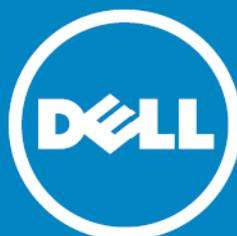


**Dell™ NetVault™ Backup
Plug-in for SnapMirror® to Tape 10.0.5
User's Guide**



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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.

Plug-in for SnapMirror to Tape User's Guide
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Introduction

- [About Dell™ NetVault™ Backup Plug-in for SnapMirror® to Tape](#)
- [Target audience](#)
- [Recommended additional reading](#)

About Dell™ NetVault™ Backup Plug-in for SnapMirror® to Tape

Dell NetVault Backup Plug-in for SnapMirror to Tape (Plug-in for SnapMirror to Tape) provides block-level backups and improved disaster recovery support for data stored on NetApp filers. Working in conjunction with NetApp SnapMirror technology, the plug-in allows you to back up selected volumes or snapshots to tape devices for off-site storage. An intuitive, easy-to-use GUI gives you a single, centralized console to configure backup and restore policies for all your NetApp filers.

Feature summary

- Allows backups of volumes and snapshots
- Allows Full, Incremental, and Differential Backups
- Moves mirrors to tapes and saves disk space on NetApp filers
- Supports deduplicated disk-based backups to Dell™ NetVault™ SmartDisk (NetVault SmartDisk)
- Offers centralized management of SnapMirror schedules from NetVault WebUI
- Supports point-in-time volume recovery from mirror images stored on tape
- Relocates mirrored data to alternate NetApp filers
- Integrates with NetVault Backup NDMP-related functions

SnapMirror to Tape backups and NDMP dump backups

The SnapMirror to Tape backups are faster than NDMP Dump backups. The following table describes the difference between these two backup types.

Table 1. SnapMirror to Tape backup and NDMP dump backup

SnapMirror to Tape backup	NDMP Dump backup
Backs up blocks of data.	Backs up files and directories.
Supports Level 0, Incremental, and Differential Backups. The software requirements for Block Level Incremental (BLI) backups are: <ul style="list-style-type: none"> • NetVault Backup 8.6.1 or later • Plug-in for SnapMirror to Tape 7.6 or later • Data ONTAP 8.1.1 or later Only Level 0 or Full Backups are supported on systems that do not meet these requirements.	Supports Level 0, Incremental, and Differential Backups.
No support for file-level restores.	Supports file-level restores.
Native deduplication is preserved during backups and restores.	Native deduplication is not preserved during backups.

Target audience

This guide is intended for backup administrators and other technical personnel who are responsible for designing and implementing a backup strategy for NAS filers. A good understanding of NAS, NDMP, and the operating systems under which the NetVault Backup Server and Clients are running is assumed.

Recommended additional reading

- NetVault Backup documentation
 - *Dell NetVault Backup Installation Guide*: This guide provides information about installing the NetVault Backup Server and Client software.
 - *Dell NetVault Backup Administrator's Guide*: This guide provides information about configuring and using NetVault Backup to protect your data. It provides comprehensive information about all NetVault Backup features and functionality.
 - *Dell NetVault Backup Command Line Interface Reference Guide*: This guide provides information about using the NetVault Backup command-line utilities.
 - *Dell NetVault Backup Plug-in for NDMP Application Notes*: These notes provide filer-specific information.

You can download these guides from <https://support.software.dell.com/>.

IMPORTANT: Starting with 10.0, NetVault Backup provides a web-based user interface to configure, manage, and monitor your NetVault Backup system and installed plug-ins. The procedures described in this guide are intended for the new NetVault 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 plug-in

- NAS device documentation
 - *Administrator's Guide for your NDMP-based NAS appliance*

Installing the plug-in

- Deploying Plug-in for SnapMirror to Tape
- Prerequisites
- Installing the plug-in
- Upgrading the plug-in
- Removing the plug-in

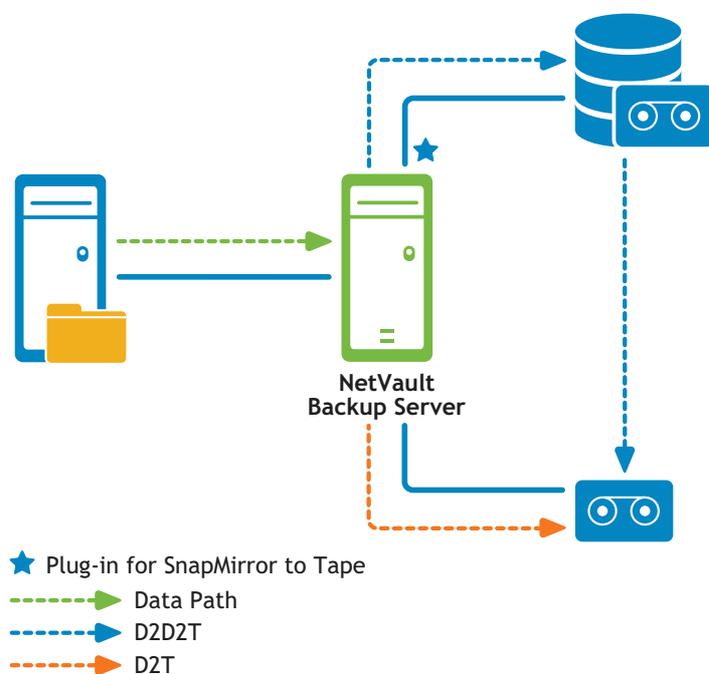
Deploying Plug-in for SnapMirror to Tape

The Plug-in for SnapMirror to Tape supports the following deployment methods:

- Deployment using server-attached device
- Deployment using filer-attached device

