



NetBackup 7.7 with Dell SC Series Storage

Configuration and management recommendations and best practices

Dell Engineering
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Revisions

Report	Date	Description
1.0	January 2011	Initial release
2.0	November 2015	Updated with support for NetBackup v7.7.1

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1 Introduction

The Dell™ SC Series hardware VSS provider leverages Dell Replay technology to provide hardware snapshots for Veritas™ NetBackup™ 7.7.1. Using SC Series Replay technology with NetBackup enables data protection that is fast, space efficient and LAN-free; the backup load is moved off the client and onto the underlying storage system.

1.1 Audience

This document was published for system administrators that are responsible for the setup and maintenance of Veritas NetBackup in a Microsoft® Windows® or Red Hat® Enterprise Linux® environment. Readers should have a working knowledge of the Dell Storage Center system and components.

1.2 Objective

This document provides best practice guidelines for configuring the SC Series hardware VSS provider in a Windows environment and the NetBackup AdvancedDisk option when using Storage Center. This document also includes information on using the NetBackup AdvancedDisk option with Storage Center as a repository or target for backup data. SC Series virtualization and NetBackup deduplication work together to provide a high-performance, space-efficient target for backup data. Additional documentation can be found on the [Dell SC Knowledge Center](#) (requires a login) and in the Veritas NetBackup product documentation on veritas.com.



2 SC Series hardware VSS provider

NetBackup leverages the hardware VSS provider available with SC Series Replay Manager to expedite backups and move the snapshot creation process off the software and onto the underlying storage system. This provides efficient backups by utilizing SC Series Replays to create and manage snapshots.

Note: Replay Manager is required on the client server to enable the hardware VSS provider. The following instructions configure NetBackup with the SC Series hardware VSS provider. This document assumes that the NetBackup environment has been setup and configured correctly. It also assumes the Dell Storage Center is configured and operational.

2.1 Replay Manager configuration

Conduct the following tasks on each backup client that will use the SC Series hardware VSS provider:

1. Follow the *Replay Manager User Guide* for the proper steps to install Replay Manager.
2. Configure the Storage Center IP address or hostname, username, password and associated server object in Replay Manager options.

2.2 NetBackup policy configurations

Complete the following steps to configure NetBackup to use the SC Series hardware VSS provider.

1. Create a backup policy under NetBackup Management in the NetBackup Administration Console. Select **NetBackup Management** and then double-click **Create a Policy** in the right hand window.

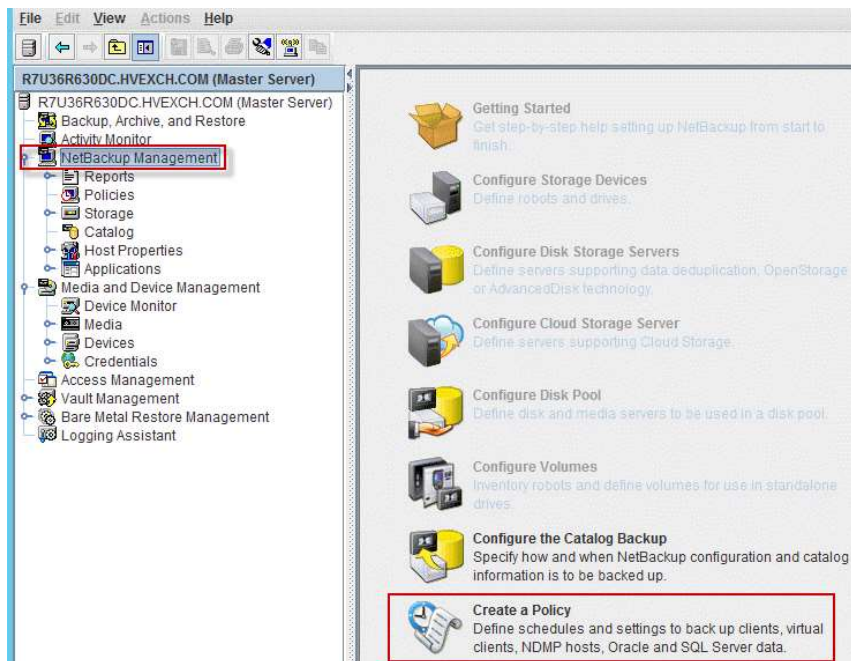


Figure 1 Create a policy



2. Select the data source to create the backup for, use the **default**, and click **Next**.
3. Assign the policy a name, and use **MS-Windows** as the policy type. Click **Next**.
4. Select the client to backup; click **Next**.
5. Specify the files to be backed up; click **Next**.
6. Select the types of backups that will be performed by the policy, click **Next**, set the desired retention schedule, and click **next** to finish setting up the policy. Click **Finish** once the policy is complete. (It may take some time.)
7. Open the policy to modify its properties.
8. Check the **Perform snapshot backups** under the Snapshot Client option. Also check **Instant Recovery** if this feature is to be used.

