



# Setting Up the Dell<sup>TM</sup> DR Series System on Symantec<sup>TM</sup> Backup Exec<sup>TM</sup>

Dell Engineering  
July 2015

## Revisions

Date	Description
January 2014	Initial release
August 2014	Added screenshots where new functionality is introduced in 2014
April 2015	Added screenshots for updates to DR Series system functionality for v3.2
July 2015	Consolidated content for various container types and updated cleaner recommendation

THIS WHITE PAPER IS FOR INFORMATIONAL PURPOSES ONLY, AND MAY CONTAIN TYPOGRAPHICAL ERRORS AND TECHNICAL INACCURACIES. THE CONTENT IS PROVIDED AS IS, WITHOUT EXPRESS OR IMPLIED WARRANTIES OF ANY KIND.

© 2015 Dell Inc. All rights reserved. Reproduction of this material in any manner whatsoever without the express written permission of Dell Inc. is strictly forbidden. For more information, contact Dell.

PRODUCT WARRANTIES APPLICABLE TO THE DELL PRODUCTS DESCRIBED IN THIS DOCUMENT MAY BE FOUND AT: <http://www.dell.com/learn/us/en/19/terms-of-sale-commercial-and-public-sector> Performance of network reference architectures discussed in this document may vary with differing deployment conditions, network loads, and the like. Third party products may be included in reference architectures for the convenience of the reader. Inclusion of such third party products does not necessarily constitute Dell's recommendation of those products. Please consult your Dell representative for additional information.

Trademarks used in this text:

Dell™, the Dell logo, and PowerVault™ are trademarks of Dell Inc. Other Dell trademarks may be used in this document. Microsoft®, Windows®, Windows Server®, Internet Explorer®, MS-DOS®, Windows Vista® and Active Directory® are either trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries. Symantec™ and Backup Exec™ are trademarks owned by Symantec Corporation or its affiliates in the U.S. and other countries. Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and/or names or their products and are the property of their respective owners. Dell disclaims proprietary interest in the marks and names of others.



# Table of contents

Executive summary.....	5
1 Installing and configuring the DR Series system .....	6
2 Configuring the DR Series system as a backup to disk target on Symantec Backup Exec .....	10
2.1 Creating a CIFS Container for use with Symantec Backup Exec 2012, 2014, and 2015.....	10
2.2 Adding the DR Series system container share as a disk storage device on Backup Exec 2012/2014/2015.	13
2.3 Creating a new backup job with the DR Series system as a target .....	17
2.4 Setting up DR Series system replication and restore from the replication target .....	25
2.4.1 Creating the replication session .....	25
2.4.2 Restoring from the replication target.....	28
3 Configuring VTL .....	31
3.1 Creating a VTL container.....	31
3.2 Setting the iSCSI target CHAP credentials .....	33
3.3 Configuring the iSCSI target – Windows.....	34
3.4 Configuring the iSCSI target – Linux.....	38
3.5 Adding additional media to the VTL container .....	39
3.6 Configuring the DR Series system VTL in Backup Exec .....	41
3.7 Performing backup and restore using DR VTL.....	46
3.8 Restoring from tape.....	58
4 Configuring an OST container on the DR Series system for use with Symantec Backup Exec Server 2014/2015	65
4.1 Creating an OST container.....	65
4.2 Installing the OST plugin.....	67
4.3 Configuring the OST device in Backup Exec.....	70
4.4 Performing backup and restore using the DR Series system OST device .....	76
4.6 Restoring data.....	86
5 Setting up the DR Series system cleaner .....	93
6 Monitoring deduplication, compression, and performance .....	94
A Setting data expiration for Backup Exec 2012/2014/2015.....	95
B Installing Backup Exec Agent on Linux client (RALUS).....	96
C VTL configuration guidelines .....	97
C.1 Installing latest Backup Exec service packs for the DR Series system iSCSI VTL capability.....	97
C.2 Managing VTL media and space use.....	97



C.2.1 General performance guidelines for DMA configuration..... 97  
C.2.2 Physical DR space sizing and planning..... 97  
C.2.3 Logical VTL geometry and media sizing..... 98  
C.2.4 Media retention and grouping..... 99  
C.2.5 VTL media count guidelines..... 99  
C.2.6 Space reclamation guidelines..... 100



## Executive summary

This document provides information about how to set up the Dell DR Series system for Symantec Backup Exec, including:

- Configuring the DR Series system as a backup to disk target for Symantec Backup Exec 2012, 2014, and 2015
- Configure a virtual tape library (VTL) of the DR Series System into Backup Exec Server 2014/2015
- Configuring an OST container on the DR Series system for use with Symantec Backup Exec Server 2014/2015

For additional information, see the DR Series system documentation and other data management application best practices whitepapers for your specific DR Series system at:

<http://www.dell.com/powervaultmanuals>

**Note:** The DR Series system/Symantec Backup Exec build version and screenshots used for this paper may vary slightly, depending on the version of the DR Series system/Symantec Backup Exec software version you are using.

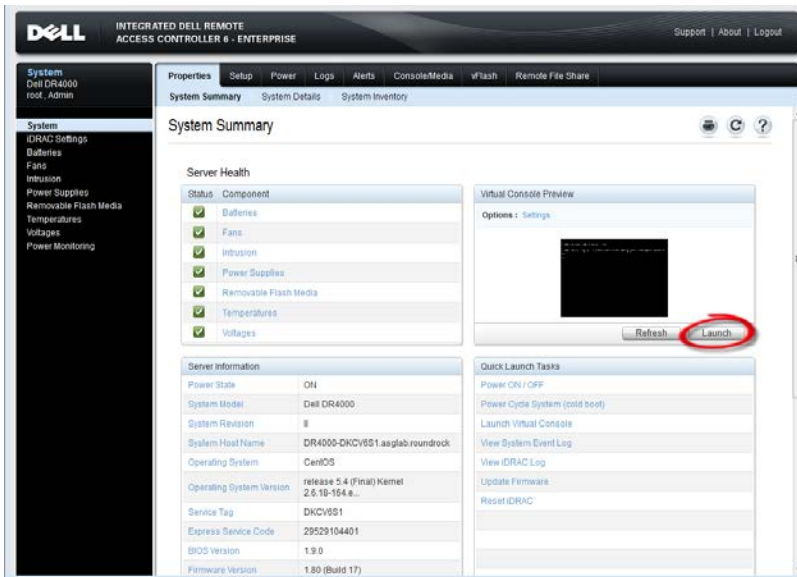


# 1 Installing and configuring the DR Series system

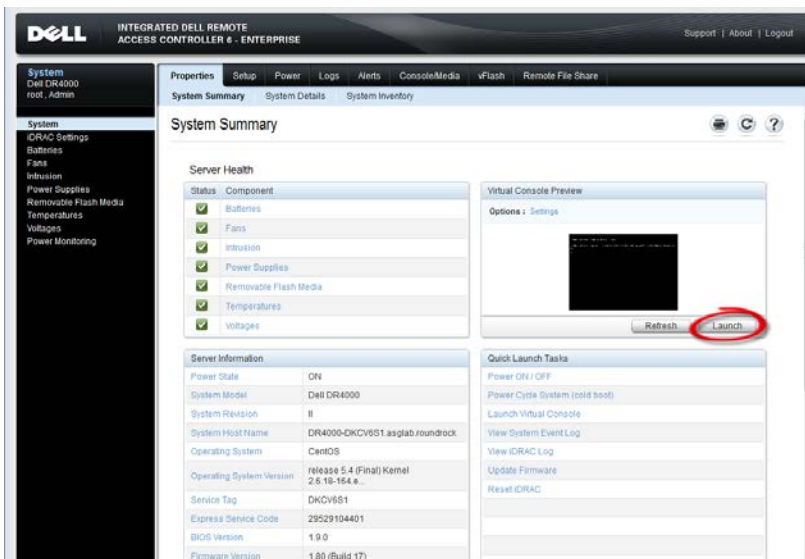
1. Rack and cable the DR Series appliance, and power it on.

In the *Dell DR Series System Administrator Guide*, refer to the sections, "iDRAC Connection", "Logging in and Initializing the DR Series System", and "Accessing iDRAC6/iDRAC7 Using RACADM" for information about using iDRAC connection and initializing the system.

2. Log on to iDRAC using the default address **192.168.0.120**, or the IP address that is assigned to the iDRAC interface, with the user name and password of "**root/calvin**".



3. Launch the virtual console.



4. After the virtual console is open, log on to the system as the user administrator with the password **St0r@ge!** (The "0" in the password is the numeral zero).

```
Ucarina release 1 (EAR-1.00.00) Build: 32850
Kernel 2.6.18-164.el5 on an x86_64

localhost login: administrator
Password: St0r@ge!
```

5. Set the user-defined networking preferences.

```
Would you like to use DHCP (yes/no) ?
Please enter an IP address:
Please enter a subnet mask:
Please enter a default gateway address:
Please enter a DNS Suffix (example: abc.com):
Please enter primary DNS server IP address:
Would you like to define a secondary DNS server (yes/no) ?
Please enter secondary DNS server IP address:
```