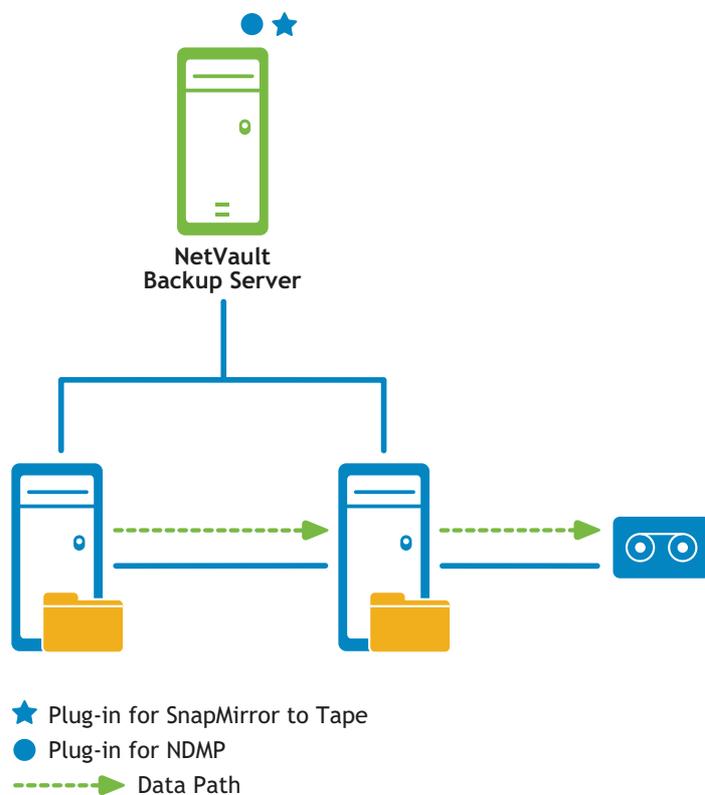
Deployment using server-attached device

Figure 1. Deployment using NetVault Backup Server-attached device



Deployment using filer-attached device

Figure 2. Deployment using filer-attached device



Prerequisites

Before installing the plug-in, verify that the following requirements are met:

- **Install Dell™ NetVault™ Backup Plug-in for NDMP (Plug-in for NDMP):** Install Plug-in for NDMP on NetVault Backup Server if you are using a filer-to-filer setup and want to use the backup device attached to a different filer.
- **Install and configure NetApp SnapMirror:** Install and configure the NetApp SnapMirror software on applicable NetApp filers.
- **Configure language and locale settings for NetVault Backup:** Configure the correct language and locale settings on NetVault WebUI. For more information, see the *Dell NetVault Backup Administrator's Guide*.

Installing the plug-in

To install the plug-in

- 1 In the Navigation pane, click **Guided Configuration**, and then on the **NetVault Configuration Wizard** page, click **Install Plugins**. In the **NetVault Backup Clients** list, select the clients on which you want to install the plug-in.

— or —

In the Navigation pane, click **Manage Clients**. In the **NetVault Backup Clients** list, select the client on which you want to install the plug-in, and click **Manage**. At the lower-right corner of the **Installed Software** table, click the **Install Plugin** button ().

 **NOTE:** You can use the configuration wizard to install the plug-in on multiple clients at the same time (if the selected clients are of the same type). When you select multiple clients, verify that the plug-in binary file is compatible with the OS and platforms of the target clients.
From the **Manage Clients** page, you can only select one client for installing the plug-in.

- 2 Click **Choose Plug-in File**, and in the browse window, navigate to the location of the “.npx” installation file for the plug-in (on the installation CD or the directory to which the file was downloaded from the website).
- 3 Select the file named **smt-x-x-x-x.npx** (x-x-x-x represents the version, build, and platform numbers), and click **Next** to begin installation.
- 4 After the plug-in is installed successfully, a message is displayed.

Upgrading the plug-in

To upgrade the plug-in, follow the steps in the section [Installing the plug-in](#). You can perform an upgrade installation without removing the current version of the plug-in.

To apply new configuration values after an upgrade, open the NetVault WebUI, and browse the plug-in node. On Linux® x86-64 platforms, restart the NetVault Backup Service.

Removing the plug-in

To remove Plug-in for SnapMirror to Tape

- 1 In the Navigation pane, click **Manage Clients**.
- 2 In the **NetVault Backup Clients** list, select the client on which the plug-in is installed, and click **Manage**.
- 3 In the **Installed Plug-ins** table, select **NDMP SnapMirror to Tape Plugin**, and click the **Remove Plugin** button ().
- 4 In the confirmation dialog box, click **Remove**.

Configuring the plug-in

- [Prerequisites](#)
- [Adding a NetApp filer](#)
- [Configuring NetVault Backup user account](#)
- [Configuring default settings](#)
- [Configuring media block size](#)

Prerequisites

Before you start the configuration procedure, verify that the following requirements are met:

- **Connect the backup devices:** Depending on the Data Transfer Model that you are using, connect the backup device to the NetVault Backup Server, Client, or NetApp filer.
- **Add the NetApp filer:** Add the NetApp filer as an NDMP Server to the Plug-in for NDMP. For more information, see the *Dell NetVault Backup Plug-in for NDMP User's Guide*.
 - In a filer-to-filer data transfer model, add both the target filer and the filer to which the backup device is connected to as NDMP Servers.
- **Add the backup devices:** Add the backup device to the NetVault Backup Server if the device is connected to a filer or NetVault Backup Client. For more information about adding devices, see the *Dell NetVault Backup Administrator's Guide*.
- **Enable UTF-8 encoding:** To use UTF-8 encoding, do the following:
 - Enable UTF-8 encoding on the filer and each target volume.
 - Configure appropriate language-type on each target volume.

To determine if UTF-8 encoding is supported on the target filer and for instructions on configuring Character Set Encoding on the filer, see the relevant filer documentation.
- **Verify that the NDMP service is set to Storage Virtual Machine (SVM)-scoped mode on Clustered Data ONTAP 8.3:** On Clustered Data ONTAP 8.3, SMTape backups and restores are only supported in SVM-scoped NDMP mode.

Adding a NetApp filer

To start using the plug-in for backups and restores, you must add the applicable NetApp filers to the plug-in, and configure a user account to log on to the filer.

To add an NDMP Server

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

— or —

In the Navigation pane, click **Guided Configuration**, and then on the **NetVault Configuration Wizard** page, click **Create Backup Jobs**.