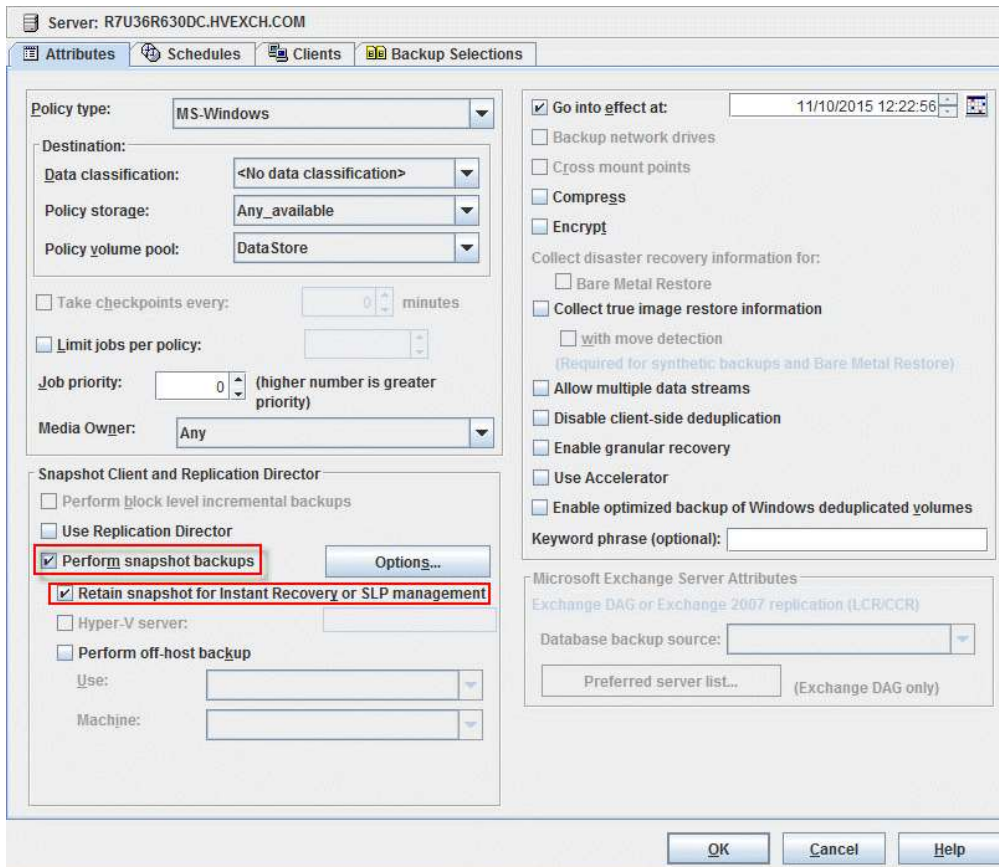


Figure 2 Snapshot Client Settings

9. Click the **Options** button in the Snapshot Client properties.

10. Enter the following information in the Snapshot Client Options box:

- Snapshot method = VSS
- Provider Type = 3 (hardware)
- Snapshot Attribute = 0 (unspecified)
- Maximum Snapshots = 10 (based on preference)