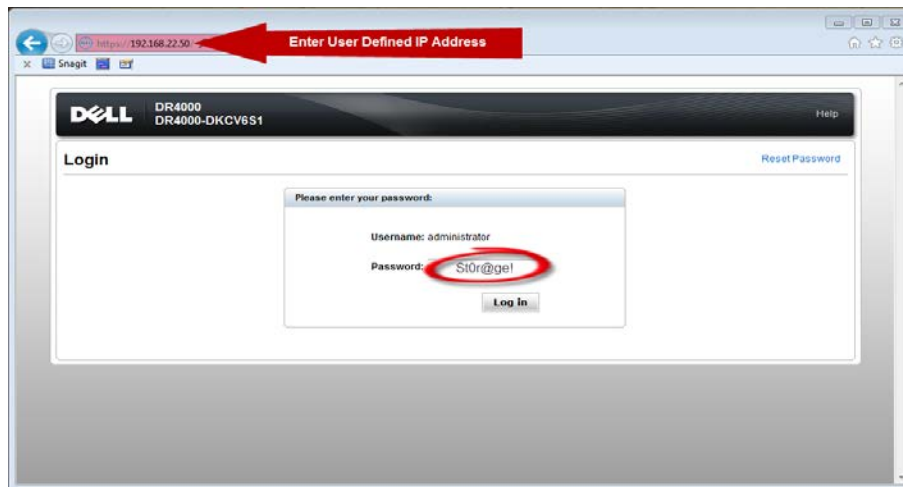
6. View the summary of preferences and confirm that it is correct.

```
=====
                          Set Static IP Address
IP Address                 : 10.10.86.108
Network Mask                : 255.255.255.128
Default Gateway             : 10.10.86.126
DNS Suffix                  : idmdemo.local
Primary DNS Server          : 10.10.86.101
Secondary DNS Server        : 143.166.216.237
Host Name                   : DR4000-5

Are the above settings correct (yes/no) ? _
```



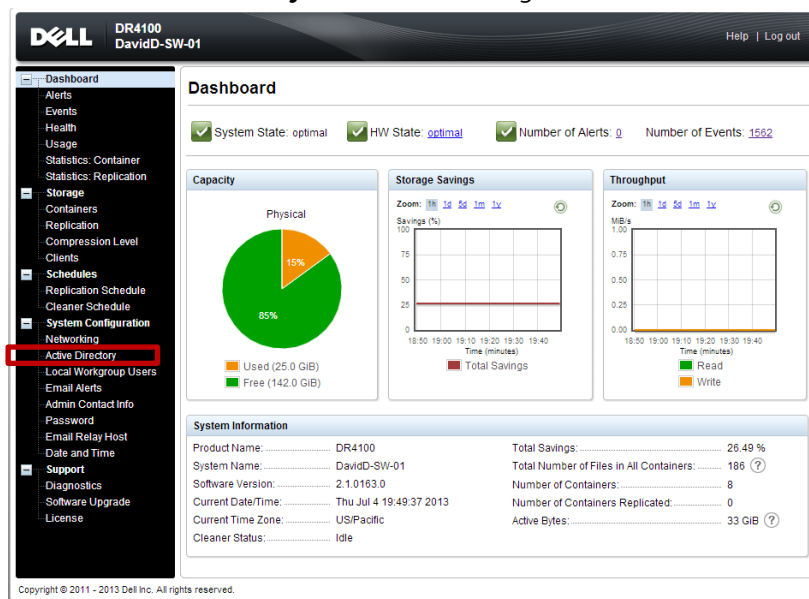
8. Log on to DR Series system administrator console using the IP address you just provided for the DR Series system, with username administrator and password **St0r@ge!** (The "0" in the password is the numeral zero).



9. Join the DR Series system to Active Directory.

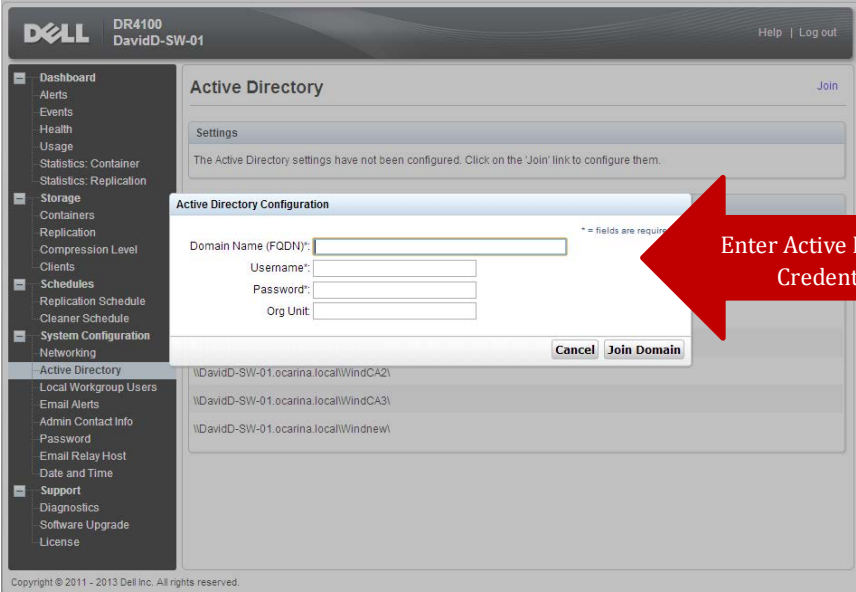
**Note:** If you do not want to add the DR Series system to Active Directory, see the *DR Series System Owner's Manual* for guest login instructions.

- a. Select **Active Directory** from the left navigation area of the DR Series system GUI.





b. Enter your Active Directory credentials.



## 2 Configuring the DR Series system as a backup to disk target on Symantec Backup Exec

### 2.1 Creating a CIFS Container for use with Symantec Backup Exec 2012, 2014, and 2015

1. Create a container by selecting **Containers** in the left navigation area, and then clicking **Create** at the top of the page.

The screenshot shows the Dell DR4000 web interface. The left navigation menu is expanded to 'Storage', and 'Containers' is selected, indicated by a red box and a '1' in a red circle. The main content area is titled 'Containers' and shows a table of existing containers. A 'Create' button is highlighted with a red box and a '2' in a red circle. The table has the following data:

Containers	Files	Marker Type	Access Protocol Enabled	Replication	Select
backup	0	Auto	NFS, CIFS	Not Configured	<input type="radio"/>
ndmpvtl	31	None	VTL NDMP	Not Configured	<input type="radio"/>
vm_cifs2	4	None	CIFS	Online	<input type="radio"/>
vol_be_cifs1	24	None	CIFS	Online	<input type="radio"/>
vol_be_ost1	13	None	Symantec OST	N/A	<input type="radio"/>

2. Enter a Container Name, and then click **Next**.

The screenshot shows the 'Container Wizard - Create New Container' dialog box. The 'Container Name' field is filled with 'backup' and is highlighted with a red box. The 'Next >' button is also highlighted with a red box. The dialog box includes a note: 'Max 32 characters, including only letters, numbers, hyphen, and underscore. Name must start with a letter.' and a 'Virtual Tape Library (VTL)' checkbox which is unchecked.



3. Select **NAS (NFS, CIFS)** and click **Next**.

Container Wizard - Create New Container

Select Access Protocols

Storage Access Protocol:

- Dell Rapid Data Storage (RDS)
- Symantec OpenStorage (OST)
- NAS (NFS, CIFS)

Container Name and Type  
backup

< Back   Cancel   Next >

4. For the CIFS access protocol, select **CIFS** and click **Next**.

Container Wizard - Create New Container

Configure NAS Access

Enable Access Protocols:

- NFS (Use NFS to backup UNIX or LINUX clients)
- CIFS (Use CIFS to backup MS Windows clients)

Marker Type:

- None
- Auto
- Networker
- Unix Dump
- BridgeHead
- Time Navigator

Container Name and Type  
backup

Access Protocols  
NAS (NFS, CIFS)

< Back   Cancel   Next >

5. Select **Open** to allow all clients access or enter client details for client access. Click **Next**.

Container Wizard - Create New Container

Configure CIFS Client Access

Client Access:

- Open (allow all clients)
- Create Client Access List

Client FQDN or IP:  Add

allow access client(s):  Remove

Container Name and Type  
backup

Access Protocols  
NAS (NFS, CIFS)  
Auto

< Back   Cancel   Next >



6. Click **Create a New Container** on the summary page.

Container Wizard - Create New Container \* = required fields

Configuration Summary

<b>Container Name and Type</b> Container Name: backup	<b>CIFS Access</b> Open (allow all clients):
<b>Access Protocols</b> Access Protocol: NAS (NFS, CIFS) Marker Type: Auto	

[< Back](#)   [Cancel](#)   [Create a New Container](#)

7. Verify the container creation.

DELL DR4000 administrator (Log out) | Help

e-shelf1.ocarina.local

**Containers** [Create](#) | [Edit](#) | [Delete](#) | [Display Statistics](#)

**Message**

- Successfully added container "backup".
- Successfully added CIFS connection for container "backup".
- Successfully enabled container "backup" with the following marker(s) "Auto".

Number of Containers: 5      Container Path: /containers

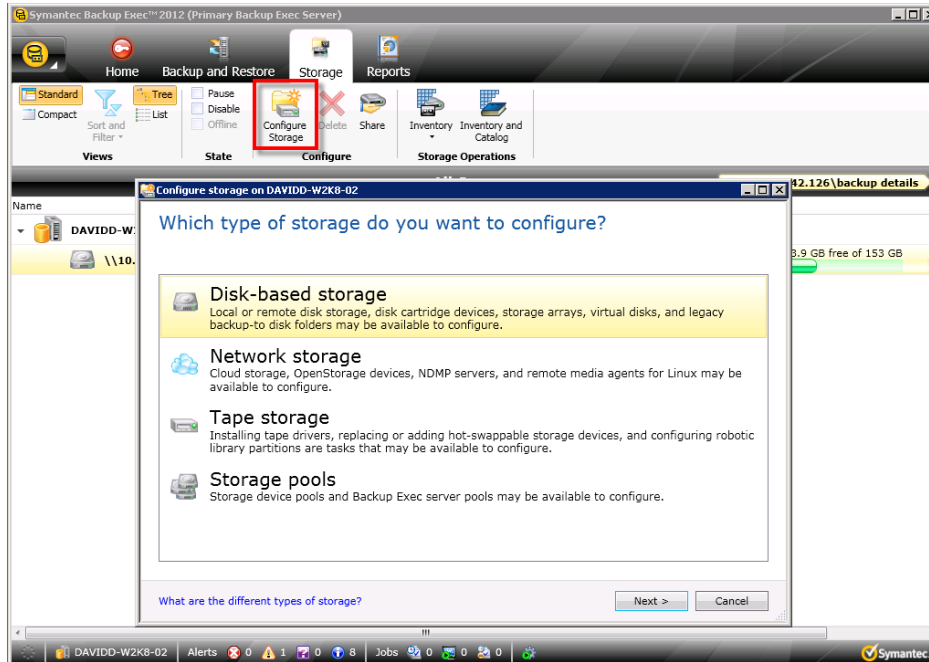
Containers	Files	Marker Type	Access Protocol Enabled	Replication	Select
backup	0	Auto	CIFS	Not Configured	<input type="radio"/>
ndmpvtl	31	None	VTL NDMP	Not Configured	<input type="radio"/>
vm_cifs2	4	None	CIFS	Online	<input type="radio"/>
vol_be_cifs1	24	None	CIFS	Online	<input type="radio"/>
vol_be_ost1	13	None	Symantec OST	N/A	<input type="radio"/>

Copyright © 2011 - 2015 Dell Inc. All rights reserved.