- 2 Click **Create New** next to the **Selections** list to open the **NetVault Backup Selections** page.
- 3 Open the NetVault Backup Server. Select **NDMP SnapMirror to Tape**, and in the **Actions** list, click **Add Server**.
- 4 In the NDMP Server dialog box, configure the following settings.

Table 1. Add NDMP Server

Option	Description
Name	Type a name for the filer. The filer name must be unique. You can assign the actual name of the filer to easily identify it in the NetVault Backup environment. NOTE: You cannot change the server name once it is configured.
Address(es)	Type the IP address of the filer. To configure multiple addresses, separate them using a comma. If you are using Clustered Data ONTAP 8.3, specify the IP address of the Cluster Management Logical Interface (LIF) or Node Management LIF.
Port	By default, the filer is configured to listen on port number 10000. Unless otherwise required, do not change the listener port for the filer.
Account	Specify a user account that can be used to log on to the filer. The user account must have necessary privileges to perform NDMP backups and restores.
Password	Type the password for the user account.
Use UTF-8 Conversions	Select this check box to convert the filenames and display them correctly according to the locale configured on the NetVault WebUI. This feature can only be used if the filer supports UTF-8 encoding. To use this feature, do the following: <ul style="list-style-type: none"> • Enable UTF-8 conversion on the filer. • Set the appropriate language type on each target volume. • Set the configuration option Codepage for UTF-8 Conversions for the Plug-in for SnapMirror to Tape. For more information, see Configuring default settings. NOTE: For NetApp filers, the actual conversion is specified on a per-job basis by setting plug-in option Request Unicode File Information . However, the Use UTF-8 Conversions check box must be selected to use this feature.

- 5 Click **OK** to add the filer.

Editing server details

To edit the server details

- 1 Start the Backup Job Wizard, and click **Create New** next to the **Selections** list.
- 2 Open the NetVault Backup Server, and then open **NDMP SnapMirror to Tape**.
- 3 Select the filer, and in the **Actions** list, click **Edit Server**.
- 4 Reconfigure the applicable settings. For more information about these settings, see [Add NDMP Server](#).

Note the following:

- You cannot change the server name.
 - To change the password, select the **New Password** check box, and type the password.
- 5 Click **OK** to save the new settings.

Removing a server

To remove a server

- 1 Start the Backup Job Wizard, and click **Create New** next to the **Selections** list.
- 2 Open the NetVault Backup Server, and then open **NDMP SnapMirror to Tape**.
- 3 Select the filer, and in the **Actions** list, click **Remove Server**.
- 4 In the confirmation dialog box, click **OK**.

Configuring NetVault Backup user account

When backing up multiple volumes, the plug-in uses the “default” user account to run child jobs. If you assign a new password to this user account, you must also update the account details for the plug-in. Otherwise, the backup jobs that include multiple volumes report an error (“unable to log on to auditor, check account and password are valid”) and fail.

To configure password for the “default” user account

- 1 Start the Backup Job Wizard, and click **Create New** next to the **Selections** list.
- 2 Open the NetVault Backup Server, and then open **NDMP Client**.
- 3 Select the filer, and in the **Actions** list, click **Set Account**.
- 4 In the **NetVault Account** dialog box, provide the following information:
 - **Account:** Type “default”, which is the user account used to run subjobs.
 - **New Password:** Select the **New Password** check box, and specify the password for the “default” account.
- 5 Click **OK** to save the information.

Configuring default settings

To configure the default settings for Plug-in for SnapMirror to Tape

- 1 Start the Backup Job Wizard, and click **Create New** next to the **Selections** list. Open the NetVault Backup Server. Select **NDMP SnapMirror to Tape**, and in the **Actions** list, click **Configure**.

— or —

In the **Navigation** pane, click **Change Settings**. On the **Configuration** page, click **Server Settings**, and then click **Plugin Options**.

- 2 Configure the following settings.

Table 2. Default settings for Plug-in for SnapMirror to Tape

Option	Description
BLI Snapshot Creation Timeout	This setting determines the amount of time the plug-in waits for creation of snapshots for BLI backups. The timeout value is specified in number of seconds. The default value is 600 seconds. You can increase the timeout value for snapshot creation if the volume is large or the filer requires an excessive amount of time to complete the task.

Table 2. Default settings for Plug-in for SnapMirror to Tape

Option	Description
BLI Snapshot Deletion Timeout	This setting determines the amount of time the plug-in waits for deletion of snapshots during BLI backups. The timeout value is specified in number of seconds. The default value is 600 seconds. You can increase the timeout value for snapshot deletion if the volume is large or the filer requires an excessive amount of time to complete the task.
BLI Incremental Backup Can Delete Previous Differential Snapshot	By default, when an Incremental Backup is performed, the plug-in deletes the snapshot that was created for the previous Incremental or Differential Backup. If you do not want to delete the snapshot for a previous Differential Backup, clear this check box. This setting can be useful when you want to use the snapshot as the base for subsequent backup.
Delete All Previous Snapshots Prior to Starting a Full BLI Snapshot	To delete all existing snapshots and reclaim disk space before starting a BLI Full Backup, select this check box.
Snapshot Backup Selection Cannot be Used with Create Snapshot Option	If you select the Create New Snapshot check box after selecting a snapshot in the selection tree, the plug-in reports an error and fails the job. When you clear this check box, the plug-in reports an error, but does not fail the job.
Codepage for UTF-8 Conversions	Type the codepage identifier for UTF-8 conversions. Use this setting with the Use UTF-8 Conversions option described in the section Adding a NetApp filer . Translations depend on the configuration, locale, and code sets installed on the system. For a list of codepage values, see the operating system documentation
Use APM UTF-8 Conversion	To store and index UTF-8 character sets for browsing, select this check box. This setting allows you to browse the files in a native UTF supported language, such as Japanese. Without this setting, the plug-in indexes the files by filer-specific NDMP metadata.

- 3 Click **OK** to save the settings and close the dialog box.

