** point.

   – If the DDS was created on a drive letter in Backup Exec 2010 using the **New Deduplication Storage Folder Wizard** and then later upgraded to Backup Exec 2012, the DDS is on the same drive letter.

6. Select a backup to disk virtual disk for the full backup.

   NOTE: Do not select the DDS as the target for the full backup of the appliance.

7. Give a name to the job and schedule the backup job to run on a regular basis.

8. In the **Backup and Restore** tab, double-click the appliance and select **Backup** → **Backup to Disk**.

9. Navigate to the job that was created and select **Run Now**.

Recovery Solution Map

Keep the following guidelines in mind:

- Reinstallation of the operating system requires you to reinstall all the applications on the appliance. With Symantec Backup Exec, this process can be streamlined through the use of the IDR or SDR.
- After the Backup Exec services are started, you must wait for a *minimum of 5 minutes* before making any changes or starting a new task within Backup Exec.
- If there is a non-recoverable failure of the disk group containing the operating system, a reinstallation of the operating system and all applications is required.
- If there is a non-recoverable failure of the disk group containing one or more Symantec Backup Exec backup to disk or DSF or DDS media sets, a restoration of the backup media sets on that disk group from tape or a secondary disk is required.
- For all non-disk related hardware failures, see the *Hardware Owner's Manual* for the PowerVault DL2*xxx* system and the PowerVault MD*xxxx* storage enclosure at **support.dell.com/manuals**.
- Unless you are replacing failed physical disks, do not attempt to add additional storage to the system or storage enclosures until all recovery procedures have been completed.
- Do not run Microsoft Windows Update until all the recovery procedures have been completed.

Table 2. Non SDR Operating System Recovery

Failure Type	Potentially Affected Hardware		Potentially Affected Software					
	Server Disk Group	Storage Enclosure Disk Group	OS	DL Appliance	Server Administrator	Backup Exec	DSF or DDS	Recovery Methods
Server RAID Group Failure (Internal Disk Failure)	X		X	X	X	X	X	1,2,7 w/IDR or SDR 1,3,4,7 w/o IDR or SDR
Storage Enclosure RAID Groups (External Disk Failure)		X					X	1,7
OS			X	X	X	X		2,7 w/IDR or SDR 3,4,7 w/o IDR or SDR
DL Appliance			X					4
Server Administrator				X				5
Backup Exec					X			6
DSF or DDS						X		7

The topic list for Recovery Methods in the table above is as:

1. Recovering From Disk Failures
2. Recovering The Appliance System Disk Using IDR

NOTE: For versions prior to Backup Exec 2012, see the topic "Recovering The Appliance System Disk Using IDR". For Backup Exec 2012 and later, see the topic "Recovering The Appliance System Disk Using SDR."

3. Recovering the Appliance System Disk without using IDR or SDR

4. Reinstalling The PowerVault DL Backup To Disk Appliance Applications

5. Repairing Dell OpenManage Server Administrator

6. Reinstalling Symantec Backup Exec During Disaster Recovery

7. DSF Recovery Solution Map

Recovering From Disk Failures

PowerVault DL2*xxx* systems are automatically configured by the backup application in RAID groups to recover from disk failures.

About RAID Types

The internal disk storage containing the operating system and applications in the DL2*xxx* 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 as described in the topic "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. For more information see the topics "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 has been 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 disk rebuild of the appliance 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 should another disk fail. For more information about using global hot spares, see *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 and DL2100 systems.

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.

Detecting And Monitoring Disk Failures

To optimize the protection of the RAID configured storage on the appliance, it is essential that you detect hard disk 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 contain status LEDs to indicate drive activity and certain failure status. See the *Owner's Manual* for the server and storage enclosures at **support.dell.com/manuals**.
- **Dell OpenManage Server Administrator**—Server Administrator monitors the health of both internal and external direct-attached disks. For more information, see the topic "Replacing Disks".
- **Dell Management Console (DMC)**—DMC centrally monitors the status of the Dell systems. For 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 a failed disk drive within a RAID group, the appliance automatically rebuilds the disk group. The data on the virtual disks in the disk group is still available to the system and the system runs without any interruption. The appliance operates in degraded mode until the rebuild operation is complete.

> ⚠ CAUTION: If an additional 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 topic "Rebuild a Failed Physical Disk" in *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 RAID 1 group on the server 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 recovery:

- **Server disk group failure**—The server RAID 1 group contains the operating system, backup application, and the DL Backup to Disk Appliance applications. See the topic "Recovery Solution 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.

> ✎ NOTE: It is recommended that you use the IDR or SDR that is part of Symantec Backup Exec software to recover the system in the event of a server software or hardware failure. See the topic "Recovery Solution Map" for the specific recovery methods.

> ✎ NOTE: After replacing the appliance's internal operating system disks, ensure that the appropriate virtual disk is selected as the Boot VD.

- **Storage array disk group failure**—You can restore the backup sets archived to tape or from a secondary appliance protecting the primary appliance. For more information about disaster planning recovery procedures, see the "Disaster Preparation And Recovery" section of the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.

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.

- Internal disks—To replace the appliance's internal disks, see the Dell PowerVault DL2*xxx 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**.

Recovering The Appliance System Disk Using IDR

NOTE: This section applies to DL appliances running Backup Exec versions prior to Backup Exec 2012. For Backup Exec 2012 and later, see the topic "Recovering The Appliance System Disk Using SDR" .

If a disaster renders the system unusable, use IDR to recover the system to its last saved good state. The state of the recovered system is based on the date and time the following items were last created:

- IDR CD
- Full backup of the appliance
- Full backup of the optional DSF
- *.DR file

CAUTION: Repair or replace any failed hardware prior to recovering the system using IDR.

CAUTION: If you are replacing the system, the hardware configuration of the replacement PowerVault DL2*xxx* must match the failed one. The replacement system must have the same storage controllers, type and number of internal hard disks, network controllers, and so on.

To recover the appliance system disk using IDR, follow the steps below:

1. Ensure that the disk storage containing the full backups of the appliance is attached to the system.
2. Locate the most current ***.DR** file for the appliance located where specified in step 2 in the topic "Preparing The System to Use IDR". The ***.DR** filename is based on the network hostname of the appliance to be recovered.
3. Copy the ***.DR** file to removable media such as a USB key or ensure that the file can be accessed from the same network as the system to be recovered.
4. Insert the bootable IDR media that you created into the DVD drive of the PowerVault DL2*xxx* to be recovered.

NOTE: If you replace a PERC adapter on a failed appliance or if the replacement PowerVault DL2*xxx* system contains one or more new PERC adapters, see the topic "Importing Foreign Virtual Disks During IDR Recovery" before you continue.

5. Boot the appliance.
6. During the initial boot up sequence, press <F11> to enter BIOS Boot Manager and select the CD/DVD drive (listed as **SATA Optical Drive**) as the boot device.

   The appliance boots up into the **IDR Recovery wizard**, which takes you through the steps necessary to recover the appliance.
7. When prompted to select the recovery file, browse to the ***.DR** file on the removable media or network location in step 2.
8. In **Select Restore Method**, select **Use locally attached media device** to recover from the full appliance backup data created in the topic "Backing Up The Appliance System Files".
9. In the **Modify Hard Disk Layout** dialogue box, click **Run Disk Management**.

⚠ CAUTION: Verify the operating system C: drive partition is assigned to the correct disk. If the C: partition is incorrect, remove the C: drive letter from the incorrect drive and assign it to the operating system partition on disk 0. Verify and correct if necessary all other disk partitions before proceeding.