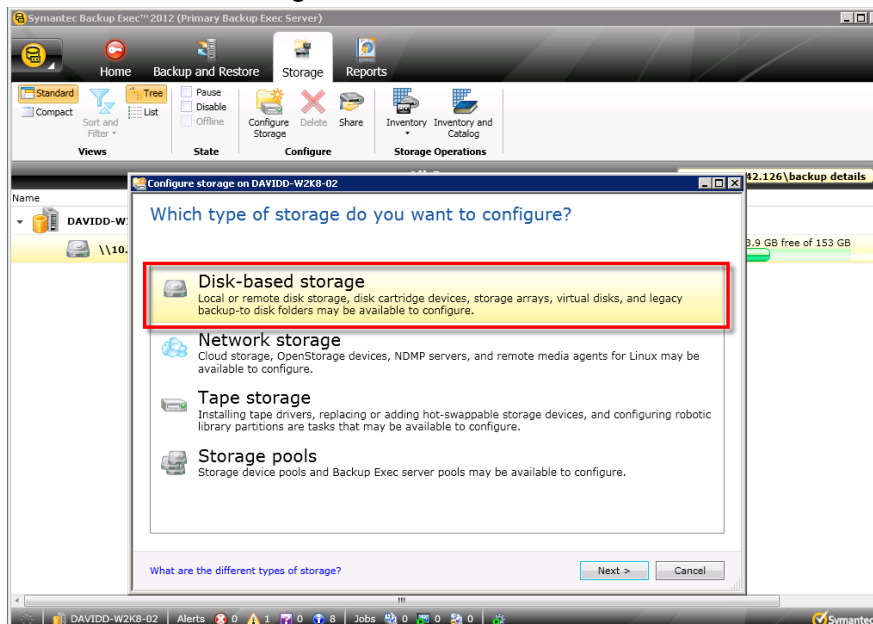


## 2.2 Adding the DR Series system container share as a disk storage device on Backup Exec 2012/2014/2015

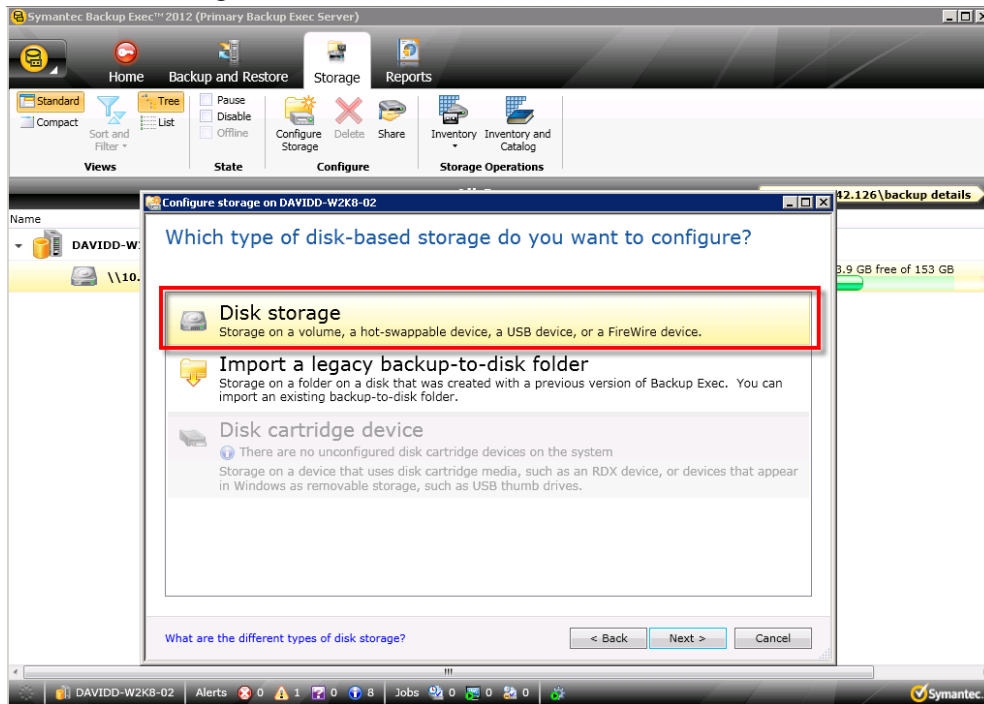
1. Open the Backup Exec console. In the Storage pane, click **Configure Storage**.



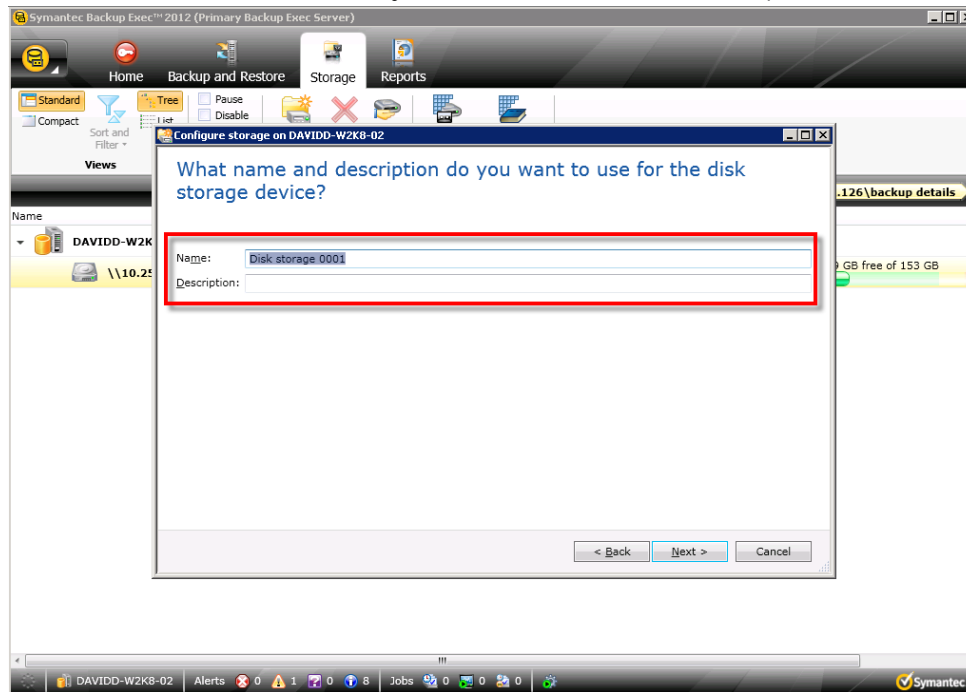
2. Select **Disk-based storage**, and click **Next**.



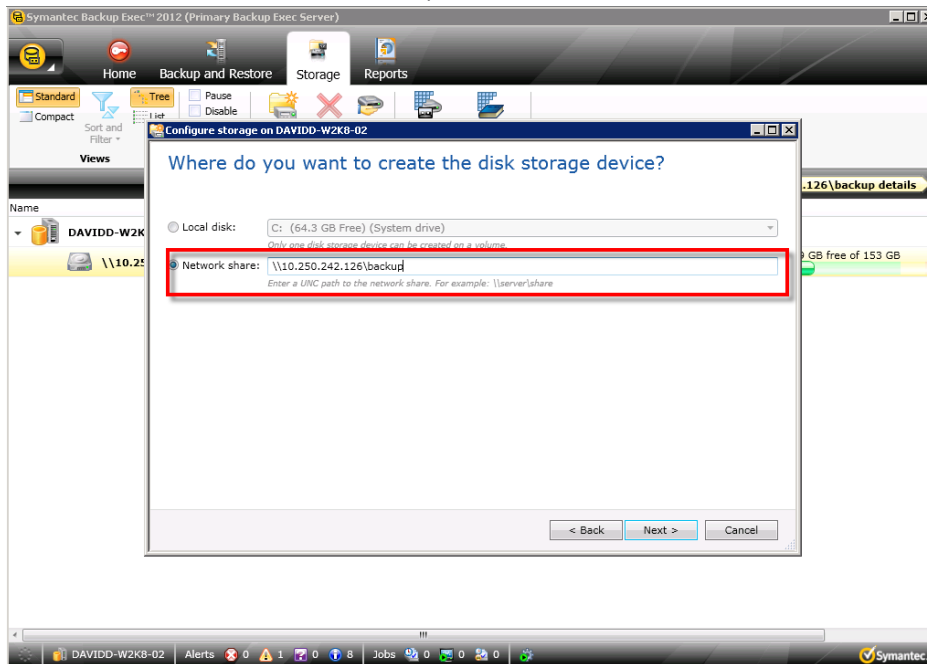
3. Select **Disk Storage**, and click **Next**.