NOTE: After configuring UTF-8 encoding setting on the filer, filer volumes, and plug-in, we recommend that you perform a test backup of some data on the relevant volumes. Then, browse these savesets using the Restore Job Wizard to ensure that the names of the directories and files are displayed correctly. This test is necessary because UTF-8 name translations are received from the filer. If the filer fails to supply the names in UTF-8 format, it can cause corruption or truncation of the file and directory names.

Configuring media block size

When configuring media block size for data transfers, verify that you set the same block size on the filer and the target drives.

NOTE: To use 256K block size, you require Plug-in for SnapMirror To Tape 7.2.101 or later. For Data ONTAP requirements, see the *Dell NetVault Backup Compatibility Guide*.

To configure the block size for data transfers

- 1 On the filer, set the `DATA_BLOCK_SIZE` variable.

Generally, this variable is set to 240K. You can set it to any value; in most cases, the filer uses 240K.

- 2 Start the NetVault WebUI, and in the Navigation pane, click **Manage Devices**. In the list of devices, click the applicable drive (or the corresponding Manage Device icon), and then click **Performance**.
- 3 In the **Drive Performance Options** dialog box, configure the following setting:
 - **Drive Block Size:** Type or select 240K or 256K depending on the value set for the **DATA_BLOCK_SIZE** variable. Changes to this setting are only applied to tapes that are blank or relabeled.
- 4 To use 256K media block size, do the following:
 - a Open the configuration file `ndmpsmtversions.cfg` in a text editor. You can find this file in `<NetVault Backup home>/config`.
 - b Set the **Filer Block Size Preferred** parameter to **FALSE**. By default, it is set to **TRUE**:

```
Filer Block Size Preferred=FALSE
```

Save the file.
 - c Restart the NetVault Backup Service.

Important notes

- Some operating systems may not be able to handle a block size of 256K or 240K. For more information about the block size capacity, see the relevant operating system documentation.
- When duplicating backups created using Plug-in for SnapMirror to Tape, verify that the target drive and media used for duplication are configured to use a block size of 256K or 240K.
- If the target tape device is not locally attached to the NetApp filer, verify that the NetVault Backup Server or Client to which the device is attached supports a block size of 256K or 240K.
 - **Linux and UNIX®:** If necessary, increase the amount of shared memory, typically the `shmmax` setting.
 - **Windows®:** If necessary, increase the `MaximumSGList` setting for the tape device. For more information, see the relevant operating system and SCSI card documentation.

Backing up data

- [About backup methods and types](#)
- [Performing a Standard Backup](#)
- [Performing BLI Backups](#)
- [Backing up existing snapshots in C-mode](#)

About backup methods and types

This section provides a brief description of the available backup methods and types.

Backup methods

The Plug-in for SnapMirror to Tape supports the following backup methods:

- **Standard Backup:** This method can be used to perform Full or Level 0 backups of the selected volumes. The Standard Backup method is the only method available with Data ONTAP versions older than 8.1.1 and Plug-in for SnapMirror to Tape versions older than 7.6.x.
- **Block Level Incremental (BLI) Backup:** This method can be used to perform Full, Incremental, and Differential Backups of the selected volumes. The BLI Backup method uses snapshots to perform backups. A Full Backup initializes a backup context against which the plug-in performs Incremental and Differential Backups of the selected volumes.

The BLI Backup Method is available with Plug-in for SnapMirror To Tape 7.6.x and later versions.

 **NOTE:** The BLI Backups created with Plug-in for SnapMirror to Tape cannot be consolidated using the Dell™ NetVault™ Backup Plug-in for Consolidation (Plug-in for Consolidation).

Backup types

The BLI method supports the following backup types:

- **Full Backup:** A Full Backup provides a backup of the entire volume. These backups serve as the base backups for subsequent Incremental and Differential Backups.
- **Incremental Backup:** An Incremental Backup provides a backup of the changes in a volume since the last Full, Differential, or Incremental Backup. Incremental Backups consume minimum storage space and are quicker to perform. However, data recovery can take more time depending on the number of savesets that the plug-in is required to restore.
- **Differential Backup:** A Differential Backup provides a backup of the changes in a volume since the last Full Backup. Differential Backups speed up recovery since the plug-in is required to restore only two savesets. However, these backups consume more storage space and take more time to complete than the Incremental Backups. Differential Backups duplicate the data backed up by previous backups of the same type.

Performing a Standard Backup

To perform Full Backups using Plug-in for SnapMirror to Tape

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

— or —

In the Navigation pane, click **Guided Configuration**, and then 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 allows you to easily identify the job for monitoring its progress or restoring data. The job name can contain alphanumeric and non-alphanumeric characters, but it cannot contain non-Latin characters. There is no length restriction. However, a maximum of 40 characters is recommended on all platforms.

- 3 In the **Selections** list, select an existing Backup Selection Set, or complete the following steps to create a set.

- a Click **Create New** to open the **NetVault Backup Selections** page.
- b Open the NetVault Backup Server, and then open **NDMP SnapMirror to Tape**.
- c In the list of added servers, open the applicable filer to display the following nodes:
 - **Volumes**
 - **Snapshots**
- d Select the data that you want to back up.

- **Volumes:** To back up all volumes, select the **Volumes** node.

To back up individual volumes, open the **Volumes** node, and select the applicable volumes.

- **Snapshots:** Open the **Snapshots** node, and then in the list of available volumes, open the applicable volume. In the list of available snapshots, select the snapshot that you want to back up. You can only select a single snapshot.

NOTE: Clustered Data ONTAP does not support volume browsing.

If you are using Clustered Data ONTAP, you cannot open a volume node in the backup selection tree to browse its contents and select a snapshot. However, you can use the **Enter Backup Path** method to back up an existing snapshot. For more information, see [Backing up existing snapshots in C-mode](#).

- e Click **Save**, and in the **Create New Set** dialog box, type a name for the set. Click **Save** to close the dialog box.

NOTE: A set name can contain alphanumeric and non-alphanumeric characters, but it cannot contain non-Latin characters. On Linux OS, the names can have a maximum of 200 characters. On Windows OS, there is no length restriction. However, a maximum of 40 characters is recommended on all platforms

- 4 In the **Plugin Options** list, select an existing Backup Options Set, or complete the following steps to create a set.