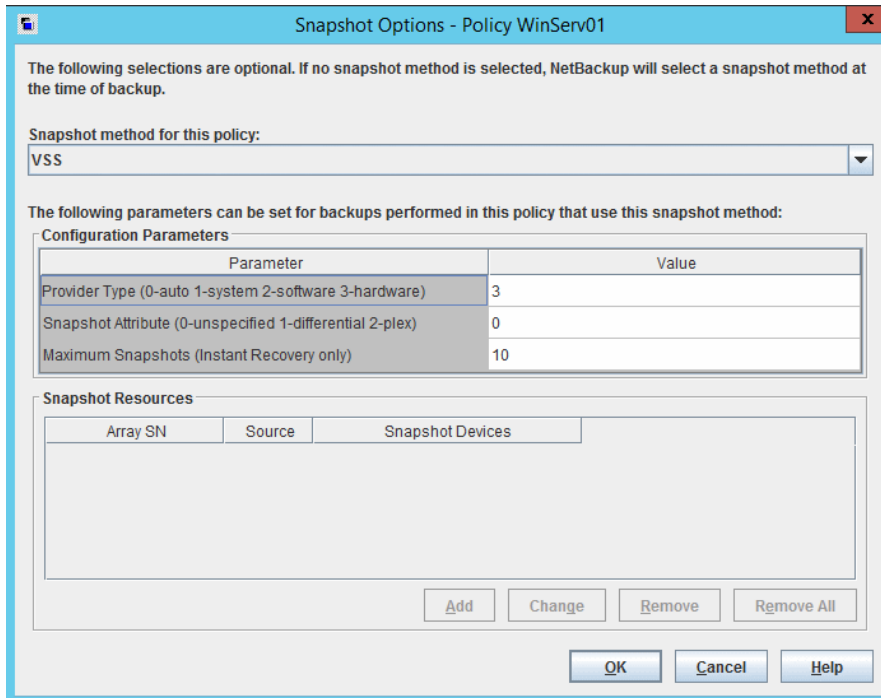


Figure 3 Snapshot Client Options

11. Click **OK** to close the Snapshot Client Options dialog and click **OK** to apply the policy changes.

2.3 NetBackup scheduling and instant recovery configuration

When the policy is selected in the NetBackup Administration Console, the right pane shows the policy attributes for the scheduled job (for example, Full or Differential). Each scheduled job can be configured to use snapshots differently. To modify the default settings, open the scheduled job and select the preferred option.

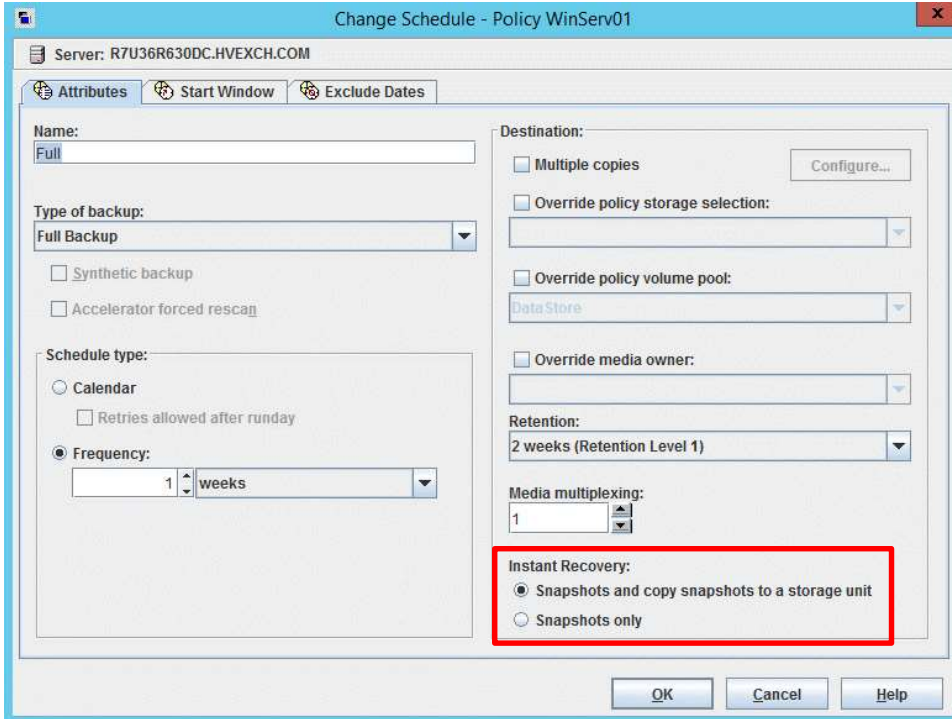


Figure 4 Instant Recovery options

2.4 NetBackup instant recovery

NetBackup recovery tasks can be executed from the client using the Backup, Archive and Restore tool. This tool leverages the recovery points from the jobs executed on the client's behalf. Replays that have been taken of the volumes are immediately mapped to the client without exposing them by a drive letter or mount point. These snapshots (View Volumes) are unmapped from the server and deleted from Storage Center based on the retention settings on the backup job.

