# Dell™ NetVault™ Bare Metal Recovery for Dell™ NetVault™ Backup Server 10.5

User's Guide



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**Legend**

**CAUTION: A CAUTION icon indicates potential damage to hardware or loss of data if instructions are not followed.**

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

**IMPORTANT NOTE**, **NOTE**, **TIP**, **MOBILE**, or **VIDEO:** An information icon indicates supporting information.

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# Introducing Dell™ NetVault™ Bare Metal Recovery for Dell™ NetVault™ Backup Server


- About Dell NetVault Bare Metal Recovery for Dell NetVault Backup Server
- About NetVault Bare Metal Recovery


## About Dell NetVault Bare Metal Recovery for Dell NetVault Backup Server

**Dell NetVault Bare Metal Recovery (NetVault Bare Metal Recovery) for Dell NetVault Backup (NetVault Backup) Server** is a specially packaged version of NetVault Bare Metal Recovery that provides offline bare metal protection for NetVault Backup Servers running on x86/x86-64-based operating systems that use locally-attached tape-based devices; it does ***not*** support shared VTLs (SVTLs) or Dell NetVault SmartDisk (NetVault SmartDisk). The bare metal recovery (BMR) image of the NetVault Backup Server is taken by a CD that is preloaded with a NetVault Backup Server, the Plug-in Server, and the **drdaemon** process. The BMR image can then be transferred to a direct-attached tape-based library or standalone tape drive for recovery in case disaster recovery is needed for the NetVault Backup Server.

**IMPORTANT:** The preloaded NetVault Backup Server uses NetVault Backup v10.0.0; however, this preloaded version of the NetVault Backup Server can protect and recover NetVault Backup Servers using NetVault Backup v8.2.2 and later.

NetVault Bare Metal Recovery for NetVault Backup Server provides a backup of the server; it does not provide access to network-related functionality such as support for the Manage Clients page and its features.

Starting with 10.0.0, NetVault Backup provides a web-based user interface (WebUI) to configure, manage, and monitor your NetVault Backup system. The procedures described in the user's guide for this version of the product are intended for the new WebUI. For procedures based on the NetVault Backup Console (user interface available with NetVault Backup 9.x), see the documentation for an earlier version of the product.

## Offline backup process overview

Offline backup of a NetVault Backup Server for bare metal recovery is achieved by performing the following:

1. Use the NetVault Bare Metal Recovery for NetVault Backup Server CD to boot the machine.
2. Verify that the NetVault Backup WebUI and drdaemon process are started separately.
3. From the NetVault Backup WebUI, detect and add a locally-attached device.

4 Select the dedicated media for backup.

5 Create and submit the backup job.

For more information, see Performing an offline backup.

# Offline recovery process overview

Offline bare metal recovery of a NetVault Backup Server is achieved by performing the following steps:

1 Use the NetVault Bare Metal Recovery for NetVault Backup Server CD to boot the target machine.

2 Verify that the NetVault Backup WebUI and drdaemon process are started separately.

3 Detect and add a locally-attached tape library or standalone tape drive.

4 Scan and import the DR target media that contains the backup index to rebuild the NetVault Database.

5 Verify that the targeted disk is available.

6 Create and submit the restore job.

For more information, see Performing an offline recovery.

# About NetVault Bare Metal Recovery

NetVault Bare Metal Recovery is an integrated bare metal recovery solution capable of recovering an entire system including the operating system (OS), applications, system settings, partition information, and data for any supported NetVault Backup Client. NetVault Bare Metal Recovery provides bare metal recovery with either offline (cold) backups or online (hot) backups.

NetVault Bare Metal Recovery integrates with NetVault Backup. NetVault Bare Metal Recovery includes two key components, or plug-ins, each of which provides its own form of disaster recovery backup, and a third component that serves as a basic OS that is used to prepare a target Disaster Recovery (DR) Client for backup and restore.