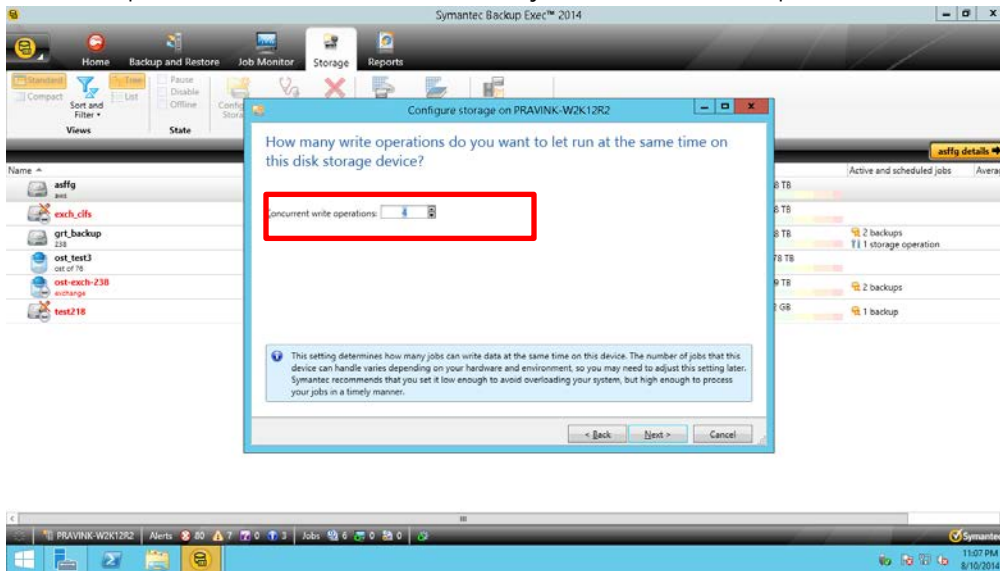
4. Enter a name for the DR Series system disk device, add a description, and click **Next**.



5. Enter the DR container CIFS share path, and click **Next**.



6. For Backup Exec 2014/2015 - set how many concurrent write operations are allowed. Click **Next**.



**Note:** The DR Series system supports the following number of concurrent writes to CIFS Storage:

DR4x00 – 32

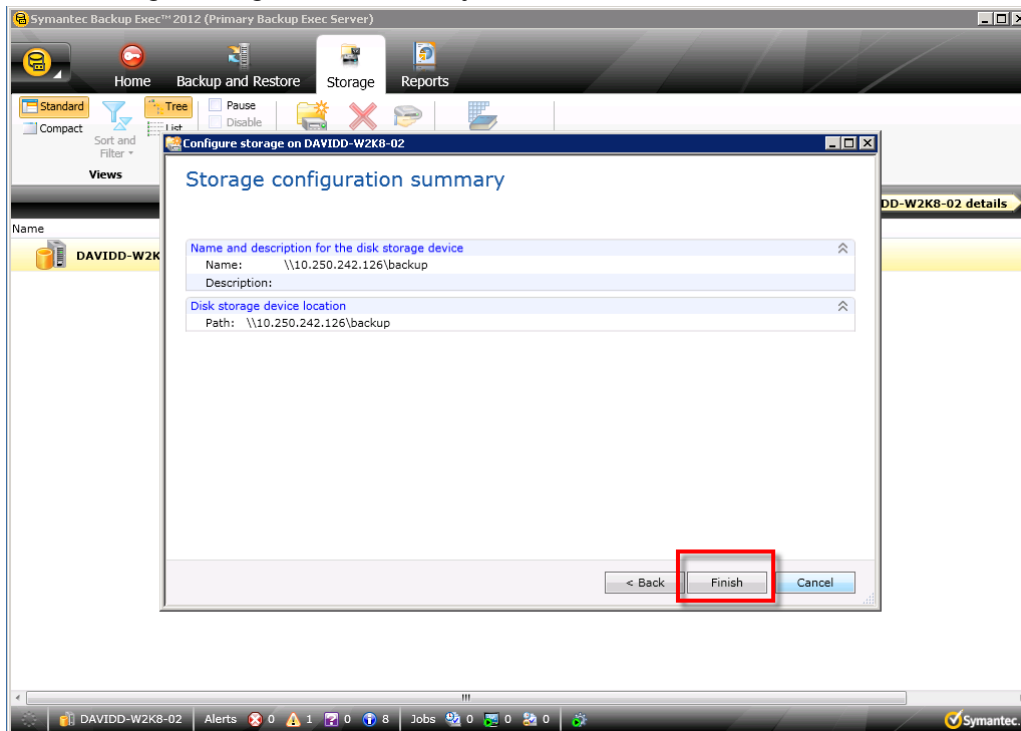
DR6000 – 64

DR2000V – 8

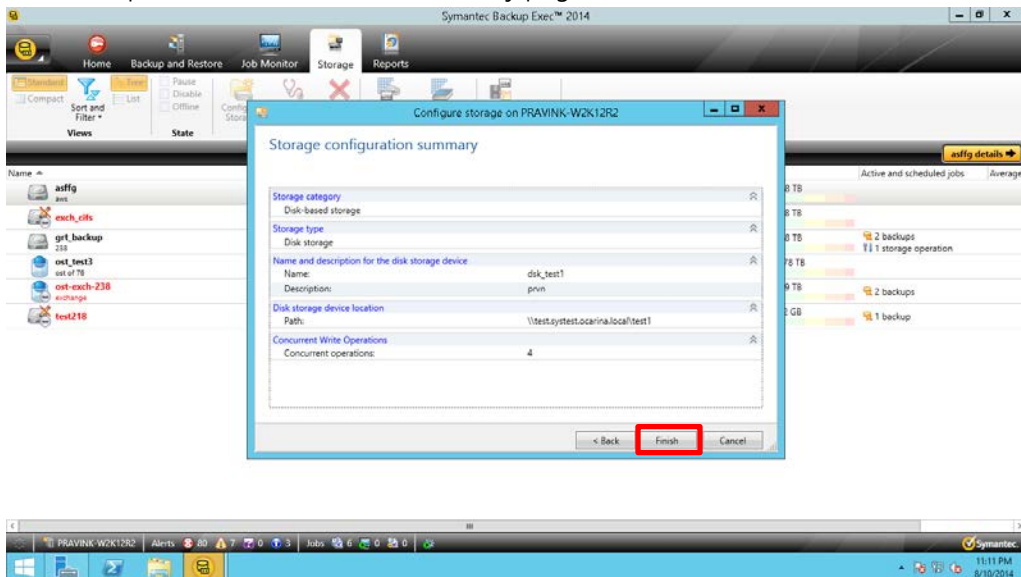
To change this number later at any time, go to the **Storage** tab, select the required Storage device and see the details. In the **Properties** page, there is an option to update concurrent operations.



6. In the Storage Configuration Summary window, click **Finish**.

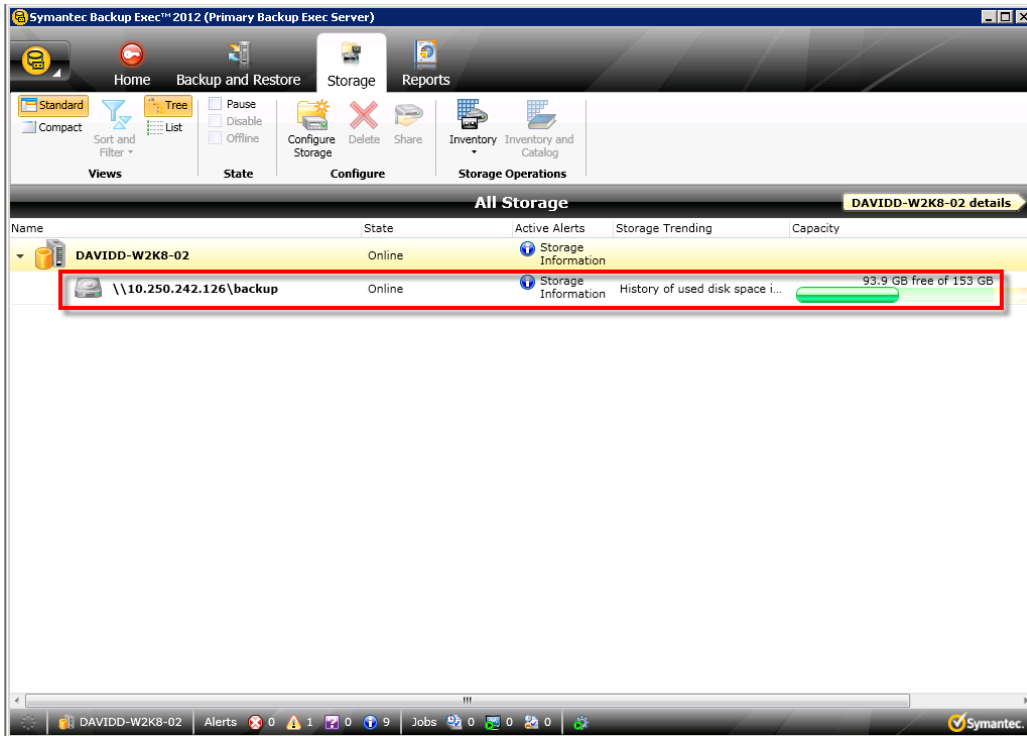


For Backup Exec 2014/2015, the summary page will include additional details.