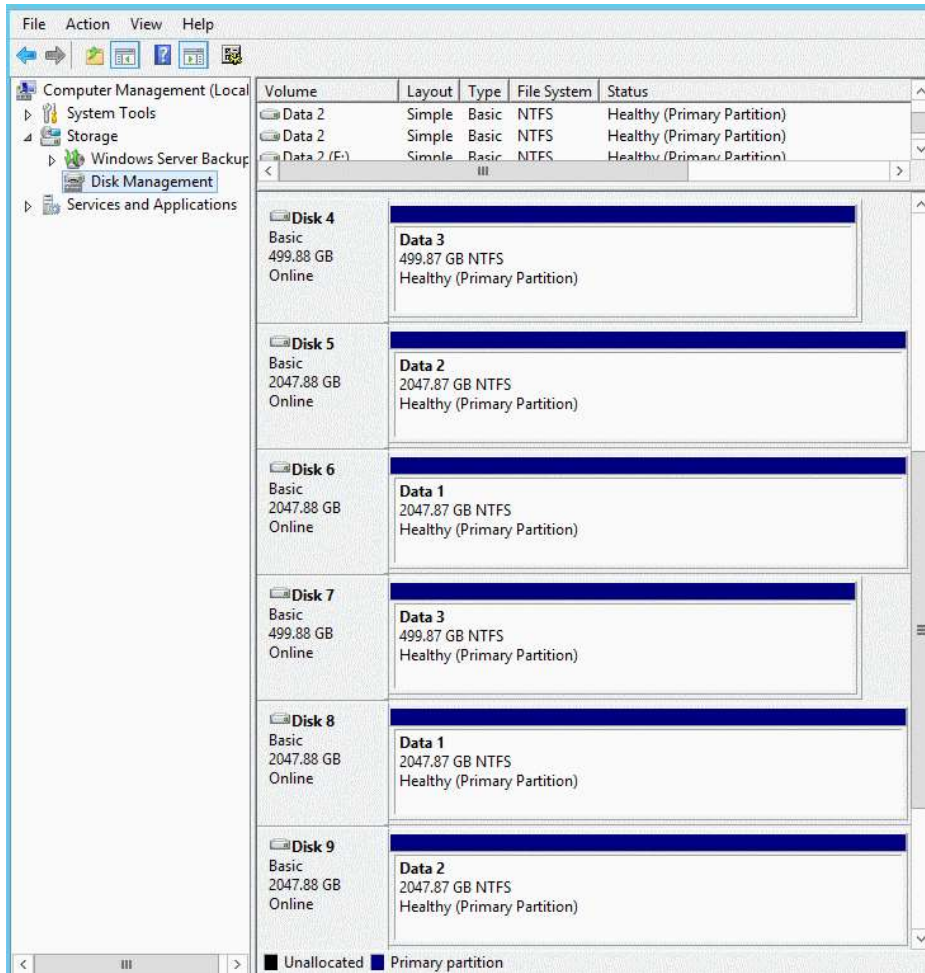


Figure 5 Instant recovery mapped drives



3 NetBackup AdvancedDisk volume

The AdvancedDisk option in NetBackup extends SC Series functionality to provide an efficient, high-speed backup target for housing mission critical backup data. Backup data can be written to the Storage Center using Windows or Linux based media servers. SC Series offers the flexibility to write data on high-performance drives and migrate backup data to less expensive disks as the data ages or write backup data directly to the less costly disks. Alternatively, data can be written to an isolated pool of disks, keeping backup data segregated from production data.

The Storage Center can be used for both BasicDisk and AdvancedDisk storage units in NetBackup. The BasicDisk options allow a directory, locally attached disk or network share to be exposed as a backup target in NetBackup. AdvancedDisk uses a dedicated direct attached disk for storing backup data and offers advanced management features such as disk pools and lifecycle policy management. For additional information on NetBackup storage unit types, see the *NetBackup Shared Storage Guide*.

3.1 Storage profile

SC Series storage profiles dictate the RAID level, storage tier, and how data is moved as it ages. The default profile writes data in at the highest performance tier at RAID 10 and allows Data Progression to move less frequently used data to RAID 5 and lower tiers of storage. This is suitable for production data in most environments.

When using SC Series as a backup target, it may be desirable to change the storage profile to allow backup data to go directly to lower tiers of storage, freeing the faster tiers of storage for production systems. Dell Storage Center ships configured with several predefined Storage Profiles. Two pre-configured options for writing data into lower tiers of storage are the medium priority (Tier 2) profile or low priority (Tier 3) storage profiles. Table 1 lists the characteristics of these two profiles.

Table 1 Default Storage Profiles

Storage Profile	Write Data	Replay Data
Medium priority	Tier 2, RAID 10	Tier 2, RAID 5-9
Low priority	Tier 3, RAID 10	Tier 3, RAID 5-9

Note: A custom storage profile can be created if more control of data placement is required. See the Storage Center documentation for complete instructions on how to create and manage storage profiles.

3.2 Disk pools

SC Series default disk configuration assigns all disks to one folder and ranks the disks based on performance characteristics. This is suitable for production data in most environments as it provides performance and efficient disk utilization. However, when using the Storage Center as a backup target there may be a need to isolate the disks used for production data from the disks used for backup data. SC



Series storage provides the flexibility of creating a new pool of disks to be utilized for backup data. This provides the following benefits:

- Assigns all backup data to lower-costs disks
- Space used for backup data will not affect available space in the production disk pool
- Limits contention between backup and production I/O

However, creating a new disk folder may cause overall storage to be used less efficiently. New disk folders should only be used if performance requirements cannot be met by changing storage profiles. See the version specific Dell Storage Center user guide for instructions on creating a new disk folder for backup data.

3.3 Creating a new backup volume

Use the following instructions to create and configure a new volume to be used as a backup target. More information on creating and managing volumes can be found in the *Dell Storage Center User Guide*.