NetVault Bare Metal Recovery includes the following technical components:

- **Plug-in Server**
- **Plug-in Offline Client for x86/x86-64 Clients**

The following sections briefly describe these components.

# Plug-in Offline Client

The **Plug-in Offline Client** implements a **block-by-block** backup and restore technique to recover a system fully. This block-by-block operation takes the system offline and makes it unavailable. This process is done to either:

- **Backup**: An ***Offline Backup*** backs up all aspects of a system (OS, applications, system settings, and so on). This process is ideal for new systems that have been configured for use.
- **Restore**: An ***Offline Restore*** recovers a machine (even if it has no functional OS) to a previously configured state.

The Plug-in Offline Client includes a component known as **VaultOS**. The VaultOS is a minimal OS that is used to boot a target disaster recovery client system to prepare it for either backup or restore. This minimal OS starts the target client, loads all applicable device drivers, and leaves its hard drive in a state suitable for either backup or restore.

# Plug-in Server

The **Plug-in Server** resides on the NetVault Backup Server and enables backup and recovery of a target client's data by using the **Plug-in Offline Client**.

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# Performing an offline backup


- Booting into NetVault Bare Metal Recovery for NetVault Backup Server
- Adding a library
- Selecting the BMR target media
- Backing up the source NetVault Backup Server


## Booting into NetVault Bare Metal Recovery for NetVault Backup Server

Before you perform an offline backup of the NetVault Backup Server, you must create a NetVault Bare Metal Recovery for NetVault Backup Server CD and boot from it.

1 Burn the **".iso"** file for the NetVault Bare Metal Recovery for NetVault Backup Server onto a blank CD-ROM.

2 Use the CD created in Step 1 to boot the server (if connected through a USB port, the port must use the 2.x protocol or earlier).

> **IMPORTANT:** Unless there is a Dynamic Host Configuration Protocol (DHCP) Server in your environment, drdaemon requires a static IP address to communicate with the NetVault Backup Server. If there is no DHCP Server, set the IP address manually.
>
> If you are running multiple NetVault Bare Metal Recovery instances for NetVault Backup Server simultaneously, stopping the NetVault Service on one instance can cause the service of the other instances to stop if the host names are identical. To avoid this conflict, press the **Tab** key at the VaultOS client boot prompt to interrupt the boot process, and enter a unique host name for each instance by using the kernel argument (for example, "hostname=samplehost1").

3 When the **Network Connections** dialog box appears, select the applicable interface, and press **Edit**.

4 In the **Editing Network Interface** dialog box, configure the IPv4 and IPv6 settings for the selected network interface.

5 When you are finished, press **Apply** to return to the **Network Connections** dialog box, and then press **Close**.

6 If you want to enable multipath support, perform the following steps:

a In the **NetVault Bare Metal Recovery Daemon** process terminal (command prompt), press **<Ctrl+C>** to stop the process.

b To open a new **NetVault Bare Metal Recovery Daemon** process terminal, double-click the **Terminal** icon on the desktop.

c At the command prompt, enter the following commands:

```
cd /vaultos_file
./drdaemon -o mpath
```

> **NOTE:** You can enter the **-o mpath** and **-p *port_number*** options together.

The NetVault Bare Metal Recovery for NetVault Backup Server desktop includes the following icons. You can click these icons at any time to access various components.

**Table 1. Icons**

| Icon | Description |
|---|---|
|  | **NetVault Backup**: This icon starts the NetVault Backup WebUI. |
|  | **drdaemon**: This icon starts the drdaemon interface. |

The next step is to detect and add the locally-attached tape library or standalone tape device through NetVault Backup. The following section describes adding a library manually. For a detailed description, see the *Dell NetVault Backup Administrator's Guide*.

# Adding a library

***To add a locally-attached library:***

1. In the Navigation pane of the NetVault Backup WebUI, click **Manage Devices**, and then click **Add Device**.
2. Select the **Tape library/media changer** option, and click **Next**.
3. In the **NetVault Backup Clients** list, select the client that is physically connected to the target device.