10. After the IDR recovery process completes, remove the IDR recovery media from the appliance and reboot the system.

✎ NOTE: If the recovered appliance contained a DSF at the time the failure occurred, do not launch Backup Exec. For more information, see the topic "Recovery Solution Map".

11. Launch the Backup Exec console and from the Devices view right-click the name of the appliance and select **Refresh**. Allow Backup Exec a *minimum of 5 minutes* to discover the available and offline virtual disks. Do not perform any other actions in Backup Exec at this time.

Recovering The Appliance System Disk Using SDR

If a disaster renders the system unusable, use SDR to recover the system to its last saved good state. The state of the recovered system is based on the date and time the following items were last created:

- Full backup of the appliance
- ***.DR file**

⚠ CAUTION: Repair or replace any failed hardware prior to recovering the system using SDR.

⚠ CAUTION: If you are replacing the system, the hardware configuration of the replacement PowerVault DL2*xxx* must match the failed one. The replacement system must have the same storage controllers, type and number of internal hard disks, network controllers, and so on.

To recover the appliance system disk using SDR, follow the steps below:

1. Ensure that the disk storage containing the full backups of the appliance is attached to the system.
2. Locate the most current ***.DR** file for the appliance.

   See the topic "Preparing The System To Use SDR" for the latest ***.DR** file location. The ***.DR** file name is based on the network hostname of the appliance to be recovered.
3. Copy the ***.DR** file to removable media such as a USB key or ensure that the file can be accessed from the same network as the system to be recovered.
4. Locate the Backup Exec 2012 media kit.
5. Insert the 64-bit SDR DVD (labeled x64 Simplified Disaster Recovery) into the DVD drive of the PowerVault DL2*xxx* to be recovered.

✎ NOTE: If you replace a PERC adapter on a failed appliance or if the replacement PowerVault DL2*xxx* system contains one or more new PERC adapters, see the topic "Importing Foreign Virtual Disks During IDR Or SDR Recovery" before you continue

6. Boot the appliance.
7. During the initial boot up sequence, press <F11> to enter BIOS Boot Manager and select the CD/DVD drive (listed as `SATA optical drive`) as the boot device.
8. The appliance boots up into the **SDR Recovery** wizard, which takes you through the steps necessary to recover the appliance.
9. Click on **Recover this Computer**.
10. When prompted to select the location of the backup data, select **The data is located on devices locally attached to this computer**.
11. When prompted to select the recovery file, browse to the ***.DR** file on the removable media or network location in step 3.
12. When prompted, specify the backup set that is to be used for the disaster recovery.

13. When prompted, select the disk that holds the backup data.

14. If the disks holding the DDS did not survive the disaster, then a popup message regarding Mismatched Volumes is displayed.

    The DDS volume is listed under Mismatched Volumes. The mismatch regarding the DDS virtual disk and the popup can be ignored. The virtual disk for the DDS is automatically configured by **Storage Provisioning** option or manually configured as part of the recovery procedures discussed in the topic "System Recovery For DL Appliance With DDS".

    ⚠ **CAUTION: Verify the operating system C: drive partition is assigned to the correct disk. If the C: partition is incorrect, click on Advanced Disk Configuration, remove the C: drive letter from the incorrect drive and assign it to the operating system partition on disk 0.**

15. Click **Next** to continue.

16. Click on **Recovery** to begin the recovery.

    SDR cannot recover the content of the DDS. As part of the SDR process, when the backup data of the deduplication disk storage is encountered, a popup message is displayed: `The Recover This Computer Wizard cannot recover the contents of a deduplication disk storage device.`

17. After the SDR recovery process completes, remove the SDR recovery media from the appliance and reboot the system.

    📝 **NOTE:** If the recovered appliance contained a DDS at the time the failure occurred, see the topic "System Recovery For DL Appliance With DDS" to continue the recovery process.

Importing Foreign Virtual Disks During IDR Or SDR Recovery

If the repair of the PowerVault DL2*xxx* system includes replacing one or more PERC adapters, the virtual disks require a foreign import operation the first time you boot the recovered system.

To perform a foreign import operation, follow the steps below:

1. Press **<F>** for the PERC adapter to automatically import the foreign virtual disks.

2. Press **<CTRL><R>** when the PERC adapter information is displayed during the boot up sequence to start the PERC adapter **Configuration Utility**.

    Within this tool, if required, you can create a foreign import operation for each PERC adapter. For additional information, see the *Dell PowerEdge Expandable RAID Controller (PERC) User's Guide* at **support.dell.com/manuals** based on the PERC adapter model in the PowerVault DL2*xxx* system.

3. In the PERC adapter **Configuration Utility**, ensure that the appropriate virtual disk is selected as the boot VD.

Recovering The Appliance System Disk Without Using IDR Or SDR

The operating system is pre-installed on the appliance. Perform the following procedures if the operating system is corrupt or unusable and requires reinstallation.

📝 **NOTE:** It is recommended that you use the IDR or SDR option that is part of Backup Exec to recover the system in the event of a software or hardware failure. For more information for systems running Backup Exec versions prior to Backup Exec 2012, see topic "Recovering the Appliance System Disk Using IDR". For Backup Exec 2012 or later, see topic "Recovering The Appliance System Disk Using SDR".

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.

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

📝 **NOTE:** The SBUU is only supported on the DL2000 appliance. For all other appliance models see the topic "Using The Dell Unified Server Configurator — Lifecycle Controller Enabled To Manually Recover The Operating System".

📝 **NOTE:** 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 also download the **Dell Windows Operating Systems install support pack** to a CD/DVD. Use this CD/DVD when prompted by SBUU.

To reinstall the operating system, follow the steps below:

1. Insert the *Dell Systems Management Tools and Documentation* media into the appliance.
2. Configure BIOS to boot from CD/DVD drive and boot the appliance using the 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 Operating Systems 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 was 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 disk is inserted.
12. Click **OK**.

    The window prompts you to choose either a core or full installation.
13. Select the full installation option.
14. Set the localization options and 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 the topic "Completing Operating System Reinstallation".

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

Use the Unified Server Configurator - Lifecycle Controller Enabled (USC LCE) utility on the PowerVault DL2*xxx* system to recover the operating system. For specific instructions, see the topic "Deploying the Operating System Using the Operating System 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 Using The Dell Systems Build And Update Utility To Manually Recover The Operating System.

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

After a multiple disk failure of the PowerVault DL2*xxx* system boot disk, you must replace the failed disks, create a RAID 1 disk group, and then reinstall the operating system. See Recovering From Single Disk Failures. The USC-LCE utility includes a RAID configuration wizard to complete this task. When prompted, select **Configure RAID Now** and configure the PowerVault DL2*xxx* system drives in slot 0 and slot 1 as RAID 1.

> ⚠ **CAUTION: Reinstalling the operating system on existing disk drives removes all 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 **Operating System 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 Completing Operating System Reinstallation.

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 must disable the firewall.

   The **Initial Configuration Tasks** window is displayed.

3. Close the **Initial Configuration Tasks** window.

4. Proceed to the topic "Updating BIOS, Firmware, And Drivers" .

Updating BIOS, Firmware, And Drivers

Before you install additional software on the appliance such as the Dell PowerVault DL 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 system. For more information, see the topic "Updating System Software" .

> **NOTE:** Complete the installation of the remaining software on the appliance before enabling Windows update on the PowerVault DL2*xxx* system.