1. Navigate to **Storage Center > Storage > Volumes** and click **Create Volume**.
2. Assign a name and volume size.
3. If disks are separated into different folders, select the disk folder for the volume.
4. Select **Change** to the right of Replay profile to select it.
5. Select **Change** to the right of server to map to a media server that will host the volume.
6. Select a storage profile.

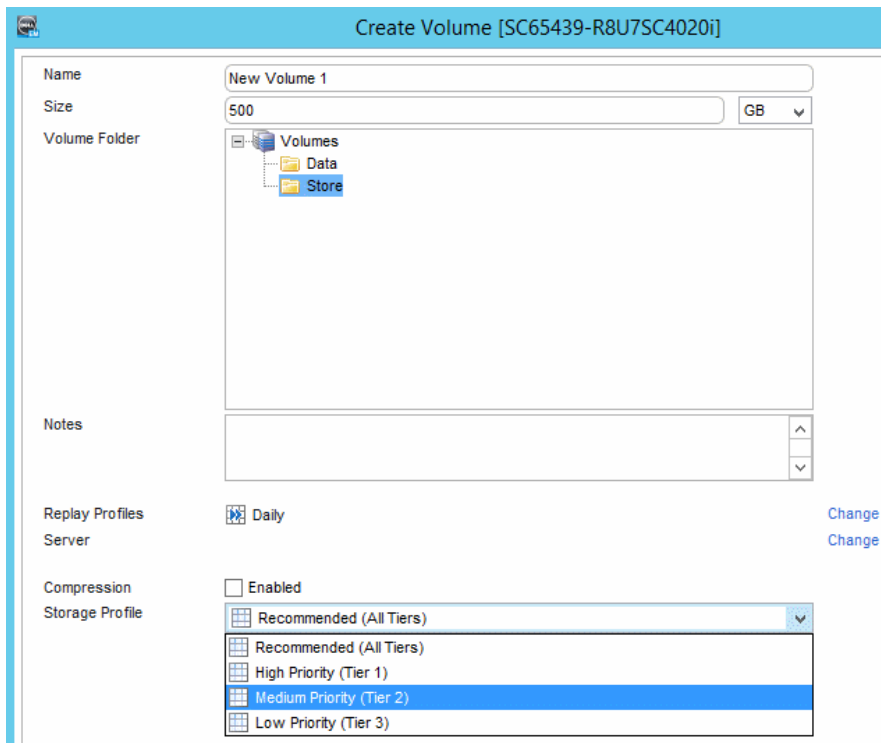


Figure 6 Select storage profile



Note: If the storage profile option is not visible it can be enabled by configuring the Storage Center user preferences for the user to allow storage profile selection as shown in Figure 7.

The screenshot shows the 'Storage Center User Preferences' configuration page. On the left is a navigation menu with options: General, License, Preferences (highlighted), Storage, Time Settings, SMTP Server, SNMP Server, IP Filtering, Users and User Groups, Password Configuration, Directory Services, Dell SupportAssist, and Secure Console. The main content area is titled 'Storage Center User Preferences' and is divided into several sections: 'Volume' (Volume Size: 500 GB, Show Block Size Option: unchecked, Base Volume Name: New Volume), 'Read Cache' (Enabled: checked), 'Write Cache' (Enabled: checked, Allow Cache Selection: unchecked), 'Compression' (Enabled: unchecked, Allow Compression Selection: checked), 'Replay' (Replay Profiles: Daily, Minimum Replay Interval: 5), 'Server' (Allow Advanced Mapping: checked, Operating System: Other Singlepath), and 'Storage' (Storage Profile: Recommended (All Tiers), Allow Storage Profile Selection: checked). The 'Allow Storage Profile Selection' checkbox is highlighted with a red rectangular box.

Figure 7 Configure user's volume defaults options

7. Verify settings and click **OK** to create the volume.
8. For Windows systems, use Microsoft Disk Management to format the disk and give it a drive letter.
9. On Linux systems, mount the volume to expose it to the OS. See [Free space recovery in Linux](#) for details on ext4 and native free space recovery support.

The drive is now ready to be used as a backup store in NetBackup.

3.4 Configuring AdvancedDisk for Windows Server

The process of using an SC Series volume to host backup data on a Windows based media server involves two parts. The first is to add the SC Series volume to the media server and the second step is to add the volume to NetBackup as an AdvancedDisk.

3.5 Adding the SC Series volume to the media server

Detailed steps for adding a volume to a Microsoft Windows server can be found in the section, Creating a new backup volume, and in the Storage Center user guide. Be sure to modify settings such as storage profile and disk folder that differ from the default settings.



3.6 Creating AdvancedDisks

Once the disk is created, mapped and mounted or assigned a drive letter on the NetBackup media server, it can be used as an AdvancedDisk backup target. Use the instruction below to add the disk to NetBackup.