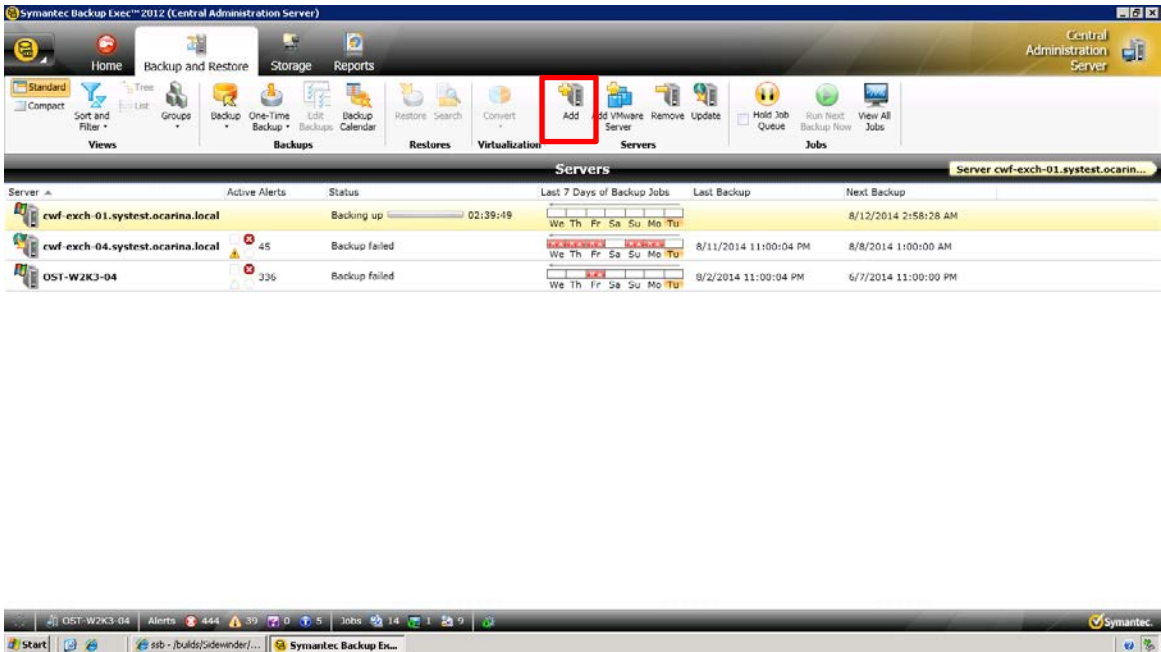


- Verify that the Disk Storage Device is attached to the server.

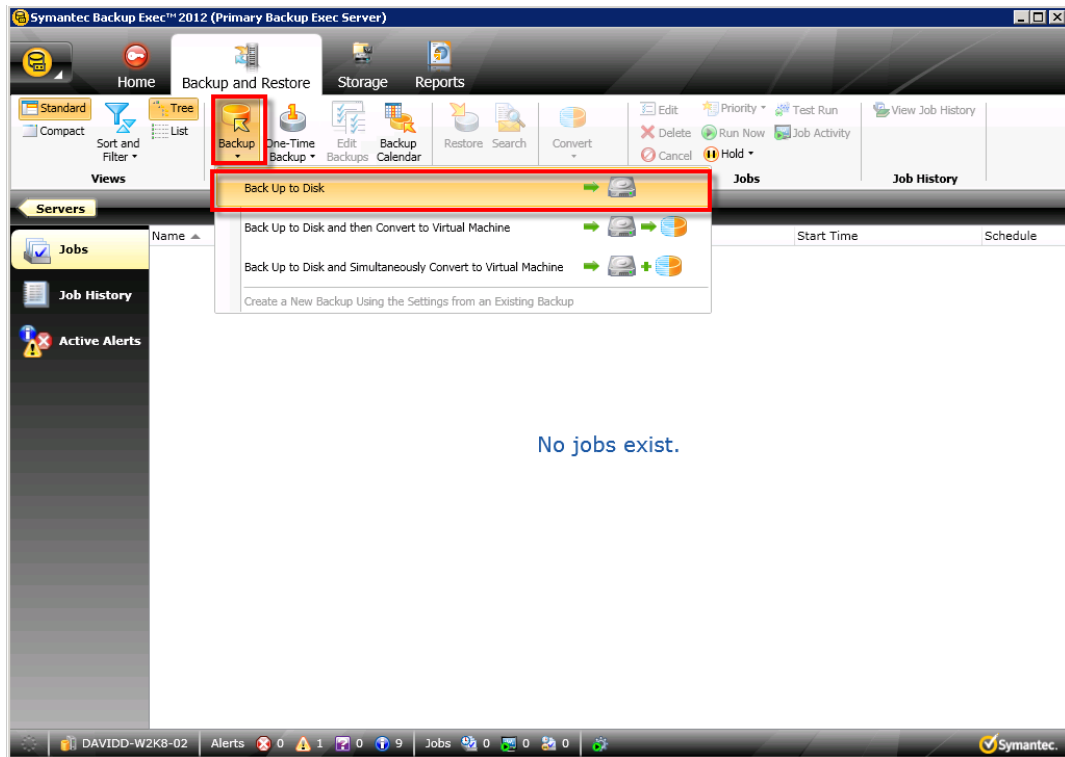


## 2.3 Creating a new backup job with the DR Series system as a target

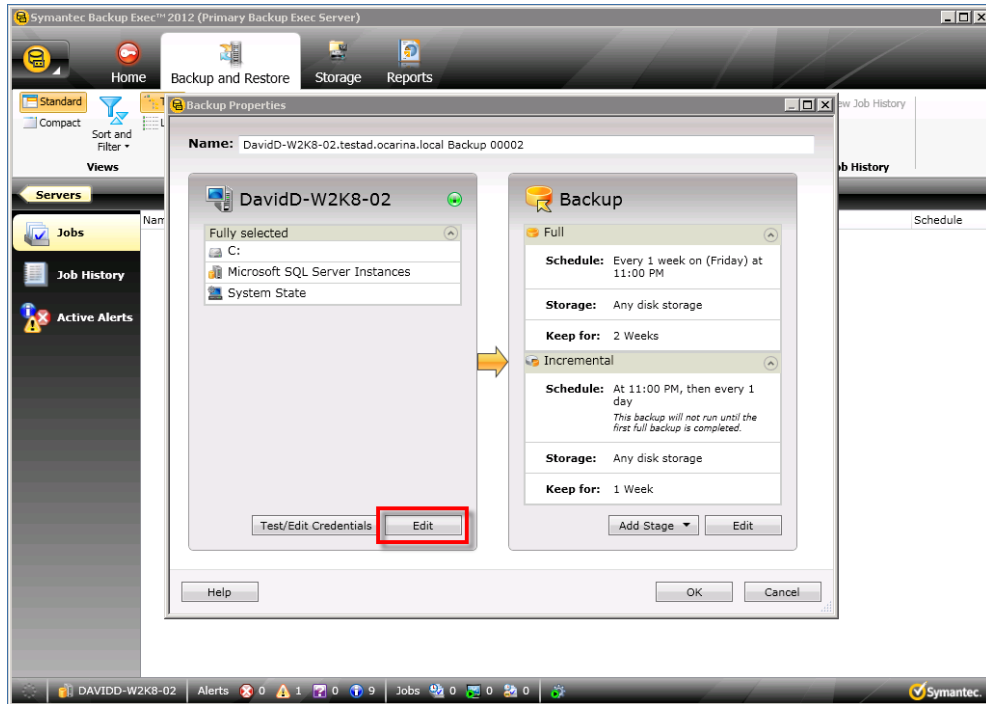
- If the required source client server is not added in Backup Exec, it can be added by selecting the **Backup and Restore** pane and then clicking the **Add** button.



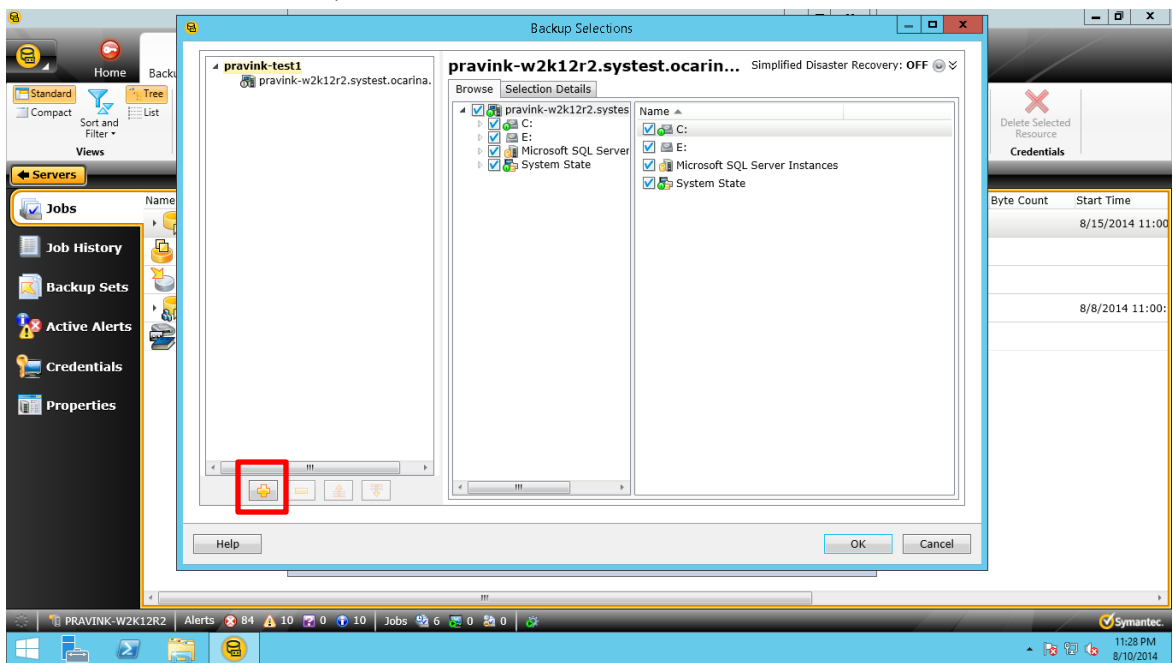
2. Follow the wizard by selecting the required type of server and continue.
3. In the Backup and Restore pane, click **Backup > Back Up to Disk**.