Reinstalling The PowerVault DL Backup To Disk Appliance Applications

The appliance is pre-installed with the following applications:

- **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**—The console is a single launch point for Symantec Backup Exec, as well as for standard and advanced hardware configuration utilities.
- Other applications used by the appliance.

NOTE: Perform the steps in this section only if required to repair a corrupted application or during a non-IDR or non-SDR disaster recovery scenario.

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

In a disaster recovery scenario, if you are using the Symantec Backup Exec IDR or SDR method to recover the system, the **DL Backup to Disk Appliance** applications are automatically recovered. Skip the remaining steps in this section.

In a non-IDR or non-SDR disaster recovery scenario, after installing the operating system, download and use the **PowerVault DL Backup to Disk Appliance Recovery and Update Utility** from **support.dell.com/support/downloads**.

To recover the **DL Backup to Disk Appliance** applications:

1. Run the executable file.

2. Select **Install Windows Server Roles and Features**, **PowerVault DL Backup to Disk Appliance Applications** and the **Dell Open Manage Server Administrator** applications, and **Reinstall backup application**.

   NOTE: If Symantec Backup Exec software is already installed, the **Recovery and Update Utility** does not allow you to reinstall the backup application. The option to reinstall the backup application is inactive.

3. If the operating system is Windows Server 2008 x64, then select **Install Microsoft Windows PowerShell**. Click **Go** to proceed with the installation.

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

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

   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**. Run the application to extract the Server Administrator installation files. When prompted by the **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.

5. The Server Administrator installer runs a compatibility check to confirm that there are no conditions that would prevent 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 the reinstallation of Symantec Backup Exec. See the topic "Reinstalling Symantec Backup Exec During Disaster Recovery".

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 Windows Roles and Features manually, follow the steps below:

1. Launch Server Manager.
2. Click **Add Features** to display the **Add Features Wizard**.

   Select the following features depending on which operating system is being restored on the DL2xxx:

   – **.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**

3. Click **Next**.

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

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

   – **Common HTTP Features**

     * Static Content
     * Default Document
     * Directory Browsing
     * HTTP Errors

   – **Application Development**

     * 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
    – **Management Tools**
        * IIS Management Console
        * IIS 6 Management Compatibility (select all sub-options)
5. Click **Next**.
   The **Confirm Installation Selections** window is displayed.
6. 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 PowerVault DL Backup To Disk Appliance Recovery And Update Utility For System Repair

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

Repairing Dell OpenManage Server Administrator

Server Administrator is a system management application that is helpful in viewing overall system hardware health. It can be used to monitor the health of the system's internal and external disk groups.

If the Symantec Backup Exec IDR Option was used to recover the system, you do not need to install Server Administrator.

Prior to installing Server Administrator, verify that the version is supported in the *Dell PowerVault DL Backup to Disk Appliance Interoperability Guide*.

To repair Server Administrator, follow the steps below:

1. Insert the *Dell Systems Management Tools and Documentation* media that came with the PowerVault DL2*xxx* system into the optical drive.
   If you do not have the *Dell Systems Management Tools and Documentation*, proceed to step 4.
2. If the Server Administrator installation process does not begin automatically, run **autorun.exe** located in the root folder of the DVD.
   Proceed to step 5.
3. Download the Server Administrator Managed Node application from **support.dell.com/support/downloads** and follow the installation instructions on the download page.
4. Select **Dell OpenManage Server Administrator** for standalone server management and select **Install**.
   The Server Administrator installer runs a compatibility check to confirm that there are no conditions preventing installation.
5. Select **Repair** or **Modify** Installation.
   The installer completes the repair.

Reinstalling Symantec Backup Exec During Disaster Recovery

If the Symantec Backup Exec IDR or SDR option was used to recover the system, you do not need to install Symantec Backup Exec.

In a non-IDR or non-SDR disaster recovery scenario, the **PowerVault DL Backup to Disk Appliance Recovery and Update Utility** guides you through the installation of Symantec Backup Exec.

NOTE: Do not initiate installation of Backup Exec directly from the recovery media. You must use the **PowerVault DL Backup to Disk Appliance Recovery and Update Utility** when installing Backup Exec.

Ensure that you meet the following prerequisites before reinstallation:

- Locate the *Symantec Backup Exec Installation* media that came with the system.
- Check with the network administrator to determine the Windows network domain settings.
- Confirm that Windows Disk Manager can access the external disk.
- Ensure that the Symantec Backup Exec software is not installed.

NOTE: If Symantec Backup Exec 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 greyed out.

To reinstall Symantec Backup Exec after performing disaster recovery in a non-IDR or non-SDR disaster recovery scenario, follow the steps below:

1. Launch the **PowerVault DL Backup to Disk Appliance Recovery and Update Utility**.
2. Select **Reinstall backup application** and follow the instructions to reinstall the backup and recovery application.

CAUTION: If the appliance configuration includes a Deduplication Storage Folder or Deduplication Disk Storage to be recovered, you must set the following values in the DL Appliance Recovery and Update Utility to match those of the appliance prior to the failure. Backup Exec fails to recover the Deduplication Storage Folder or Deduplication Disk Storage if the values for Deduplication Storage Folder or Deduplication Disk Storage controller type (internal or external), system hostname, administrator password, and domain name are not set correctly.

NOTE: For Symantec Backup Exec installation steps, see the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.

Repairing Symantec Backup Exec

If the installation of Symantec Backup Exec has become corrupted or unusable and must be repaired, see Repairing Backup Exec in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.

DSF Recovery Solution Map

NOTE: This section only applies to systems running Backup Exec 2010. If you are running Backup Exec 2012 or later, see the topic "System Recovery For DL Appliance With DDS".

If the appliance configuration includes a DSF, use the solution map below to recover the DSF based on whether the disaster recovery scenario includes:

- A recovery of the appliance operating system
- A recovery of the DSF
- A recovery of both the appliance operating system and the DSF

NOTE: The DSF must be recovered during an operating system recovery even if the DSF disks were unaffected during the disaster.

Method To Create DSF

This section describes the various methods that were used to create the DSF.

- **Automatic Disk Configuration**–This refers to a DSF that was automatically configured using the **Storage Provisioning** option. This automatically creates the required RAID group on raw physical disks and configures the DSF under the **C:\Program Files\Symantec\Backup Exec\PDDE_Volume** mount point.
- **New Deduplication Storage Folder Wizard on Drive Letter**–This refers to a DSF that was created on a drive letter in Backup Exec 2010 using the **New Deduplication Storage Folder Wizard**.

Recovery Of DSF

During the disaster, if the system disk survived and the disks holding the DSF were lost, follow the appropriate column in the table below based on the method used to create the DSF. This procedure can be followed irrespective of whether the system was protected by IDR or not.

Table 3. Deduplication Storage Folder Recovery

Method used to create the DDS	Automatic Disk Configuration	New DSF Wizard on Drive Letter
Deleting the Offline DSF	X	X
Retargeting Jobs from the Deleted DSF	X	X
Creating a new DSF Automatically	X	
Creating a new DSF Manually		X
Reassigning Drive Letter to the DSF		X
Recovering the DSF from Backup	X	X
DSF Inventory and Catalog	X	X
Retargeting Jobs to the new Deduplication Disk Storage	X	X
Deleting Offline Virtual Disks	X	

IDR Recovery

This section details the recovery procedures to be followed by a system that contains a DSF and was protected by IDR.

Operating System Recovery For IDR

During the disaster, if the system disk was lost but the disks holding the DSF survived the disaster, follow the appropriate column based on the method used to recover the DSF.