- a Click **Create New** to open the **NDMP Backup Options** page.
- b Configure the following settings.

Table 1. Standard Backup options

Option	Description
Backup Method	Select the Standard option. This method creates a Full or Level 0 Backup of the selected volumes. For more information about the Standard Backup method, see Backup methods . NOTE: If the BLI backup method is not supported on your filer, the plug-in automatically uses the Standard Backup method.
Delete Snapshot on Exit	Select this check box to delete the snapshot created by the plug-in on completion of the job. This option is only applicable to the Standard Backup method. NOTE: You cannot use the snapshots created for Standard Backups to perform BLI Backups.
Number of Backups to Run in Parallel	Type or select the number of jobs that can be run concurrently. The default value is zero. Use the default value to run all jobs in parallel, limited only by the availability of drives, network bandwidth, and other resources. To achieve the desired result, you must set the same value for each job.
Delete Auto Generated Backup Jobs on Completion	The plug-in creates individual subjobs for each qtree and volume included in a backup. If this check box is not selected, all subjobs are listed on the Job Status page. This can create confusion when you try to view the details of the parent job. To avoid this and include only a single entry for the parent job, leave this check box selected.

- c Click **Save**, and in the **Create New Set** dialog box, type a name for the set. Click **Save** to close the dialog box.
- 5 Select or create the **Schedule Set**, **Target Set**, and **Advanced Options Set**. For more information about these sets, see the *Dell NetVault Backup Administrator's Guide*.

i **IMPORTANT:** We recommend that you assign specific media groups to the Plug-in for SnapMirror to Tape backups and do not mix them with backups created using other plug-ins.
- 6 To submit the job for scheduling, click **Save & Submit**. You can monitor the job progress from the **Job Status** page and view the logs from the **View Logs** page.

To save the job definition without scheduling it, click **Save**. You can view, edit, or run this job from the **Manage Job Definitions** page. This job is not displayed on the **Job Status** page until you submit it.

For more information about **Job Status**, **View Logs**, and **Manage Job Definitions**, see the *Dell NetVault Backup Administrator's Guide*.

Performing BLI Backups

The BLI Backup method uses snapshots to perform Full, Incremental, and Differential Backups of the selected volumes. You can either create a snapshot with Plug-in for SnapMirror To Tape or use an existing snapshot to perform these backups.

- **Creating new snapshots using Plug-in for SnapMirror To Tape:** The plug-in automatically creates a new snapshot for Full Backup. This snapshot is used as the base for subsequent Incremental and Differential Backups. To create new snapshots for Incremental and Differential Backups, select the “**Create New Snapshot**” check box while creating the Backup Options Set.

The snapshots are named as follows:

snapshot_for_smtape.x-x-x-x.n

Here “x-x-x-x” represents a hexadecimal number and “n” represents the snapshot sequence number (0 for Full Backup, 1 for Incremental Backup 1, 2 for Incremental Backup 2, and so on).

Examples:

snapshot_for_smtape.5574d877-cfa3-11e1-9449-123478563412.0

snapshot_for_smtape.5574d877-cfa3-11e1-9449-123478563412.1

snapshot_for_smtape.5574d877-cfa3-11e1-9449-123478563412.2

- **Using existing snapshots:** The plug-in can also use existing snapshots for BLI backups. These snapshots must be named as follows:

snapshot_for_smtape.<any string>.n

Here “n” represents the snapshot sequence number (0 for Full Backup, 1 for Incremental Backup 1, 2, and so on).

Examples:

snapshot_for_smtape.Vol1.0

snapshot_for_smtape.Vol1.1

snapshot_for_smtape.Vol1.2

To use existing snapshots for backups, do not select the “Create New Snapshot” check box while creating the Backup Options Set.

To perform Full, Incremental, or Differential Backups using the BLI backup method

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

— or —

In the Navigation pane, click **Guided Configuration**, and then 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 allows you to easily identify the job for monitoring its progress or restoring data. The job name can contain alphanumeric and non-alphanumeric characters, but it cannot contain non-Latin characters. There is no length restriction. However, a maximum of 40 characters is recommended on all platforms.

- 3 In the **Selections** list, select an existing Backup Selection Set, or complete the following steps to create a set.

- a Click **Create New** to open the **NetVault Backup Selections** page.

- b Open the **NetVault Backup Server**, and then open **NDMP SnapMirror to Tape**.

- c In the list of added servers, open the applicable filer to display the following nodes:

- **Volumes**
- **Snapshots**

- d Select the data that you want to back up.

- **Volumes:** To back up all volumes, select the **Volumes** node.

To back up individual volumes, open the **Volumes** node, and select the applicable volumes.

- **Snapshots:** Open the **Snapshots** node, and then in the list of available volumes, open the applicable volume. In the list of available snapshots, select the snapshot that you want to back up. You can select only a single snapshot.

- e Click **Save**, and in the **Create New Set** dialog box, type a name for the set. Click **Save** to close the dialog box.

NOTE: A set name can contain alphanumeric and non-alphanumeric characters, but it cannot contain non-Latin characters. On Linux OS, the names can have a maximum of 200 characters. On Windows OS, there is no length restriction. However, a maximum of 40 characters is recommended on all platforms

- 4 In the **Plugin Options** list, select an existing Backup Options Set, or complete the following steps to create a set.
 - a Click **Create New** to open the **NDMP Backup Options** page.
 - b Configure the following settings.

NOTE: To use existing snapshots for Incremental and Differential Backups, make sure that you do not select any check box under **BLI Options**.