   If the device is connected to multiple clients, select the client that you want to designate as the library controller.
4. To scan the selected client and list the attached devices, click **Next**.
5. In the **Choose library** table, select the device that you want to add, and click **Next**.

   After the tape drives are discovered and assigned to the appropriate storage bay, a message is displayed.

   To use the default configuration, no further action is required. You can exit the configuration wizard.

# Selecting the BMR target media

The next step is to select a dedicated BMR target media for your backup.

***To create a Target Set:***

1. In the Navigation pane of the NetVault Backup WebUI, click **Create Backup Job**.
2. Next to **Target Storage**, click **Create New**.
3. Click **Device Selection**, and select the applicable device.
4. Click **Media Options**, select the applicable options (enter a user-defined label, for example, **BMRMedia** string in the **Media Label** field).
5. Click **Media Sharing**, and select the applicable options.
6. Click **Save** to save the set, enter a name in the **Create New Set** dialog box, and click **Save**.

   The name can contain alphanumeric and non-alphanumeric characters, but it cannot include non-English characters. On Linux®, the names can have a maximum of 200 characters. On Windows®, there is no length restriction. However, a maximum of 40 characters is recommended on all platforms.

# Backing up the source NetVault Backup Server

To back up the server, complete steps outlined in the following sections.

- Prerequisites
- Completing the backup

# Prerequisites

Before initiating a backup with the Plug-in Server, review the following sections for details on prerequisites that must be met.

> ⚠ **WARNING: Even if there is no difference between the system devices in a backup and a restore, the order of the disks might be different. If the restored data is started without performing a rename, any data that exists on the disks is lost. To compare the information of physical disk at backup and restore, note the *Disk Geometry* and *Device Size* at backup.**

## Verifying Disk Geometry and Device Size

Before backing up any portion of a NetVault Backup Server's hard drive, Dell recommends that you note the **Disk Size** and the **Disk Geometry** of the selected drive. If these items are not accounted for, a restore might fail.

### Example of how to note the Drive Disk Size and Disk Geometry

A Client drive is divided into three partitions. The primary partition is 10 gigabytes (GB), the first logical partition is 7GB and the second is 3GB. A backup of the first logical partition is performed with the Plug-in Server. On restore of the system after a hard drive crash, if the first logical partition was restored, it needs to be restored to the proper partition (the first logical partition), or the restore fails.

#### *To verify the geometry and size:*

1. Open the **NetVault Backup Selections** page, and double-click the NetVault Backup Server (the system containing the Plug-in Server) to open it.
2. Open the Plug-in Server by double-clicking it.
3. Double-click the **self** node displayed under the plug-in to reveal the disks contained within.
4. To determine the Disk Geometry, select the applicable disk, and select **Disk Geometry** from the **Actions** list.

   The **Display Device Geometry** dialog box displays details about the partition structure of the selected disk.

   - **Partitions**: Each individual partition is listed here by number and the partition type.
   - **Active**: Displays the current state of the partition ("Yes" or "No").
   - **Start Cyl**: Displays the origination point (cylinder) for the various partitions.
   - **End Cyl**: Displays the partition's endpoint (cylinder).
   - **Size**: Displays the size of each partition.
   - **Type**: Displays the type of partition.
5. With this information noted, click **OK**.
6. To determine the overall size of a disk, select the applicable disk, and select **Disk Size** from the **Actions** list.

The **Device Size** dialog box displays details about the size of the selected disk.

- **Device**: The number and type of the disk.
- **Size**: The size of the selected disk.