Table 4. IDR Operating System Recovery

Method used to create the DSF	Automatic Disk Configuration	New DSF Wizard on Drive Letter
Recover the Appliance System Disk using IDR	X	X
Deleting the Offline DSF	X	
Retargeting Jobs from the Deleted DSF	X	

Method used to create the DSF	Automatic Disk Configuration	New DSF Wizard on Drive Letter
Manually Configuring a DSF Virtual Disk	X	
Virtual Disk Inventory and Catalog	X	X
DSF Inventory and Catalog	X	X
Retargeting Jobs to the new DDS	X	
Deleting Offline Virtual Disks	X	

Operating System And DSF Recovery For IDR

During the disaster, if the system disk and the disks holding the DSF were lost, follow the appropriate column in the table below based on the method used to create the DSF.

Table 5. IDR Operating System and Deduplication Storage Folder Recovery

Method used to create the DDS	Automatic Disk Configuration	New DSF Wizard on Drive Letter
Recover the Appliance System Disk using IDR	X	X
Deleting the Offline DSF	X	X
Retargeting jobs from the deleted DSF	X	X
Creating a new DSF automatically	X	
Creating a new DSF manually		X
Reassigning Drive Letter to the DSF		X
Virtual Disk Inventory and Catalog	X	X
Recovering the DSF from backup	X	X
DSF Inventory and Catalog	X	X
Retargeting jobs to the new DDS	X	X
Deleting Offline Virtual Disks	X	X

Non-IDR Recovery

This section details the recovery procedures to be followed by a system that contains a DSF and was not protected by IDR.

Operating System Recovery For Non-IDR

During the disaster, if the system disk was lost but the disks holding the DSF survived the disaster, follow the appropriate column based on the method used to create the DSF.

Table 6. Non-IDR Operating System Recovery

Method used to create the DSF	Automatic Disk Configuration	New DSF Wizard on Drive Letter
Recover the Appliance System Disk using IDR		
See the Recovery Solution map for non-IDR or non-SDR recovery procedures	X	X
Reassigning Drive Letter to the DSF		X
Virtual Disk Inventory and Catalog	X	X
DSF Inventory and Catalog	X	X

Operating System And DSF Recovery For Non-IDR

During the disaster, if the system disk and the disks holding the DDS were lost, follow the appropriate column in the table below based on the method used to create the DDS.

Table 7. Non SDR Operating System and DDS Recovery

Method used to create the DDS	Automatic Disk Configuration	New DSF Wizard on Drive Letter
See the Recovery Solution map for non-IDR or non-SDR recovery procedures	X	X
Retargeting Jobs from the Deleted DSF		
Creating a new DSF Automatically	X	
Creating a new DSF Manually		X
Reassigning Drive Letter to the DSF		X
Virtual Disk Inventory and Catalog	X	X
Recovering the DSF from Backup	X	X
DSF Inventory and Catalog	X	X

System Recovery For DL Appliance With DDS

If the appliance configuration includes a DDS, use the solution maps below to recover the DDS based on the disaster recovery scenario:

- A recovery of the appliance operating system
- A recovery of the DDS
- A recovery of both the appliance operating system and the DDS

NOTE: The DDS must be recovered during an operating system recovery even if the disks containing the DDS were unaffected during the disaster.

Method To Create DDS

This section describes the various methods that were used to create the DDS. It also applies to a DSF that was created on an appliance that was previously running Backup Exec 2010 and later upgraded to Backup Exec 2012. Use the method discussed in this section to decide which column to follow in the specific solution maps.

- **Automatic Disk Configuration**—This refers to a DSF that was automatically configured using the **Storage Provisioning** option. This automatically creates the desired RAID group on raw physical disks and configures the DSF or DDS under the **C:\Program Files\Symantec\Backup Exec\PDDE_Volume** mount point
- **Manually Configured from Backup Exec Console** —This refers to a DSF or DDS that was configured by navigating to the Backup Exec console, right-clicking on an Unconfigured virtual disk and specifying to configure the virtual disk as a DSF or DDS. This option was only available starting in Backup Exec 2010 R2. This configures the DSF or DDS under the **C:\Program Files\Symantec\Backup Exec\PDDE_Volume** mount point
- **New Deduplication Storage Folder Wizard on Drive Letter**—This refers to a DSF that was created on a Drive Letter in Backup Exec 2010 using the **New Deduplication Storage Folder Wizard** and then later upgraded to Backup Exec 2012. After the upgrade, the DSF still remains on the same drive letter.

Recovery Of DDS

During the disaster, if the system disk survived and the disks holding the DDS were lost, follow the specific column in the table below based on the method used to recover the DDS. This procedure can be followed irrespective of whether the system was protected by SDR or not.

Table 8. Deduplication Disk Storage Recovery

Method used to create the Deduplication Disk Storage	Automatic Disk Configuration	Manually configured from Backup Exec Console	New Deduplication Storage Folder Wizard on Drive Letter
Deleting the Offline Deduplication Disk Storage	X	X	X
Creating a new Deduplication Disk Storage Automatically	X		
Manually Configuring Virtual Disk for Deduplication		X	X
Reassigning Drive Letter to Deduplication Disk Storage		X	
Recovering Deduplication Disk Storage from Backup	X	X	X
Importing Deduplication Disk Storage from Drive Letter			X
Deduplication Disk Storage Inventory and Catalog	X	X	X

Method used to create the Deduplication Disk Storage	Automatic Disk Configuration	Manually configured from Backup Exec Console	New Deduplication Storage Folder Wizard on Drive Letter
Retargeting Jobs to the new Deduplication Disk Storage	X	X	X
Deleting Offline Virtual Disks	X	X	X

SDR Recovery

This section details the recovery procedures to be followed by a system that contains a DDS and protected by SDR.

Operating System Recovery For SDR

During the disaster, if the system disk was lost but the disks holding the DDS survived the disaster, follow the appropriate column based on the method used to create the DDS.

Table 9. SDR Operating System Recovery

Method used to create the Deduplication Disk Storage	Automatic Disk Configuration	Manually configured from Backup Exec Console	New Deduplication Storage Folder Wizard on Drive Letter
Recover the Appliance System Disk using SDR	X	X	X
Virtual Disk Inventory and Catalog	X	X	X
Deduplication Disk Storage Inventory and Catalog	X	X	X

Operating System And DDS Recovery For SDR

During the disaster, if the system disk and the disks holding the DDS were lost, follow the appropriate column in the table below based on the method used to create the DDS.

Table 10. SDR Operating System and DDS Recovery

Method used to create the Deduplication Disk Storage	Automatic Disk Configuration	Manually configured from Backup Exec Console	New Deduplication Storage Folder Wizard on Drive Letter
Recover the Appliance System Disk using SDR	X	X	X
Deleting the Offline Deduplication Disk Storage	X	X	X
Creating a new Deduplication Disk Storage Automatically	X		

Method used to create the Deduplication Disk Storage	Automatic Disk Configuration	Manually configured from Backup Exec Console	New Deduplication Storage Folder Wizard on Drive Letter
Creating a new Deduplication Disk Storage Virtual Disk Manually		X	X
Manually Configuring Virtual Disk for Deduplication		X	
Reassigning Drive Letter to Deduplication Disk Storage			X
Virtual Disk Inventory and Catalog	X	X	X
Recovering Deduplication Disk Storage from Backup	X	X	X
Importing Deduplication Disk Storage from Drive Letter			X
Deduplication Disk Storage Inventory and Catalog	X	X	X
Retargeting Jobs to the new Deduplication Disk Storage	X	X	X
Deleting Offline Virtual Disks	X	X	X

Non-SDR Recovery

This section details the recovery procedures to be followed by a system that contains a DDS and was not protected by SDR.