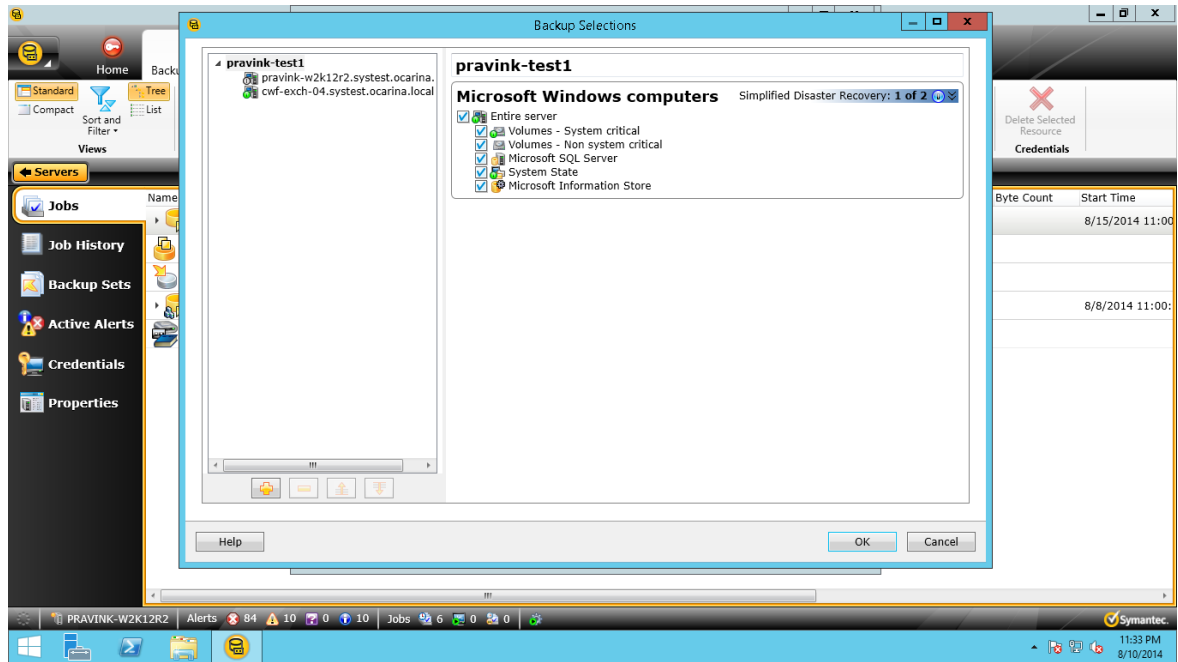
4. In the backup source selection pane, click **Edit**. Select the backup data set.



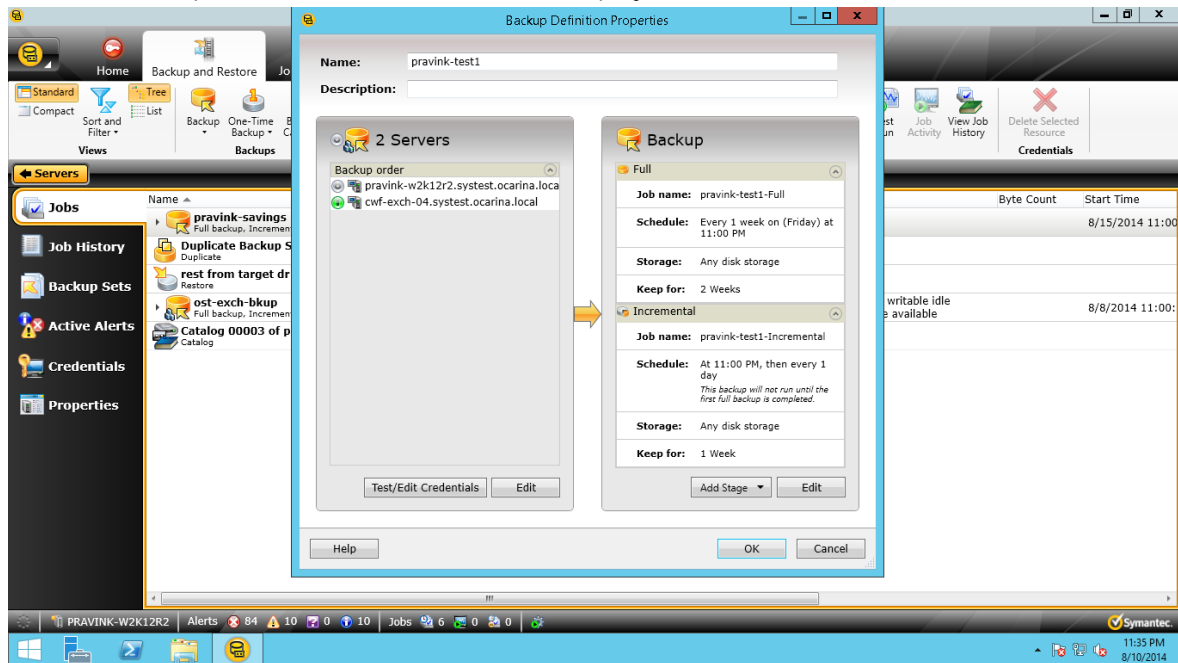
5. For Backup Exec 2014, backup data sets can be selected from multiple servers within the same job. To add an additional server, click the "+" button.



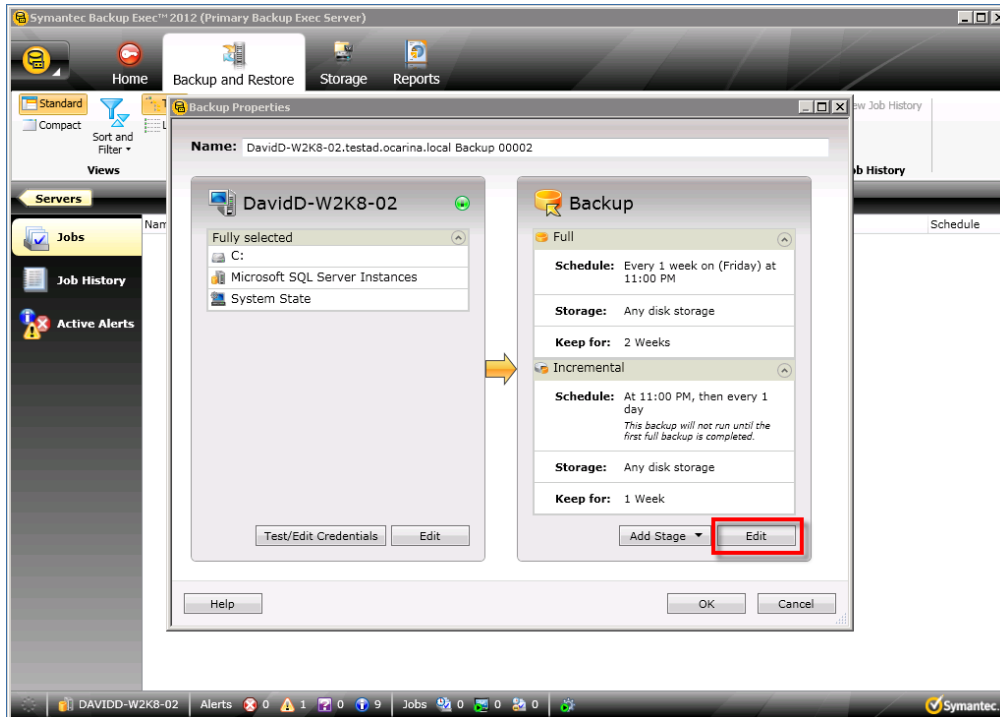
- For Backup Exec 2014/2015, follow the wizard and add the Server with the selected backup data. The Source Dataset will appear. Click OK to continue.



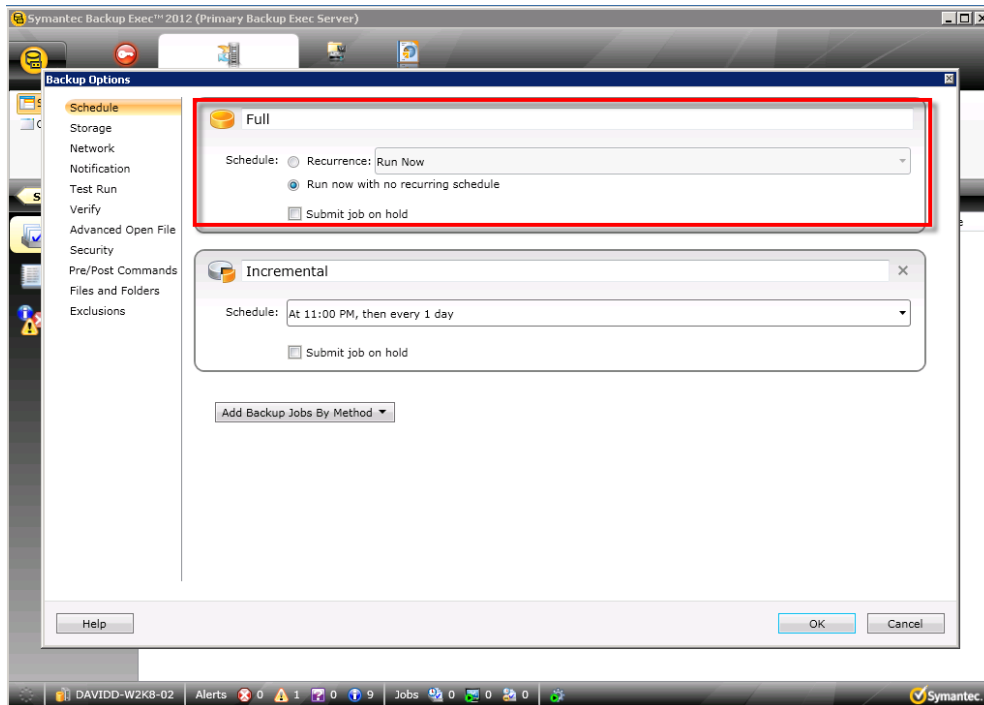
The final backup selection with two servers is displayed.