1. Open the NetBackup Administration console. In the left-hand panel, select **Media and Device Management** and then double-click the **Configure Disk Storage Servers** option in the right-hand panel.

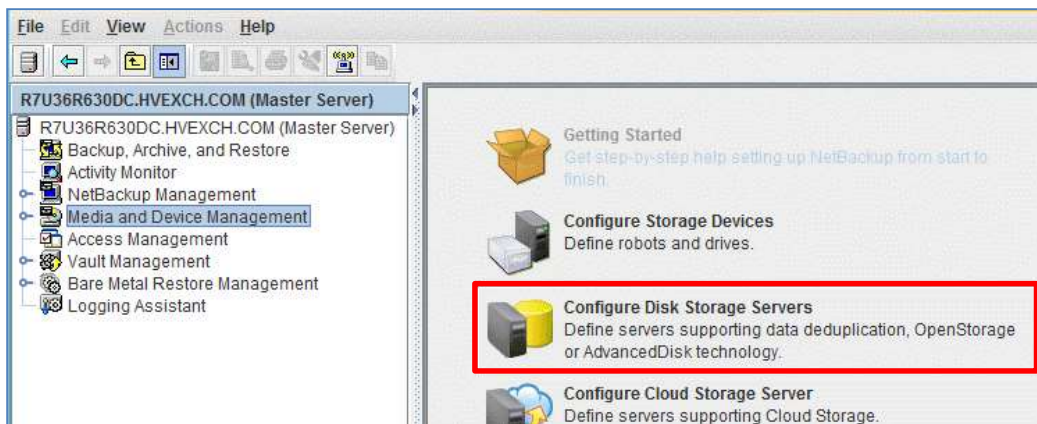


Figure 8 Configure Disk Storage Servers

2. Confirm that the AdvancedDisk option is selected and click **Next** at the Configuration Wizard Welcome Screen.

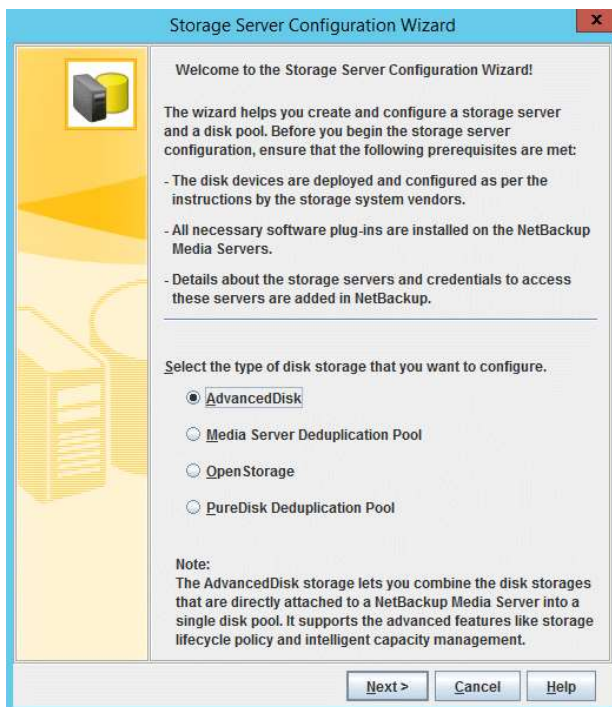


Figure 9 Select type of disk storage

3. Verify the Storage Server/media Server with the SC Series volume(s) and click **Next**.

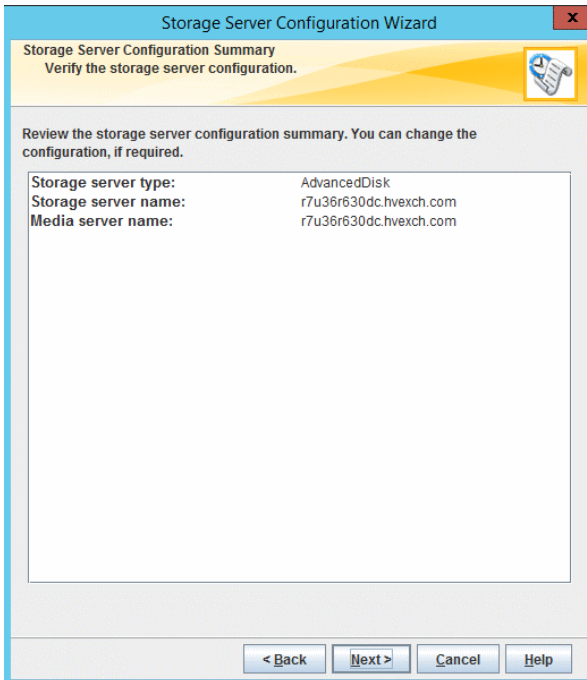


Figure 10 Verify storage server configuration

4. Once the storage server has been created, click **Next**.

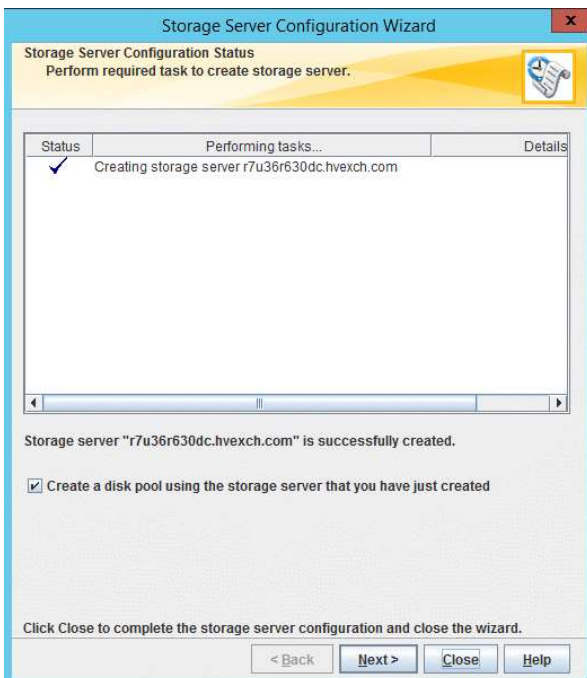


Figure 11 Storage server created with disk pool option checked



The following steps configure the disk pool in NetBackup.

5. Confirm that the **Create a disk pool** option is checked then click **Next** to continue the wizard for disk pool creation.
6. Select the SC Series volume(s) and click **Next**.