Operating System Recovery For Non-SDR

During the disaster, if the system disk was lost but the disks holding the DDS survived the disaster, follow the appropriate column based on the method used to create the DDS.

Table 11. Non SDR Operating System Recovery

Method used to create the DDS	Automatic Disk Configuration	Manually configured from Backup Exec Console	New DSF Wizard on Drive Letter
See the Recovery Solution map for non-IDR or non-SDR recovery procedures	X	X	X
Virtual Disk Inventory and Catalog	X	X	X

Method used to create the DDS	Automatic Disk Configuration	Manually configured from Backup Exec Console	New DSF Wizard on Drive Letter
Importing DDS from Drive Letter			X
DDS Inventory and Catalog	X	X	X

Operating System And DDS Recovery For Non-SDR

During the disaster, if the system disk and the disks holding the DDS were lost, follow the appropriate column in the table below based on the method used to create the DDS.

Table 12. Non SDR Operating System and Deduplication Disk Storage Recovery

Method used to create the DDS	Automatic Disk Configuration	Manually configured from Backup Exec Console	New DSF Wizard on Drive Letter
See the Recovery Solution map for non-IDR or non-SDR recovery procedures	X	X	X
Creating a new DDS Automatically	X		
Creating a new DDS Virtual Disk Manually		X	X
Manually Configuring Virtual Disk for Deduplication		X	
Reassigning Drive Letter to DDS			X
Virtual Disk Inventory and Catalog	X	X	X
Recovering DDS from Backup	X	X	X
Importing DDS from Drive Letter			X
DDS Inventory and Catalog	X	X	X

Deleting The Offline DDS

To delete the offline DDS, follow the steps below:

1. From the DL Backup to Disk Appliance Console **Settings** tab, set the **Disk Configuration Policy** to **Manual**.
2. Navigate to the **Home** tab.
3. Verify that the status of **System**, **Disk subsystem**, and **Symantec Backup Exec Services** display as **OK** on the **Home** tab of the Appliance Console and then launch Backup Exec.

NOTE: Verify no jobs that use the DDS are running or scheduled to run.

4. In the Backup Exec console, go to the **Storage** tab.

   If a `Discovering Devices` message is displayed, wait for the message to get cleared. This can take up to 30 minutes.

   a) Do not respond to any Storage Intervention popups regarding auto-provisioning.

   b) If the `Discovering Devices` message does not get cleared after 30 minutes, restart the Backup Exec services. See the topic "Restarting Backup Exec Services For Backup Exec 2012".

5. Right-click on the Offline DDS and select **Delete** .

6. Any jobs associated with the deleted DDS must be retargeted since the DDS has been removed from Backup Exec. When prompted to retarget the existing jobs, select **Yes** to retarget each job associated with the deleted DDS to backup to disk virtual disks.

   NOTE: These jobs target backup to disk virtual disks and are not deduplicated. Once the DDS has been restored, these jobs must be retargeted back to the DDS.

7. See the specific solution map for the next step in the recovery process.

Restarting Backup Exec Services For Backup Exec 2012

To restart Backup Exec Services, follow the steps below:

1. In the Backup Exec 2012 console, click on the **Backup Exec** button, select **Configuration and Settings** → **Backup Exec Services** .

2. Select **Enable deduplication services to be started or stopped**.

   NOTE: Ensure that no backup jobs are running or scheduled to run.

3. Click **Restart** all services.

Virtual Disk Inventory And Catalog

After a disaster recovery, each virtual disk must be inventoried and cataloged prior to using for backup or restore tasks. To inventory and catalog virtual disks, follow the steps below:

1. Navigate to the **Storage** tab in the Backup Exec Console.

2. Right-click the virtual disk in the Backup Exec device view and select **Inventory and Catalog**.

   This initiates the inventorying and cataloging of the media sets contained on that virtual disk.

3. Double-click on the virtual disk and verify the **Inventory and Catalog** completes successfully.

4. Repeat step 2 and step 3 for each virtual disk.

   After all the inventory and catalog jobs are complete, the virtual disks are ready to be used for backup and recovery jobs.

5. See the specific solution map for the next step in the recovery process.

Recovering Deduplication Disk Storage From Backup

To recover the DDS from Backup, follow the steps below:

1. In the Backup Exec Console, navigate to the **Backup and Restore** tab.

2. Right-click the DL Appliance from the list of servers and select **Restore**.

3. Select **Shadow Copy Components** and click **Next**.

4. Locate the most current backup under the **User Data** → **Backup Exec Deduplication Storage Node**.

5. Enter a name for the Restore job when prompted, and accept the defaults for the remaining screens in the restore wizard.
6. Click **Finish** at the **Restore Summary** to run the Restore job.
7. Once the restore job completes, the Backup Exec services must be restarted.

   See the topic "Restarting Backup Exec Services For Backup Exec 2012".
8. See the specific solution map for the next step in the recovery process.

Importing DDS From Drive Letter

To import the DDS from a drive letter, follow the steps below:

1. Bring up the Backup Exec console.
2. Click on the **Backup Exec Button** → **Configurations and Settings** → **Logon Accounts**.
3. Create a Backup Exec Logon Account with the same credentials that was used to initially create the DDS.
4. Navigate to the **Storage Tab** → **Configure Storage** → **Disk Based Storage** → **Deduplication Disk Storage**.
5. On the **Configure Deduplication on a Dell DL Appliance** window, select **Yes** when asked if you want to configure DDS.
6. Provide a name for the DDS device.
7. Select **Import an existing Deduplication Disk Storage Device**.
8. Enter the path to the Deduplication Disk Storage device .

   For example: **K:\BackupExecDeduplicationStorageFolder**
9. Select the logon account created in step 3.
10. Select **Finish** to begin the import process.

    Once the import is complete, the Backup Exec services must be restarted. See the topic "Restarting Backup Exec Services For Backup Exec 2012".
11. See the specific solution map for the next step in the recovery process.

Retargeting Jobs To The New Deduplication Disk Storage

1. After a new DDS has been created and optionally restored from backup, retarget any backup or recovery jobs that used the deleted DDS.
2. Refer to the specific solution map for the next step in the recovery process.

Deleting The Offline DSF

To delete the offline DSF, follow the steps below:

1. From the **DL Backup to Disk Appliance Console Settings** tab, set the **Disk Configuration Policy** to **Manual**.
2. Navigate to the **Home** tab.
3. Verify that the status of **System**, **Disk subsystem**, and **Symantec Backup Exec** services display as OK on the **Home** tab of the Appliance Console then launch Backup Exec.

   NOTE: Verify no jobs that use the DSF are running or scheduled to run.
4. In the Backup Exec console, go to the **Devices** view and locate the name of the appliance.
5. Right-click the name of the appliance and select **Refresh**.
6. Wait a *minimum of 5 minutes* for Backup Exec to update the status of all virtual disks before proceeding.
7. On the **Device** view in Backup Exec, locate the DSF in the device tree under the appliance name.

8. Right-click the DSF and select **Delete**.

9. Restart the Backup Exec services.

    See the topic "Restarting Backup Exec Services".

Retargeting Jobs From The Deleted DSF

Any jobs associated with a deleted DSF must be retargeted since the DSF virtual disk has been removed from Backup Exec. When prompted to retarget the existing jobs:

- Select **Yes** to retarget each job associated with the deleted DSF to backup to disk folders. Use this option to run scheduled jobs.