7 With this information noted, click **OK**.

# Completing the backup

You are now ready to perform a backup of the NetVault Backup Server. The procedure for performing backups includes the steps outlined in the following sections:

- Selecting data for a backup
- Setting backup options
- Finalizing and submitting the job

# Selecting data for a backup

You must use sets (Backup Selection Set, Backup Options Set, Schedule Set, Target Set, and Advanced Options Set) to create a backup job. For more information, see the *Dell NetVault Backup Administrator's Guide*.

***To create a Backup Selection Set:***

1 In the Navigation pane, click **Create Backup Job**.

You can also start the wizard from the Guided Configuration link. In the Navigation pane, click **Guided Configuration**. On the **NetVault Configuration Wizard** page, click **Create backup jobs**.

2 In **Job Name**, specify a name for the job.

Assign a descriptive name that lets you easily identify the job when monitoring its progress or restoring data. The job name can contain alphanumeric and non-alphanumeric characters, but it cannot include non-English characters. On Linux®, the names can have a maximum of 200 characters. On Windows®, there is no length restriction. However, a maximum of 40 characters is recommended on all platforms.

3 Next to the **Selections** list, click **Create New**.

4 Double-click the Plug-in Server (labeled "**VaultDR APM**") to open it.

5 When the **self** node appears, double-click it to display all disk device information for this NetVault Backup Server.

You can open disks by double-clicking them. Individual partitions are displayed and made available for selection to back up.

6 Select a single disk, all disks, all partitions, or a single partition of each disk to back up.

7 Click **Save**, enter a name in the **Create New Set** dialog box, and click **Save**.

The name can contain alphanumeric and non-alphanumeric characters, but it cannot include non-English characters. On Linux®, the names can have a maximum of 200 characters. On Windows®, there is no length restriction. However, a maximum of 40 characters is recommended on all platforms.

# Setting backup options

The next step involves creating the Backup Options Set.

### *To create a Backup Options Set:*

1. Next to the **Plugin Options** list, click **Create New**.
2. Select **Disk Raw Mode**, **Compression**, or both.
   - **Disk Raw Mode**: Select this option if you want all partition information for a selected hard drive to be ignored and a "bit-by-bit" backup of the entire disk image to be performed. This bit-by-bit form of data transfer occurs during the restore of this backup as well, thus eliminating the need to format the target drive or remove the partition.

     Cases in which Raw Mode is desired include:
     - The selected hard drive does not have a partition table.
     - NetVault Bare Metal Recovery cannot recognize the partition table.
     - You are backing up data outside the Master Boot Record (MBR) and partitions (for example, dynamic disks).
   - **Compression**: Select this option to compress data on the NetVault Backup Server before transfer during backup. This option reduces overall network traffic during data transfer and also requires less media space to accommodate the backup. This option is useful for partitions that contain a large amount of unused space. Selecting this option usually provides better compression than using a network-based or tape-library-based compression feature.
3. Click **Save** to save the set.
4. In the **Create New Set** dialog box, specify a name for the set, and click **Save**.

   The name can contain alphanumeric and non-alphanumeric characters, but it cannot include non-English characters. On Windows®, there is no length restriction; however, a maximum of 40 characters is recommended.

# Finalizing and submitting the job

The final steps include setting additional options on the Schedule, Target Storage, and Advanced Options pages, submitting the job, and monitoring the progress through the Job Status and View Logs pages. These pages and options are common to all NetVault Backup Plug-ins. For more information, see the *Dell NetVault Backup Administrator's Guide*.

### *To finalize and submit a backup job:*

1. Next to the **Target Storage** option, click **Create New**.
2. Click **Media Options**, select **MID**, and then enter the label in the text box.

   This label is the label (for example, **BMRMedia**) for the target media that you specified earlier in the **Media Properties** dialog box.
3. Click **Set**.
4. Use the **Schedule** and **Advanced Options** lists to configure any additional required options.
5. Click **Save & Submit**, whichever is applicable.

   You can monitor progress on the **Job Status** page and view the logs on the **View Logs** page. For more information, see the *Dell NetVault Backup Administrator's Guide*.