Table 2. BLI Backup options

Option	Description
Backup Method	Select the Block Level Incremental (BLI) option. For more information about the BLI Backup method, see Backup methods . NOTE: If your filer does not support the BLI backup method, the plug-in automatically uses the Standard Backup method.
BLI Backup Type	Select the applicable option from the following: <ul style="list-style-type: none"> • Full • Incremental • Differential For more information, see Backup types .
Create New Snapshot	To create a snapshot for an Incremental or a Differential Backup, select this check box. NOTE: For a Full Backup, the filer automatically generates an SMTape snapshot. Therefore, this option is not applicable to Full Backups.
Delete Previous Snapshot	To delete the snapshot for previous Incremental or Differential Backup on completion of the current backup, select this check box. When you select this check box, the snapshots for the base Full Backup and current backup are not deleted.
Delete All Previous Snapshots	To delete the snapshots for all previous backups, including the base Full Backup, on completion of the current backup, select this check box. When you select this check box, the snapshot for current backup is not deleted. NOTE: Without the snapshot for the base Full Backup, a Differential Backup performed after this backup fails. The workaround is to run a Full Backup before running the next instance of the Differential Backup.
Number of Incremental/Differential Jobs Before Deletion of All BLI Snapshots	To delete all snapshots associated with a backup sequence after a specified number of Incremental or Differential Backups, select this check box. Type or select the instance ID for the backup after which the snapshots are to be deleted. When you select this check box, the snapshot for the base Full Backup and current backup are also deleted. NOTE: Without the associated snapshots, Incremental and Differential Backups performed after this backup fail. The workaround is to run a Full Backup before running the next instance of Incremental or Differential Backup.
Number of Backups to Run in Parallel	Type or select the number of jobs that can be run concurrently. The default value is zero. Use the default value to run all jobs in parallel, limited only by the availability of drives, network bandwidth, and other resources. To achieve the desired result, you must set the same value for each job.

Table 2. BLI Backup options

Option	Description
Delete Auto Generated Backup Jobs on Completion	The plug-in creates individual subjobs for each qtree and volume included in a backup. If this check box is not selected, all subjobs are listed on the Job Status page. This can create confusion when you try to view the details of the parent job. To avoid this and include only a single entry for the parent job, leave this check box selected.

- c Click **Save**, and in the **Create New Set** dialog box, type a name for the set. Click **Save** to close the dialog box.
- 5 Select or create the Schedule Set, Target Set, and Advanced Options Set. For more information about these sets, see the *Dell NetVault Backup Administrator's Guide*.

IMPORTANT: We recommend that you assign specific media groups to the Plug-in for SnapMirror to Tape backups and do not mix them with backups created using other plug-ins.

- 6 To submit the job for scheduling, click **Save & Submit**. You can monitor the job progress from the Job Status page and view the logs from the View Logs page.

To save the job definition without scheduling it, click **Save**. You can view, edit, or run this job from the Manage Job Definitions page. This job is not displayed on the Job Status page until you submit it.

For more information about Job Status, View Logs, and Manage Job Definitions, see the *Dell NetVault Backup Administrator's Guide*.

Important notes

- For BLI Backups, the snapshots must be numbered sequentially whether they are created using the Plug-in for SnapMirror to Tape or through any other application. If a snapshot exists on the filer, the backup job reports the following error and fails:

Snapshot '%s' is unexpectedly already present. The backup cannot occur until this snapshot has been removed to allow the job to create a new snapshot of the same name.

- When you select the **Delete Previous Snapshot** check box, the plug-in retains the snapshot for that backup and the base Full Backup. It deletes all other snapshots.

Example:

- Full Backup of Set-A: The **Create New Snapshot** check box is grayed-out and the **Delete Previous Snapshot** check box is cleared.
- Incremental Backup 1 of Set-A: The **Create New Snapshot** and **Delete Previous Snapshot** check boxes are selected.
- Incremental Backup 2 of Set-A: The **Create New Snapshot** and **Delete Previous Snapshot** check boxes are selected.

In this scenario, the ".0" Full and ".2" Incremental snapshots are retained on the filer.

- To use existing snapshots for backups, do not select the BLI Options.

Example:

- Full Backup of Set-B: The **Create New Snapshot** check box is grayed-out and the **Delete Previous Snapshot** check box is cleared.
- Incremental Backup 1 of Set-B: The **Create New Snapshot** and **Delete Previous Snapshot** check boxes are cleared.
- Incremental Backup 2 of Set-B: The **Create New Snapshot** and **Delete Previous Snapshot** check boxes are cleared.

In this scenario, the ".0" Full, and the ".1" and ".2" Incremental snapshots are retained on the filer. You must manually delete these snapshots; the plug-in does not delete them.

Backing up existing snapshots in C-mode

Clustered Data ONTAP does not support volume browsing. If you are using Clustered Data ONTAP, you cannot open a volume node in the backup selection tree to browse its contents and select a snapshot. However, you can use the **Enter Backup Path** method to back up an existing snapshot.

To back up existing snapshots in C-mode

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

— or —

In the Navigation pane, click **Guided Configuration**, and then 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 allows you to easily identify the job for monitoring its progress or restoring data. The job name can contain alphanumeric and non-alphanumeric characters, but it cannot contain non-Latin characters. There is no length restriction. However, a maximum of 40 characters is recommended on all platforms.

- 3 Click **Create New** to open the **NetVault Backup Selections** page.
- 4 Open the **NetVault Backup Server**, and then open **NDMP SnapMirror to Tape**.
- 5 In the list of added servers, select the applicable filer, and in the **Actions** list, click **Enter Backup Path**.
- 6 In the **NDMP Backup Request** dialog box, configure the following option:

- **Directory:** Specify the full path to the snapshot that you want to back up. Use the following format to specify the backup path:

```
/<vservername>/<volumename>/ .snapshot/<snapshotname>
```

Example:

```
/vs1/vs1_vol3/ .snapshot/snapshot_for_smtape.b2f00b22-2e10-4752-bacf-5b97a0eccb04.0
```

Consult the relevant NetApp ONTAP documentation for more information on snapshot names.

Click **OK** to save the settings.

- 7 Complete [Step 5](#) and [Step 6](#) in the section [Performing a Standard Backup](#).

Restoring data

- [Restoring a Standard Backup](#)
- [Restoring Block Level Incremental Backups](#)
- [Using other restore procedures](#)
- [Mirroring process](#)
- [Using additional features available on the Choose Saveset page](#)

Restoring a Standard Backup

Prerequisites

Before initiating a restore, the target volume must be configured as restricted. On Clustered Data ONTAP 8.3, the target volume must be of type Data Protection (DP) and this volume must be in restricted state.