  NOTE: These jobs target backup to disk folders and are not deduplicated.

- Select **No** if you plan to immediately create a new DSF. You must ensure that the jobs associated with the deleted DSF are not scheduled to run until the new DSF has been created and the jobs have been retargeted to the new DSF.

Restarting Backup Exec Services

To restart Backup Exec services, follow the steps below:

1. Restart the Backup Exec services by clicking on **Tools → Backup Exec Services** .

2. Click **Restart all Services**.

3. Locate the name of the appliance in the **Devices** view then right-click and select **Refresh**.

    CAUTION: After the services have restarted and the refresh command has been issued, allow Backup Exec a *minimum of 5 minutes* to discover the existing and new virtual disks. Do not perform any operations in Backup Exec at this time.

Creating A New DDS Automatically

The Backup Exec Storage Provisioning option automatically attempts to create a new DDS virtual disk during recovery if the **Disk Configuration Policy** is set to **Automatic with Confirmation**. For this operation to complete, the failed physical disks of the old DDS must be replaced with new unconfigured physical disks.

NOTE: Perform the following steps only when indicated in the DDS Recovery Map. Otherwise, click **No** when prompted to configure the replacement disks as the new DDS virtual disk.

To create a new DDS automatically, follow the steps below:

1. Navigate to the DL Backup to Disk Appliance Console **Settings** tab, and review the **Disk Configuration State**.

2. If the **Disk Configuration State** is `Standard`, follow the steps below:
    a) Set the **Disk Configuration Policy** to **Automatic With Confirmation**.

    Backup Exec detects the unconfigured replacement hard disks and prompts the user to configure the available disks.

    b) If the Device Intervention message does not appear automatically, restart the Backup Exec services.
    c) Select **Respond Yes** to automatically configure the physical disks.

    The DDS is created automatically.

    d) Restart the Backup Exec services.

    See the topic "Restarting Backup Exec Services For Backup Exec 2012".

NOTE: In case the replacement disks get configured as a backup to disk virtual disk, see the topic "Converting Storage Role Of Virtual Disk" for steps to convert this to a DDS. This could happen if the disks were previously manually configured or an incorrect selection was made during the **PowerVault DL Backup to Disk Appliance Configuration Wizard**.

3. If the **Disk Configuration State** is **Advanced**, perform the steps listed in the topic "Creating A New DDS Virtual Disk Manually" followed by the topic "Manually Configuring Virtual Disk For Deduplication".

4. Refer to the appropriate solution map for the next step in the recovery process.

Creating A New DDS Virtual Disk Manually

To create a new DDS virtual disk manually, follow the steps below:

1. Use Server Administrator to create a new DDS virtual disk manually.
   See the topic "Configuring Storage Manually".

2. Ensure that the correct RAID level and all the correct replacement physical disks are selected when creating the new DDS virtual disk.

3. Refer to the appropriate solution map for the next step in the recovery process.

Manually Configuring Virtual Disk For Deduplication

To manually configure a virtual disk for deduplication :

1. In the Backup Exec console, go to the **Storage** tab.

2. Locate the unconfigured DDS virtual disk.

3. Right-click the virtual disk and select **Configure Virtual Disk**.

4. Select **Yes** when prompted to configure as a DDS device.

5. Restart the Backup Exec services.
   See the topic "Restarting Backup Exec Services For Backup Exec 2012".

6. Refer to the appropriate solution map for the next step in the recovery process.

Reassigning Drive Letter To DDS

To reassign the drive letter to the DDS, follow the steps below:

1. From the Windows desktop, click **Start → Administrative Tools → Server Manager** and select **Disk Management** in **Storage**.

2. Initialize the new virtual disk as GUID Partition Table (GPT) format.

3. Create a simple volume on the new virtual disk using **Disk Management**.
   The **New Simple Volume** wizard displays the **Assign Drive Letter** screen.

4. Select an unused drive letter such as **K:**.

NOTE: Select the same drive letter for the new DSF virtual disk that was assigned to the old DSF. If the required drive letter is assigned to another disk, you can free up the drive letter by assigning a different drive letter to that disk.

NOTE: Do not associate a mount point with the DSF virtual disk.

5. Refer to the appropriate solution map for the next step in the recovery process.

Recovering Deduplication Disk Storage From Backup

To recover the DDS from Backup, follow the steps below:

1. In the Backup Exec Console, navigate to the **Backup and Restore** tab.
2. Right-click the DL Appliance from the list of servers and select **Restore**.
3. Select **Shadow Copy Components** and click **Next**.
4. Locate the most current backup under the **User Data → Backup Exec Deduplication Storage Node**.
5. Enter a name for the Restore job when prompted, and accept the defaults for the remaining screens in the restore wizard.
6. Click **Finish** at the **Restore Summary** to run the Restore job.
7. Once the restore job completes, the Backup Exec services must be restarted.
   See the topic "Restarting Backup Exec Services For Backup Exec 2012".
8. See the specific solution map for the next step in the recovery process.

Importing DDS From Drive Letter

To import the DDS from a drive letter, follow the steps below:

1. Bring up the Backup Exec console.
2. Click on the **Backup Exec Button → Configurations and Settings → Logon Accounts**.
3. Create a Backup Exec Logon Account with the same credentials that was used to initially create the DDS.
4. Navigate to the **Storage Tab → Configure Storage → Disk Based Storage → Deduplication Disk Storage**.
5. On the **Configure Deduplication on a Dell DL Appliance** window, select **Yes** when asked if you want to configure DDS.
6. Provide a name for the DDS device.
7. Select **Import an existing Deduplication Disk Storage Device**.
8. Enter the path to the Deduplication Disk Storage device .
   For example: **K:\BackupExecDeduplicationStorageFolder**
9. Select the logon account created in step 3.
10. Select **Finish** to begin the import process.
    Once the import is complete, the Backup Exec services must be restarted. See the topic "Restarting Backup Exec Services For Backup Exec 2012".
11. See the specific solution map for the next step in the recovery process.

Deduplication Disk Storage Inventory And Catalog

1. Perform an **Inventory and Catalog** on the Deduplication Disk Storage using the procedures in the topic "Virtual Disk Inventory And Catalog".
2. Refer to the appropriate solution map for the next step in the recovery process.

Retargeting Jobs To The New Deduplication Disk Storage

1. After a new DDS has been created and optionally restored from backup, retarget any backup or recovery jobs that used the deleted DDS.
2. Refer to the specific solution map for the next step in the recovery process.

Deleting Offline Virtual Disks

After the appliance has been completely recovered, the Backup Exec device tree view may contain one or more offline virtual disks that no longer exist on the appliance. To remove an offline virtual disk, right-click the device and select **Delete**.

Creating A New DSF Automatically

The Backup Exec Storage Provisioning Option automatically attempts to create a new DSF virtual disk during recovery if the **Disk Configuration Policy** is set to **Automatic with Confirmation**. For this operation to complete, the failed physical disks of the old DSF must be replaced with new unconfigured physical disks.

NOTE: Perform the following steps only when indicated in the topic "DSF Recovery Map". Otherwise, click **No** when prompted to configure the replacement disks as the new DSF virtual disk.