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# Performing an offline recovery


- Prerequisite
- Booting into NetVault Bare Metal Recovery for NetVault Backup Server
- Importing the indexes to the NetVault Database
- Verifying access and availability of disks for restore
- Recovering the source NetVault Backup Server


## Prerequisite

Before recovering the NetVault Backup Server, the following condition must be met: Provide either a new disk or an existing disk that has had all existing partitions removed.

## Booting into NetVault Bare Metal Recovery for NetVault Backup Server

The first step in the recovery process is to use the NetVault Bare Metal Recovery for NetVault Backup Server CD to boot the machine. This process requires the CD previously created during the Offline Backup process.

1. Use the CD created in Booting into NetVault Bare Metal Recovery for NetVault Backup Server to boot the server (if connected through a USB port, the port must use the 2.x protocol or earlier).

   The server boots into X graphical multiuser mode and starts NetVault Backup and the drdaemon process.

2. If you want to enable multipath support, perform the following steps:

   a. In the **NetVault Bare Metal Recovery Daemon** process terminal (command prompt), press **<Ctrl+C>** to stop the process.

   b. To open a new **NetVault Bare Metal Recovery Daemon** process terminal, double-click the **Terminal** icon on the desktop.

   c. At the command prompt, enter the following commands:

   ```
   cd /vaultos_file
   ./drdaemon -o mpath
   ```

   **NOTE:** You can enter the **-o mpath** and **-p *port_number*** options together.

3. Detect and add the locally-attached tape library or standalone tape device through NetVault Backup.

# Importing the indexes to the NetVault Database

The next step is to select the dedicated DR target media for your recovery and import the indexes to the NetVault Database.

***To import the indexes:***

1. In the Navigation pane of the NetVault Backup WebUI, open the **Manage Devices** page.
2. On the **Manage Devices** page, click the **Manage Device** icon for the drive or slot that contains the media that was used during backup (for example, **BMRMedia**) and is now marked **"FOREIGN."**
3. On the **Tape Drive Management** page, click **Scan**.

   NetVault Backup imports backup indexes stored on the FOREIGN media to the NetVault Database.

# Verifying access and availability of disks for restore

The next step is to verify access and disk availability of the new or target NetVault Backup Server.

***To verify availability:***

1. From the NetVault Backup WebUI, open the **NetVault Backup Selections** page.
2. Double-click the NetVault Backup Server node.
3. Double-click the Plug-in Server (labeled **"VaultDR APM"**) to open it.
4. When the **"self"** node appears, double-click it to display all disk device information for this NetVault Backup Server.

   **IMPORTANT:** If there is no disk available, the recovery process cannot continue.

# Recovering the source NetVault Backup Server

The final step in the recovery process is to restore the offline backup of the original NetVault Backup Server to the new or target NetVault Backup Server. To recover the server, complete steps outlined in the following sections.

- Prerequisites
- Selecting data for a restore
- Setting restore options
- Finalizing and submitting the job

**WARNING: Even if there is no difference between the system devices in a backup and a restore, the order of the disks might be different. If the restored data is started without performing a rename, any data that exists on the disks is lost. To compare the information of physical disk at backup and restore, note the *Disk Geometry* and *Device Size* at backup.**

**For version 1.1.6 and later, also compare the Disk ID of the targeted disk on the *Create Selection Set* page to the Disk ID of the same disk on the *NetVault Backup Selections* page.**

**Dell strongly recommends that you disconnect all disks that contain critical data from the server before you boot NetVault Bare Metal Recovery for NetVault Backup Server.**

# Prerequisites

A DR restore procedure is a delicate operation. Before setting up and running a DR restore, ensure that the following prerequisites have been met:

- **Ensure that device filenames match**: The target device name on the NetVault Bare Metal Recovery Client (for example, Disk 0 (IDE)) must be the same as it was at the time of backup.