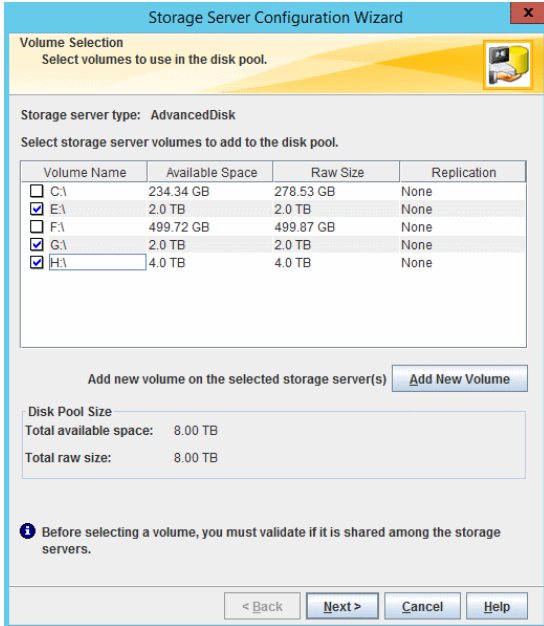


Figure 12 Volume selection

7. Enter a name for the new disk pool and the I/O streams limit if any. Click **Next** to continue.

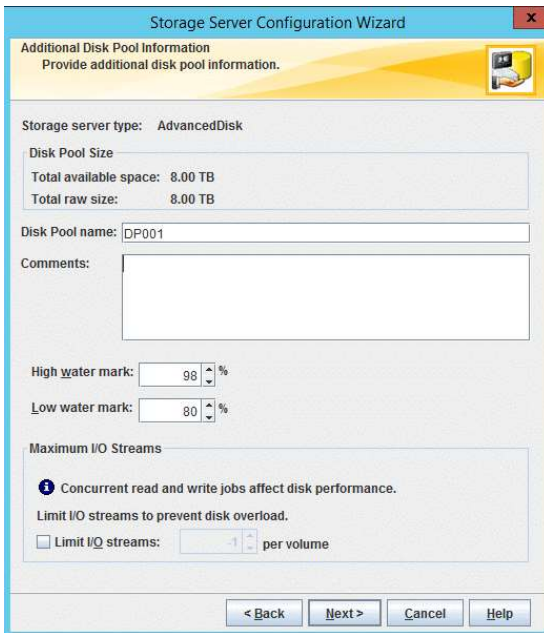


Figure 13 Additional pool information



8. Verify the configuration and select **Next** to continue.

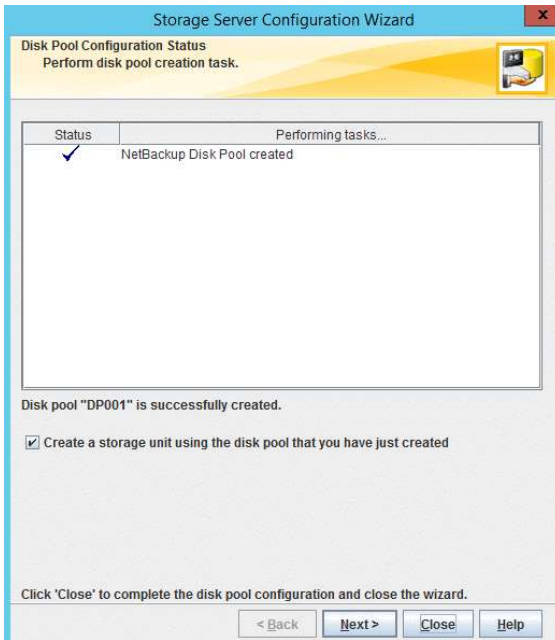


Figure 14 Disk pool created with storage unit option checked

9. Click **Next** to create a storage unit for the newly created pool.

10. Enter the storage unit name. If the storage unit will be dedicated to the Media Server, select it, and the **Maximum concurrent jobs** for the storage unit. Click **Next**. On the completed page, click **Finish**. The storage is now available to be assigned to a policy in NetBackup.

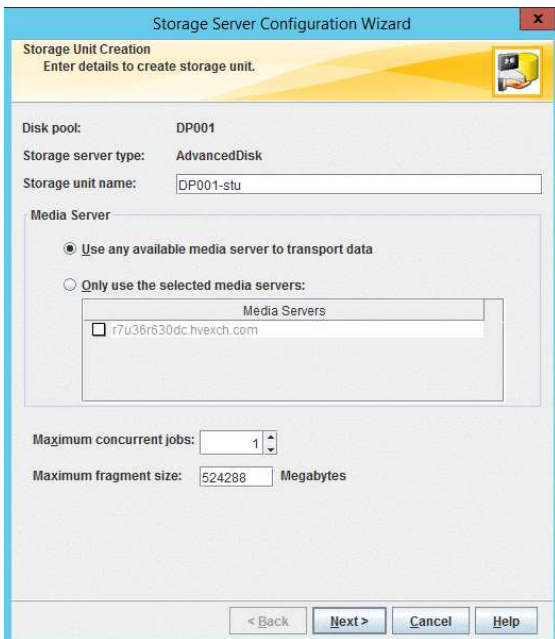


Figure 15 Storage unit creation



3.7 Configuring AdvancedDisk for Linux

The process for configuring a Linux based media server to use an SC Series volume as a backup target is similar to the process for a Windows media server. The volume must be configured and mounted on the media server, and then the storage unit has to be configured in NetBackup.

The process of attaching an SC Series volume to a Linux host will differ based on the connection protocol used. The Dell Compellent Linux Best Practices guide outlines the process for managing SC Series volumes in Linux:

[Dell Storage Center with Red Hat Enterprise Linux \(RHEL\) 7x Best Practices](http://en.community.dell.com/techcenter/extras/m/white_papers/20440304)

http://en.community.dell.com/techcenter/extras/m/white_papers/20440304

[Dell Storage Center with Red Hat Enterprise Linux \(RHEL\) 6x Best Practices](http://en.community.dell.com/techcenter/extras/m/white_papers/20437964)

http://en.community.dell.com/techcenter/extras/m/white_papers/20437964