To create a new DSF automatically, follow the steps below:

1. Navigate to the DL Backup to Disk Appliance Console **Settings** tab, and review the **Disk Configuration State**.

2. If the **Disk Configuration State** is **Standard**, follow the steps below:
    a) Set the **Disk Configuration Policy to Automatic With Confirmation**.
        Backup Exec detects the unconfigured replacement hard disks and prompts the user to configure the available disks.
    b) If the Device Intervention message does not appear automatically, right-click the appliance name in the device tree view and select **Refresh**.
    c) Select **Yes** to automatically configure the physical disks.
        The deduplication storage folder is created automatically.
    d) Restart the Backup Exec services. See Restarting Backup Exec Services.

3. If the **Disk Configuration State** is **Advanced**, see Creating A New DSF Manually.

Creating A New DSF Manually

To create a new DSF manually, follow the steps below:

1. Create a new DSF virtual disk manually using Server Administrator.
    See the topic "Configuring Storage Manually".

2. From the Windows desktop, click **Start** → **Administrative Tools** → **Server Manager** and select **Disk Management** in **Storage**.

3. Initialize the new virtual disk as GPT format.

4. Create a simple volume on the new virtual disk using **Disk Management**.
    The **New Simple Volume** wizard displays the **Assign Drive Letter or Path** screen.

5. Select an unused drive letter such as **K:**.

NOTE: Select the same drive letter for the new DSF virtual disk that was assigned to the old DSF. If the required drive letter is assigned to another disk, you can free up the drive letter by assigning a different drive letter to that disk.

NOTE: Do not associate a mount point with the DSF virtual disk.

Reassigning The Drive Letter To The DSF

To reassign the drive letter to the DSF, follow the steps below:

1. In the Backup Exec console, click **Tools** → **Configure Devices** → **New Deduplication Storage Folder Wizard**.
2. Provide the drive letter of the DSF virtual disk.
3. Restart the Backup Exec services.
   See the topic "Restarting Backup Exec Services".

Manually Configuring A DSF Virtual Disk

To manually configure a DSF virtual disk, follow the steps below:

1. Using the Backup Exec console, locate the unconfigured DSF virtual disk in the device tree view.
2. Right-click the virtual disk and select **Configure**.
3. Restart the Backup Exec services.
   See the topic "Restarting Backup Exec Services".

Recovering The DSF From Backup

To recover the DSF from backup, follow the steps below:

1. In the Backup Exec console, navigate to **Job Setup view** → **Restore Tasks** , click **New Job**.
2. On the **Restore Job Properties** under **Source** → **Selection** , click the **View by Resource** tab.
3. In the appliance, expand the resource tree.
4. Expand the **Shadow Copy Components**.
5. Locate the most current backup under **User Data** → **Backup Exec Deduplication Storage** and check the box to enable recovery of the DSF.
6. Under **Source** → **Device**, select the backup to disk folder source that contains the DSF backup. You may select All Virtual Disks for this setting.
7. Under **Settings** → **Advanced**, locate the **Junction Points** section.
8. Click **Preserve existing junction points and symbolic links and restore files and directories from backup media**.
9. Under **Setting** → **General**, enter a name for this recovery job.
10. Click **Run Now** to start the recovery job.
11. After the DSF recovery job completes, the Backup Exec services must be restarted.
    See the topic "Restarting Backup Exec Services".

DSF Inventory And Catalog

Perform inventory and catalog on the DSF using the procedures in the topic "Virtual Disk Inventory and Catalog".

Retargeting Jobs To The New DSF

After a new DSF has been created and optionally restored from backup, retarget any backup or recovery jobs that used the deleted DSF. Navigate to the Job Setup view and modify the properties of each job to use the new DSF.

Deleting Offline Virtual Disks

After the appliance has been completely recovered, the Backup Exec device tree view may contain one or more offline virtual disks that no longer exist on the appliance. To remove an offline virtual disk, right-click the device and select **Delete**.

Solution Map

This section addresses frequently asked questions about **Dell PowerVault DL Backup to Disk Appliance** deployment planning, setup, maintenance, storage expansion and migration, and troubleshooting.

Deployment Planning

Where do I learn more about system requirements for the Dell 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**.
Where do I learn about known issues?	For information about potential issues and workarounds for the **DL Backup to Disk Appliance**, see the *Dell PowerVault DL2xxx System Powered by Symantec Backup Exec Release Notes* at **symantec.com**.
Where do I learn more about system requirements for the Dell 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**.
Where do I learn about pre-installation setup and requirements for Symantec Backup Exec?	See the topic "Installing Backup Exec" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.
How do I determine what types of data can be backed up?	See the topic "Backup Exec Agents and Options" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.
Where do I learn more about system requirements for Symantec Backup Exec?	For Symantec Backup Exec software requirements, see the topic "Checking Your Environment Before Installing" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.

Setup

How do I set up my PowerVault Backup to Disk Appliance?	See the *Setting Up Your Dell PowerVault DL Backup to Disk Appliance* that shipped with the PowerVault DL2xxx system or the topic "Setting Up The DL Backup To Disk Appliance".
How do I add tape devices to my PowerVault Backup to Disk Appliance?	For information on adding tapes to the system, see the topic "Adding An Optional Tape Library".
How do I manage and monitor my appliance 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**.
How do I configure NIC teaming?	See *Configuring Teaming in the Broadcom NetXtreme II Network Adapter User Guide* at **support.dell.com/manuals**.

Deployment And Maintenance

Where do I learn about known issues?	For late-breaking information about the **DL Backup to Disk Appliance** and potential issues and workarounds, see the *Dell PowerVault DL2xxx System Powered by Symantec Backup Exec Release Notes* at **symantec.com**.
Where do I learn about the Symantec Backup Exec architecture?	See the topic "How Backup Exec Works" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.
Where do I learn about the Symantec Backup Exec Central Admin Server Option?	See the topic "Using the Central Admin Server Option with Microsoft clusters and SAN SSO" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.
Where do I learn about the Symantec Backup Exec software storage provisioning features for the DL Backup to Disk Appliance?	See the *Symantec Backup Exec Storage Provisioning Option and Dell PowerVault DL2000* document at **support.dell.com/manuals**.
Where do I learn to configure and schedule a disaster recovery solution in Symantec Backup Exec?	See the topic "Disaster Preparation and Recovery" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.
How do I configure and schedule backup jobs?	See the topics "Preparing for Backup" and "Backing Up Data" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.
How do I view my backup job status?	See the topic "Viewing Media Server Properties" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.
How do I configure automatic alerting in Symantec Backup Exec?	See the topic "Alerts and Notifications" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.
How do I recover my system using disaster recovery?	See the topic "Disaster Recovery".
How do I add an optional tape library in Symantec Backup Exec?	See the topic "Managing Tape Drives and Robotic Libraries" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.
Where do I understand and set up a media management strategy for the optional tape library in Symantec Backup Exec?	See the topic "Managing Media" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.
How do I recover backup data?	See the topic "Restoring Data" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.
How do I upgrade my DL Backup to Disk Appliance Software?	See the topic "Updating DL Backup To Disk Appliance Software".
How do I upgrade my Symantec Backup Exec backup application?	See the topics "Upgrading From Previous Versions of Backup Exec" and "Upgrading an Existing CASO Installation" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.