To change the volume status:

- Start a Telnet session, and log on to the filer. At the prompt, type:

```
vol restrict <target volume>
```

You can also change the volume status from the NetApp web interface. For more information, see the relevant NetApp documentation.

Restore procedure

To restore a Standard Backup

- 1 In the Navigation pane, click **Create Restore Job**.
- 2 In the saveset table, select the saveset that you want to use, and click **Next**.

The table displays the saveset name (Job Title and Saveset ID), creation date and time, and saveset size. Note the following.

- The list is sorted alphabetically by saveset name. You can sort the list by a different column or reverse the sort order by clicking the column heading. The arrowhead next to the column name indicates the sort order.
 - You can use one or more filters to display specific savesets on this page. You can also search for a data item in savesets and view the media list for a saveset. For more information about the additional features, see [Using additional features available on the Choose Saveset page](#).
 - When you select a saveset, the following details are displayed in the **Saveset Information** area: Job ID, Job Title, name of the NetVault Backup Server, name of the client from which the data was backed up, plug-in used to create the saveset, saveset creation date and time, saveset retirement setting, whether Incremental Backup or not, whether Archive or not, and saveset size.
- 3 On the **Create Selection Set** page, select the volumes you want to restore.

- Click **Edit Plugin Options**, and configure the following settings.

Table 1. Restore options for Plug-in for SnapMirror to Tape

Option	Description
NDMP Server	This option specifies the target filer name. It is only required when you want to restore data to an alternate filer. By default, it is set to the name of the original filer from which the data was backed up. Do not change the NDMP Server while restoring data to the same filer.
Break Mirror on Exit	<p>When a snapshot is restored to a volume, a SnapMirror Relationship is established for the volume and the volume is marked as read only. After the restore job is completed successfully, you must break the relationship and mark the volume as writable.</p> <p><i>To break the SnapMirror relationship</i></p> <ul style="list-style-type: none"> Select the Break Mirror on Exit check box. — or — After the restore job is completed successfully, start a Telnet session, and log on to the filer on which the snapshot was restored. At the prompt, type: <pre>snapmirror break <target volume></pre>

- Click **Save** to save the settings, and then click **Next**.

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

Assign a descriptive name that allows you to easily identify the job for monitoring its progress. The job name can contain alphanumeric and non-alphanumeric characters, but it cannot contain non-Latin characters. There is no length restriction. However, a maximum of 40 characters is recommended on all platforms

- In the **Target Client** list, the client from which data was backed up is selected by default. Do not change this setting.
- Select or create the **Schedule Set**, **Restore Source Set**, and **Advanced Options Set**. For more information about these sets, see the *Dell NetVault Backup Administrator's Guide*.
- Click **Submit** to submit the job for scheduling.

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

IMPORTANT:

- Due to NetApp configurations, quotas are not restored when you recover a snapshot. You need to set the quotas manually on the destination filer.
- On NetApp filers running Data ONTAP 7.0 and later versions, you cannot restore data from Traditional Volumes to Flexible Volumes or from Flexible Volumes to Traditional Volumes.

Restoring Block Level Incremental Backups

This section includes the following topics:

- [Restoring Incremental Backups](#)
- [Restoring Differential Backups](#)

Restoring Incremental Backups

To restore data from an Incremental Backup sequence

- 1 Before starting the restore procedure, place the destination volume in restricted mode. For more information, see [Prerequisites](#).
- 2 Restore the Full Backup. For more information, see [Restore procedure](#). When restoring the Full Backup, do not select the **Break Mirror on Exit** check box.
- 3 Restore each Incremental Backup in the backup sequence. For more information, see [Restore procedure](#). When restoring the Incremental Backups, do not select the **Break Mirror on Exit** check box

You must restore the Incremental Backups in the order in which they were created.

- IMPORTANT:** When restoring the Full or Incremental Backups, if you select the **Break Mirror on Exit** check box or issue the `snapmirror break` statement, you cannot restore any additional Incremental Backups in the backup sequence.

A volume must be in a SnapMirror Relationship to restore the Incremental Backups. If you break the SnapMirror Relationship before restoring all Incremental Backups, restore the Full Backup again, and then restore the applicable Incremental Backups.

- 4 When a snapshot is restored to a volume, a SnapMirror Relationship is established for the volume and the volume is marked as read only. After the restore job is completed successfully, you must break the relationship and mark the volume as writable.

To break the SnapMirror relationship:

- Start a Telnet session, and log on to the filer on which the snapshot was restored. At the prompt, type:

```
snapmirror break <target volume>
```

Restoring Differential Backups

To restore data from a Differential Backup sequence

- 1 Before starting the restore procedure, place the destination volume in restricted mode. For more information, see [Prerequisites](#).
- 2 Restore the Full Backup. For more information, see [Restore procedure](#). When restoring the Full Backup, do not select the **Break Mirror on Exit** check box.
- 3 Restore the most recent Differential Backup. For more information, see [Restore procedure](#). When restoring the Differential Backup, do not select the **Break Mirror on Exit** check box

- IMPORTANT:** When restoring the Full Backup, if you select the **Break Mirror on Exit** check box or issue the `snapmirror break` statement, you cannot restore any Differential Backup.

A volume must be in a SnapMirror Relationship to restore the Differential Backup. If you break the SnapMirror Relationship before restoring a Differential Backup, restore the Full Backup again, and then restore the applicable Differential Backup.

- 4 When a snapshot is restored to a volume, a SnapMirror Relationship is established for the volume and the volume type is marked as read only. After the restore job is completed successfully, you must break the relationship and mark the volume as writable.

To do break the SnapMirror relationship:

- Start a Telnet session, and log on to the filer on which the snapshot was restored. At the prompt, type:

```
snapmirror break <target volume>
```

Using other restore procedures

This section includes the following topics:

- [Renaming a volume during restore](#)
- [Restoring data to an alternate NetApp filer](#)

Renaming a volume during restore

To restore a volume without overwriting the existing copy, you can rename the item during restore.