7. In the backup target selection pane, click **Edit** to define the backup strategy.

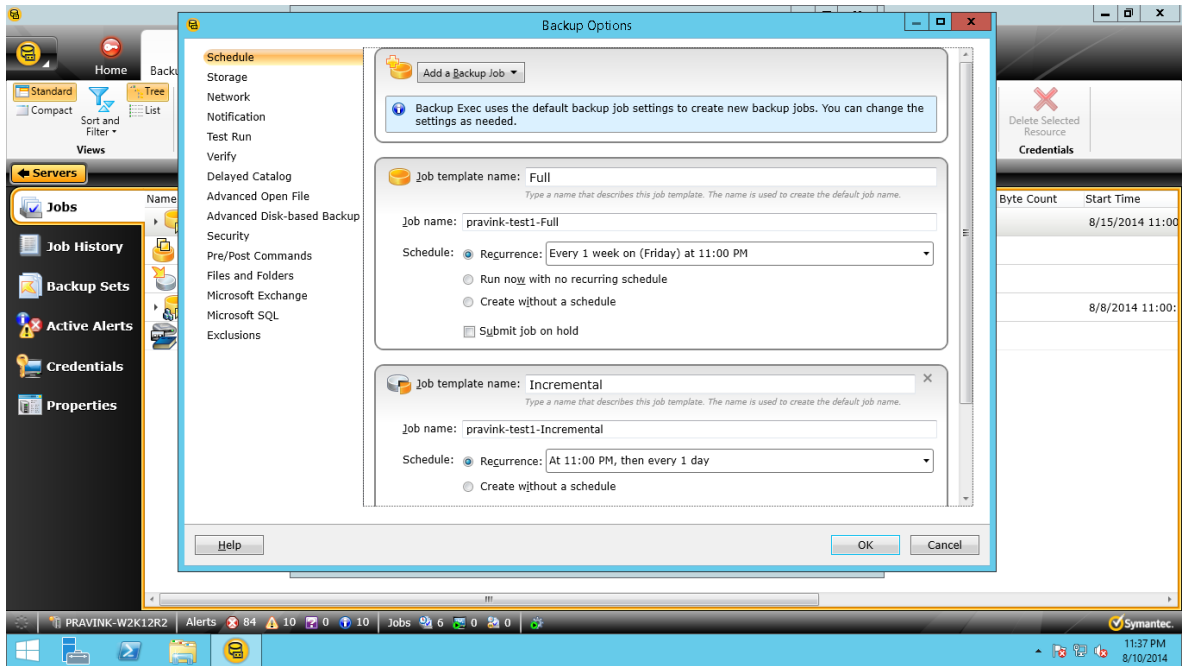


8. Click **Schedule**. Define the backup mode and select schedule options.

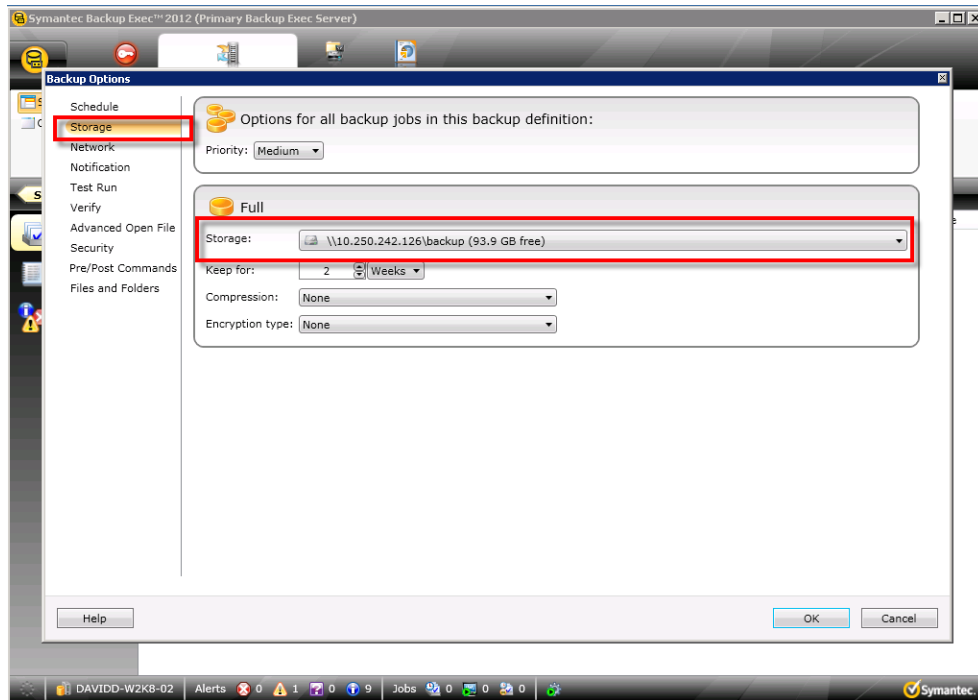


For Backup Exec 2014/2015 the screen includes additional information.



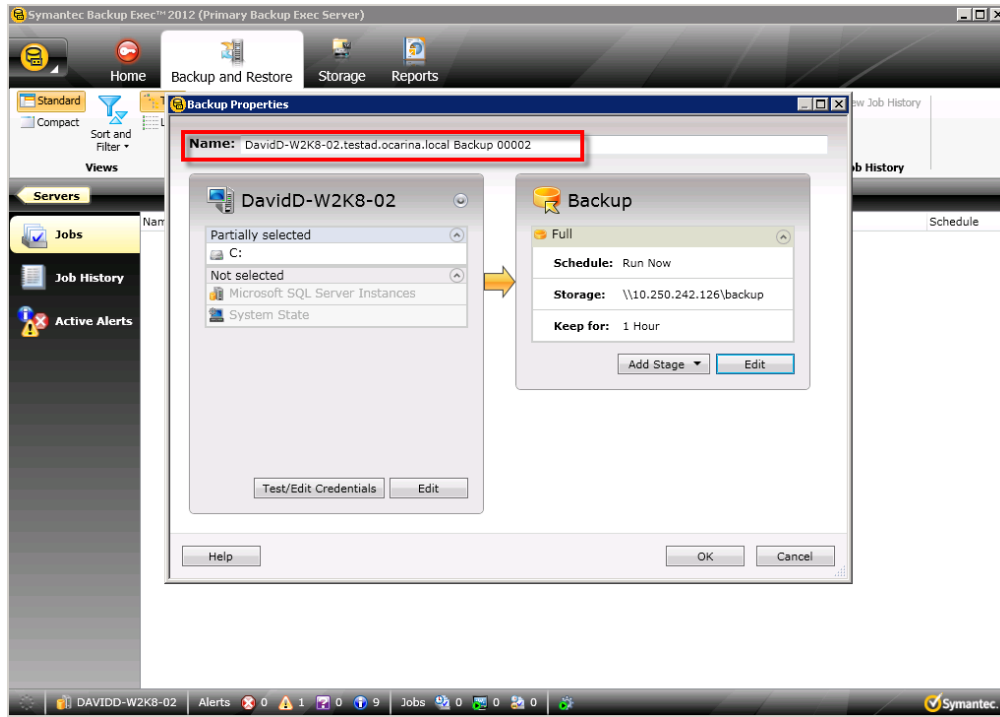


9. Click **Storage** and then select the Disk Storage Device pointing to the DR container share. Define other backup options as needed, and then click **OK**.