Storage Expansion And Migration

How do I add a PowerEdge RAID Controller (PERC) to the PowerVault DL2*xxx* **system?**	See the topic "Expansion Cards" in the *Dell PowerVault DL2xxx Hardware Owner's Manual*. Also see the Dell PERC 6/i, PERC 6/E, PERC H700, and PERC H800 User's Guides at **support.dell.com/manuals**.
How do I add a PowerVault MD*xxxx* **storage enclosure to the PowerVault DL2***xxx* **system?**	See the topic "Setting Up The Hardware". Also see the *Dell PowerVault MDxxxx Storage Enclosure Hardware Owner's Manual* at **support.dell.com/manuals**.
How do I add a PowerVault MD*xxxx* **storage enclosure to an existing PowerVault MD***xxxx***?**	See the topic "Setting Up The Hardware". Also see the *Dell PowerVault MDxxxx Storage Enclosure Hardware Owner's Manual* at **support.dell.com/manuals**.
How do I learn about the Symantec Backup Exec software storage provisioning features for the DL Backup to Disk Appliance?	See the *Symantec Backup Exec Storage Provisioning Option and Dell PowerVault DL2000* document at **support.dell.com/manuals**.
How do I add additional disk storage capacity to the PowerVault MD*xxxx* **storage enclosure?**	See the topic "Installing Enclosure Components" in the *Dell PowerVault MDxxxx Storage Enclosure Hardware Owner's Manual* at **support.dell.com/manuals**.
How do I incorporate recently added storage into the PowerVault DL2*xxx* **system?**	See the topic "Launching Symantec Backup Exec".
How do I migrate or copy backup data from one PowerVault DL2*xxx* **system to another, including Data Sets, RAID groups, Tape Media, and Tape Libraries?**	See the *Dell PowerVault DL Backup to Disk Appliance Powered by Symantec Backup Exec Media Migration* whitepaper at **dell.com/dl2000**.
How do I create an advanced RAID group on the PowerVault DL2*xxx* **system?**	See the topic "Using The DL Backup To Disk Appliance Console".

Troubleshooting And Getting Help

How do I contact Dell for support?	See **support.dell.com** or contact the Dell support representative.
How do I recover from a system hardware failure?	See the topic "Disaster Recovery".
Where do I get troubleshooting information for Symantec Backup Exec software?	See the topic "Troubleshooting" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.
Where do I learn about learn about Symantec Backup Exec software licensing?	See the topic "Viewing License Information" in the *Symantec Backup Exec Administrator's Guide* at **symantec.com**.

Additional References

This section lists out the software and hardware documents for reference.

NOTE: Unless mentioned otherwise, all documents are located at **support.dell.com**.

Software Documents

The following is a list of **DL Backup to Disk Appliance** documents:

- *PowerVault DL Backup to Disk Appliance setup diagram* also supplied with the PowerVault DL2*xxx* system helps you set up the appliance hardware and configure the software before using the system for the first time.
- *PowerVault DL Backup to Disk Appliance Interoperability Guide* lists the Dell-supported hardware and software compatible with the appliance.
- *Dell PowerVault DL2xxx Systems Powered by Symantec Backup Exec Release Notes* contains late-breaking information about the appliance.

The following is a Symantec Backup Exec software document:

- *Symantec Backup Exec Administrator's Guide* located on the Symantec media supplied with the system and at **symantec.com** contains information about setup, system administration, and troubleshooting for Symantec Backup Exec.

Hardware Documents

The following lists the **DL Backup to Disk Appliance** hardware documents:

- *Dell PowerVault DL2xxx Getting Started With Your System* helps you get started with hardware installation and rack installation.
- *Dell PowerVault DL2xxx Hardware Owner's Manual* contains information specific to Dell hardware.
- *Dell Serial-Attached SCSI 6/iR Integrated and Adapter User's Guide* contains information on the PERC 6-series adapters.
- *Dell PERC H700 and H800 User's Guide* contains information on the PERC H700 and H800 adapters.
- *Dell PowerVault MDxxxx Getting Started With Your System* helps you get started with the PowerVault MD*xxxx*.
- *Dell PowerVault MDxxxx Storage Enclosure Hardware Owner's Manual* contains information specific to the PowerVault MD*xxxx* Expansion Enclosure.
- *Dell PowerVault Systems Compatibility Matrix* also at **dell.com/pvmatrix** provides information on supported software and hardware for the PowerVault disk array and tape library systems.
- *Dell PowerVault TL2000/4000 Tape Library User's Guide* contains information on the optional TL2000/4000 tape library.
- *Dell PowerVault ML6000 Tape Library User's Guide* contains information on the optional ML6000 tape library.
- *Dell PowerVault 122T Autoloader User's Guide* contains information on the optional 122T autoloader.
- *Rack Installation Instructions* contains information on installing the system in a rack.
- *Broadcom NetXtreme II Network Adapter User Guide* contains information about configuring and diagnosing Broadcom NICs.

Systems Management Documents

The following lists the Systems Management documents:

- *Dell Unified Server Configurator and Unified Server Configurator– Lifecycle Controller Enabled User Guide* contains information on how to deploy an Operating System, run diagnostics, and apply updates to the system.
- *Dell OpenManage Software Installation and Security User's Guide* contains information on how to install OpenManage software.
- *Dell OpenManage Server Administrator User's Guide* contains information on how to use OpenManage Server Administrator to manage the system.
- *Dell OpenManage Server Update Utility User's Guide* contains information on how to use the Server Update Utility (SUU) to update system software.
- *Dell Management Console User's Guide* contains information on how to install and use the Dell Management Console to remotely manage the DL Backup to Disk Appliance.
- *Dell OpenManage IT Assistant* contains information on how to install and use IT Assistant for centralized management of the system.
- *Dell Update Packages for Microsoft Windows Operating Systems User's Guide* describes how to use Dell Update Packages (DUPs) to update individual devices on the system.
- *Integrated Dell Remote Access Controller 6 (iDRAC6) User's Guide* contains information on the Integrated Remote Access Controller 6 (iDRAC6), which monitors the system and can be used for remote access.
- *Dell Management Pack for Microsoft System Center Operations Manager 2007 User's Guide* contains information on how to manage the PowerVault system using Microsoft System Center Operations Manager 2007.
- *Dell Management Pack for Microsoft Operations Manager User's Guide* contains information on how to manage the PowerVault system using Microsoft Operations Manager 2005.

DL Backup to Disk Appliance Media

The following lists the DL Backup to Disk Appliance media:

- *Dell Systems Build and Update Utility DVD (DL2000 only)* supplied with the DL2000 (disk image can also be downloaded from **support.dell.com/support/ downloads**) contains the Dell Systems Build and Update Utility which is a bootable utility for installing server operating system, updating pre-operating system firmware and system configuration.
- *Dell OpenManage Management Station* downloaded from **support.dell.com/support/ downloads** contains IT Assistant, BMC management utility, Dell remote Access controller console, and the Microsoft Active Directory Snap-in utility.
- *Dell Systems Management Tools and Documentation DVD* supplied with the system (disk image can also be downloaded from **support.dell.com/support/ downloads**) includes Dell OpenManage Server Administrator, Dell Online Diagnostics, and documentation.
- *Dell Management Console* supplied with the system (disk image can also be downloaded from **support.dell.com/ support/ downloads**) contains the installation software and documentation for the Dell Management Console.
- *Symantec Backup Exec software installation media* supplied with the system contains setup files for the Symantec Backup Exec software and documentation.
- *Microsoft Windows Server 2008 Standard x64 Edition or Microsoft Windows Server 2008 R2* supplied with the system contains setup files for the operating system.

8

Getting Help

Contacting Dell

> NOTE: If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

1. Visit **support.dell.com**.
2. Select your support category.
3. If you are not a U.S. customer, select your country code at the bottom of the **support.dell.com** page, or select **All** to see more choices.
4. Select the appropriate service or support link based on your need.

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