To rename a volume during restore

- 1 Complete [Step 1](#) through [Step 3](#) in the section [Restore procedure](#).
- 2 Select the volume that you want to rename, and in the **Actions** list, click **Rename**.
- 3 In the **Restore Rename** dialog box, configure the following option:
 - **Rename:** Type a new name for the selected volume. You must provide the full path. For example, type `/vol/vol1` to rename `vol0` to `vol1`. Verify that the target volume is available on the filer and it is offline.

Click **OK** to close the dialog box.

After you close the dialog box, the plug-in updates the corresponding node in the selections tree to display the new name for the volume.

- 4 Complete [Step 4](#) through [Step 9](#) in the section [Restore procedure](#).

Restoring data to an alternate NetApp filer

To relocate a file or directory to an alternate client, use the following procedure. This procedure can be useful when the original filer is unavailable or dealing with limited capacity or bandwidth.

Prerequisites

Before you start the restore procedure, verify that the following requirements are met:

- Add the new NetApp filer to the plug-in. For more information, see [Adding a NetApp filer](#).
- Verify that the size of the target volume is equal to or larger than the original volume.

This requirement must be met even if the amount of data to be transferred is smaller than the overall size of the target volume. For example, if the original volume size is 10GB and the snapshot size is 2GB, relocating this data to a volume that is only 5GB in size results in a failure.

Restore procedure

To restore data to an alternate filer

- 1 Complete [Step 1](#) through [Step 3](#) in the section [Restore procedure](#).
- 2 Click **Edit Plugin Options**, and configure the following option:
 - **NDMP Server**: This option specifies the target filer name. By default, it is set to the name of the original filer from which the data was backed up. To relocate the data to an alternate server, type the name of the target filer.
- 3 If applicable, configure the **Break Mirror on Exit** option. For more information, see [Restore options for Plug-in for SnapMirror to Tape](#).
- 4 Complete [Step 5](#) through [Step 9](#) in the section [Restore procedure](#).

Mirroring process

Using the NetApp SnapMirror utility and Plug-in for SnapMirror to Tape, you can take a snapshot from a NetApp filer and transfer it to a piece of media, and then mirror this data to a second filer. However, the plug-in does not control this aspect of the operation. It is solely handled by the NetApp utilities. For more information about this process, see the relevant NetApp documentation.

Using additional features available on the Choose Saveset page

This section describes how to use the additional features available on the **Create Restore Job – Choose Saveset** page. These features are common to all NetVault Backup plug-ins.

Filtering the saveset list

By default, the saveset table on the **Create Restore Job – Choose Saveset** page lists all available savesets. You can use the following filters to display specific savesets on this page.

Table 2. Saveset filters

Filter	Description
Client	Displays savesets created for particular clients. <i>To use this filter</i> <ul style="list-style-type: none">• Click the Client box, and in the Choose Client dialog box, select the applicable clients. Click OK to close the dialog box. The default selection is Any.
Plugin Type	Displays savesets created using a particular plug-in. <i>To use this filter</i> <ul style="list-style-type: none">• Click the Plugin Type box, and in the list, select the applicable plug-in. The default selection is Any.

Table 2. Saveset filters

Filter	Description
Date	<p>Displays savesets created during a specified period.</p> <p><i>To use this filter</i></p> <ul style="list-style-type: none">Click the Date box, and in the list, select the option that you want to use. The available options are Last 24 hours, Last Week, Last Month, Last 6 Months, Last Year, and Any. The default selection is Any.
Job	<p>Displays savesets created for particular job IDs.</p> <p><i>To use this filter</i></p> <ul style="list-style-type: none">Click the Job box, and in the Choose Job dialog box, select the applicable jobs. Click OK to close the dialog box. The default selection is Any.

Viewing media list

To view media list for a saveset

- 1 On the **Create Restore Job – Choose Saveset** page, select the applicable saveset.
- 2 In the **Saveset Information** area, click **Media List**.
- 3 In the dialog box that appears, you can view the data and index segment details. For each data segment, you can view the media label, media group, offset, segment size, and media location. For index segments, you can view the media label, media group, and media location.
- 4 Click **Close** to close the dialog box.

Troubleshooting

- Common errors

Common errors

The following is a list of some common errors and their solution.

Table 1. Troubleshooting

Description	Symptom	Solution
The NetVault Backup Service fails to start on a Windows-based NetVault Backup Server.	Check the Windows Event Viewer to see if it displays the following message: PDT FATAL: lock file "postmaster.pid" already exists	NetVault Backup cannot start if the PostgreSQL database that is used to store the system data does not start. To correct this issue, delete the "postmaster.pid" file from the location referenced in the log and restart the NetVault Backup Server.
After restarting the machine, the NetVault Backup Service sometimes fails to start on a Windows-based NetVault Backup Server.	Check the Windows Event Viewer to see if it displays the following message: FATAL: could not create any TCP/IP sockets " for a PostgreSQL source	NetVault Backup cannot start if the PostgreSQL database that is used to store the system data does not start. To correct this issue, start the Task Manager, and click Show processes from all users . You can see multiple instances of postgres32.exe running on the system. Select any one instance of this process, and click End Process to remove all instances of postgres32.exe . Then, start the NetVault Backup Service from the Configurator.
The NetVault Backup Service starts, and then stops immediately on a Linux-based machine.	No error messages are displayed.	This issue can occur if the Postgres service cannot resolve the host name localhost , and fails to start. Check the <code>/etc/hosts</code> file, and if the file does not contain an entry for localhost , add the entry.
Restore fails with the message "Aborting: Destination volume, XXX, is too small."	Restore fails immediately after media is assigned and the restore operation is started on the filer.	Add more disk space to the destination volume or choose another destination volume of sufficient capacity.

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Contacting Dell

For sales or other inquiries, visit <http://software.dell.com/company/contact-us.aspx> or call +1-949-754-8000.

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 portal provides direct access to product support engineers through an online Service Request system.

The site enables you to:

- Create, update, and manage Service Requests (cases)
- View Knowledge Base articles
- Obtain product notifications
- Download software. For trial software, go to [Trial Downloads](#).
- View how-to videos
- Engage in community discussions
- Chat with a support engineer