  **IMPORTANT:** When relocating a DR backup, ensure that the hard disk installed on the new relocation target has the same name as the hard disk that existed in the original target.

- **Gather noted Device Size and Disk Geometry information**: This information should have been noted before the backup. Have this information handy to complete the restore properly.

# Selecting data for a restore

***To select data to restore:***

1. In the Navigation pane, click **Create Restore Job**.
2. On the **Create Restore Job—Choose Saveset** page, select **VaultDR APM** from the **Plugin Type** list.
3. To filter the items displayed in the saveset table further, use the **Client**, **Date**, and **Job ID** lists.

   The table displays the saveset name (Job Title and Saveset ID), creation date and time, and size. By default, the list is sorted alphabetically by saveset name.
4. In the saveset table, select the applicable item.

   When you select a saveset, the following details are displayed in the **Saveset Information** area: Job ID, Job Title, server name, client name, plug-in name, saveset date and time, retirement setting, Incremental Backup or not, Archive or not, and saveset size.
5. Click **Next**.

6 On the **Create Selection Set** page, select the data that you want to restore.

Select a single disk, all disks, all partitions, or a single partition of each disk to restore.

# Setting restore options

On the **Create Selection Set** page, click **Edit Plugin Options**, and configure the following parameters on the **Options** tab:

- Ensure that **Physical Machine** is the selected **Restore Type**.
- In the **Restore Name** box of the **Physical Recovery Options** section, verify that the correct name appears.

  By default, the value in this field is the name of the NetVault Backup Server from which this backup was originally performed (based on the backup saveset selected from the **Create Selection Set** page). This name is associated with a specific IP address that was previously configured. If this value is left at its default setting, selected data is restored to a machine that uses the same information as the machine that was originally backed up.

# Finalizing and submitting the job

The final steps include setting additional options on the Schedule, Source Options, and Advanced Options pages, submitting the job, and monitoring the progress through the Job Status and View Logs pages. These pages and options are common to all NetVault Backup Plug-ins. For more information, see the *Dell NetVault Backup Administrator's Guide*.

### *To finalize and submit a restore job:*

1 Click **Ok** to save the settings, and then click **Next**.

2 In **Job Name**, specify a name for the job if you do not want to use the default setting.

Assign a descriptive name that lets you easily identify the job when monitoring its progress. The job name can contain alphanumeric and non-alphanumeric characters, but it cannot include non-English characters. On Linux®, the names can have a maximum of 200 characters. On Windows®, there is no length restriction. However, a maximum of 40 characters is recommended on all platforms.

3 In the **Target Client** list, select the machine on which you want to restore the data.

> **TIP:** You can also click **Choose**, and then locate and select the applicable client in the **Choose the Target Client** dialog box.

4 Use the **Schedule**, **Source Options**, and **Advanced Options** lists to configure any additional required options.

5 Click **Save** or **Save & Submit**, whichever is applicable.

You can monitor progress on the **Job Status** page and view the logs on the **View Logs** page. For more information, see the *Dell NetVault Backup Administrator's Guide*.

# About Dell

Dell listens to customers and delivers worldwide innovative technology, business solutions, and services they trust and value. For more information, visit http://www.software.dell.com.

# Contacting Dell

**Product questions and sales:** (800) 306-9329

**Email:** info@software.dell.com

# Technical support resources

Technical support is available to customers who have purchased Dell software with a valid maintenance contract and to customers who have trial versions. To access the Support Portal, go to https://support.software.dell.com.

The Support Portal provides self-help tools you can use to solve problems quickly and independently, 24 hours a day, 365 days a year. In addition, the Support Portal provides direct access to product support engineers through an online Service Request system.

The Support Portal enables you to:

- Create, update, and manage Service Requests (cases).
- View Knowledge Base articles.
- Obtain product notifications.
- Download software. For trial software, go to http://software.dell.com/trials.
- View how-to videos.
- Engage in community discussions.
- Chat with a support engineer.