Once the Volume is mounted, it can be added as a storage unit in NetBackup. The process is the same as outlined in the previous [Creating AdvancedDisk](#) section.



4 Reclaiming free space

4.1 Free space recovery in Windows

Backup data is written to and removed from storage based on predefined retention policies. Over time, this could result in a misalignment between the space usage reported on the Windows Server and on the Storage Center. Free space recovery is available for Microsoft Windows servers with the Enterprise Manager Server Agent. The space recovery process finds and recovers unused space as reported by Windows. Details on how to recover free space can be found in the *Enterprise Manager User Guide*, located on the [SC Series Customer Portal](#).

4.2 Free space recovery in Linux

Red Hat Enterprise Linux 6 and its variants natively support the UNMAP command when mounting a file system with ext4 using the **discard** option. In this configuration, the file system natively identifies the storage blocks that are no longer in use. This allows Storage Center version 5.4 and up to re-claim those pages from the volume. More information can be found in the document, *Native Free Space Recovery in Red Hat Linux* available on the following links:

[Dell Storage Center with Red Hat Enterprise Linux \(RHEL\) 7x Best Practices](#)

http://en.community.dell.com/techcenter/extras/m/white_papers/20440304

[Dell Storage Center with Red Hat Enterprise Linux \(RHEL\) 6x Best Practices](#)

http://en.community.dell.com/techcenter/extras/m/white_papers/20437964

Due to the support of the UNMAP command, it is recommended to use ext4 with the **discard** option when possible.



A Additional resources

For more information about the Dell Storage Center and other Dell Storage solutions, refer to the administrator and user guides, best practices guides, videos, and reference architectures found at Dell TechCenter:

<http://en.community.dell.com/techcenter/storage/>