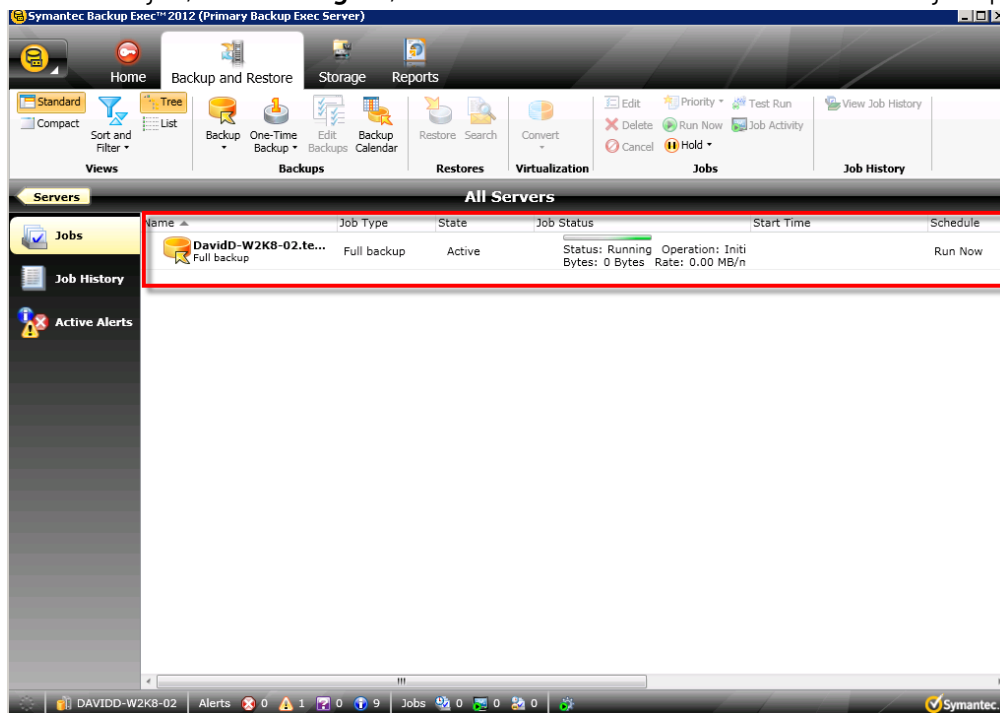


10. Enter a job **Name**, and click **OK**.

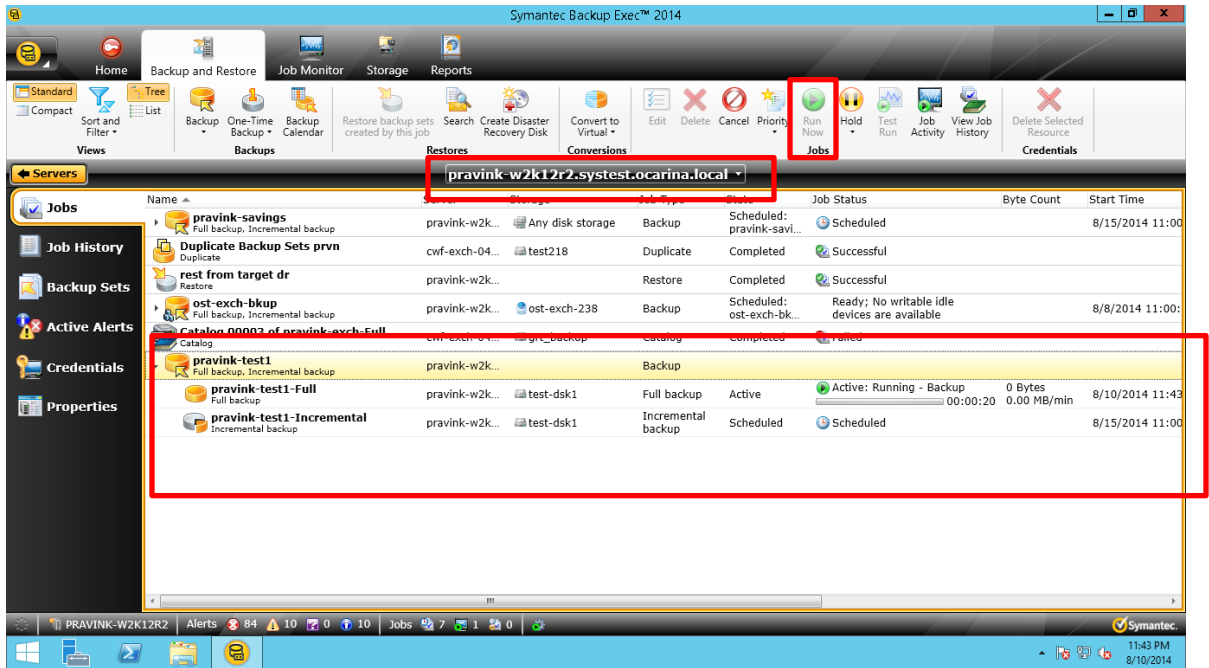




11. To run the job, select an **Agent**, and click **OK**. The **Jobs** window shows the job queue status.



12. For Backup Exec 2014, select the required server from the drop down, select the job recently created, and click **Run Now**.



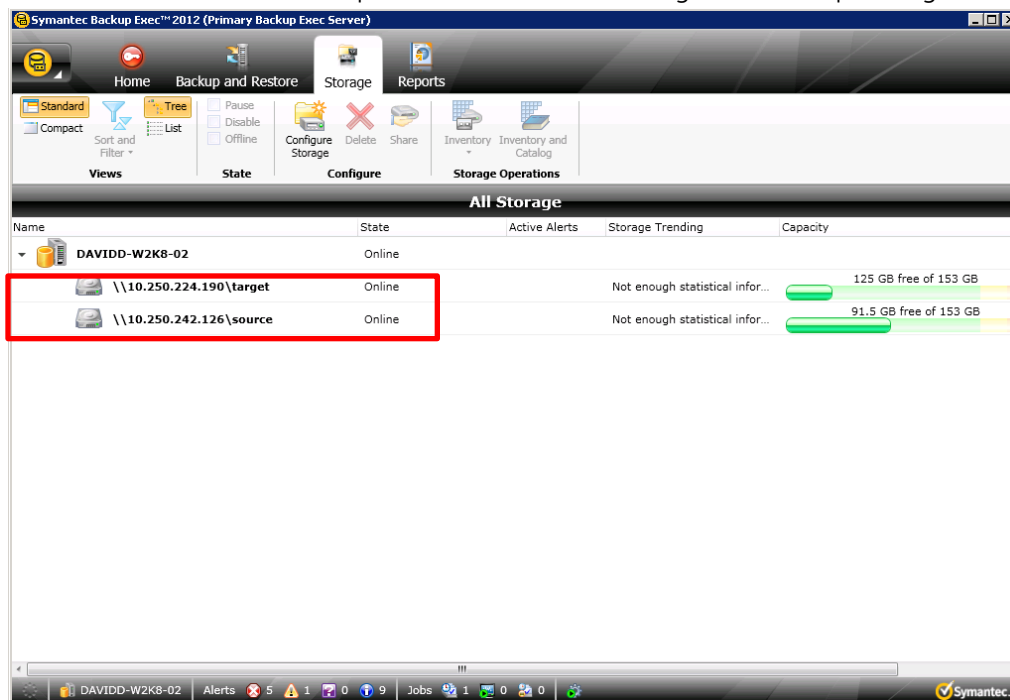


## 2.4 Setting up DR Series system replication and restore from the replication target

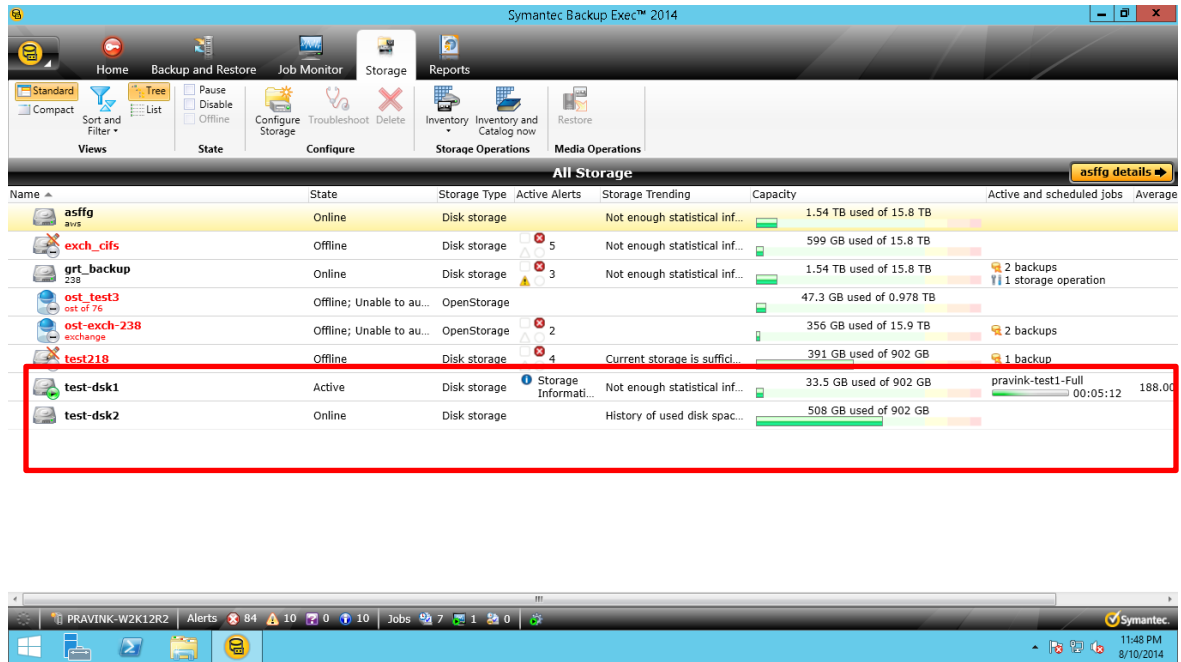
**Note:** For the steps in this procedure, assume DR1 is the replication source DR Series system, and DR2 is the replication target DR system. 'source' is the replication source container, and 'target' is the replication target container.

### 2.4.1 Creating the replication session

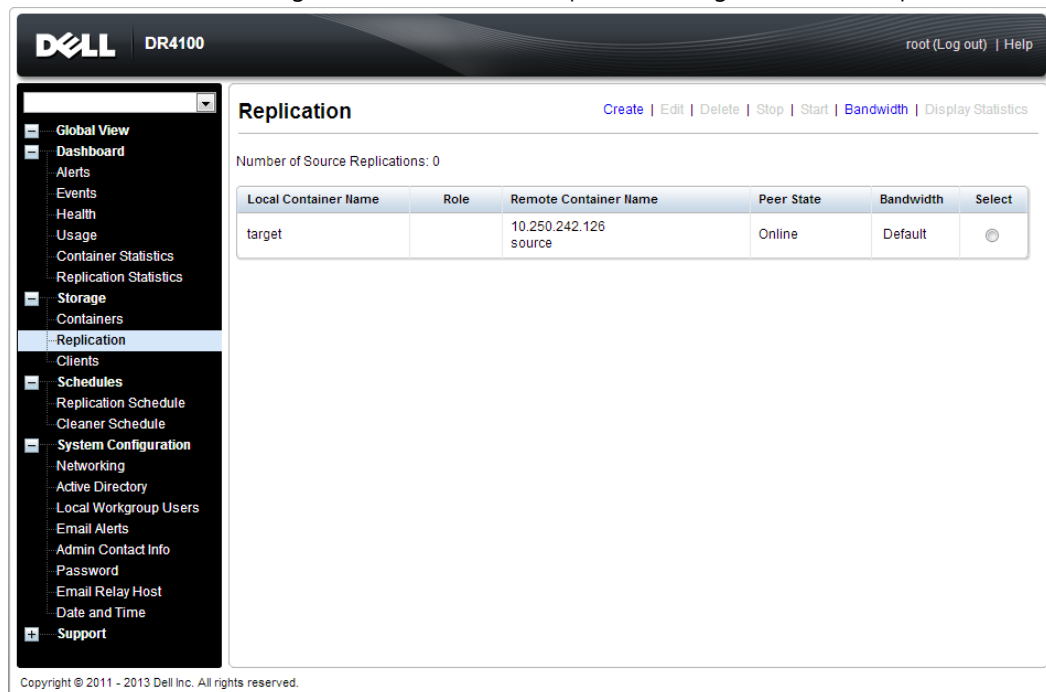
1. Create a CIFS container 'source' on DR1; create a second CIFS container 'target' on DR2. For each of the containers, on the Backup Exec media server, configure a corresponding Disk Storage Device.



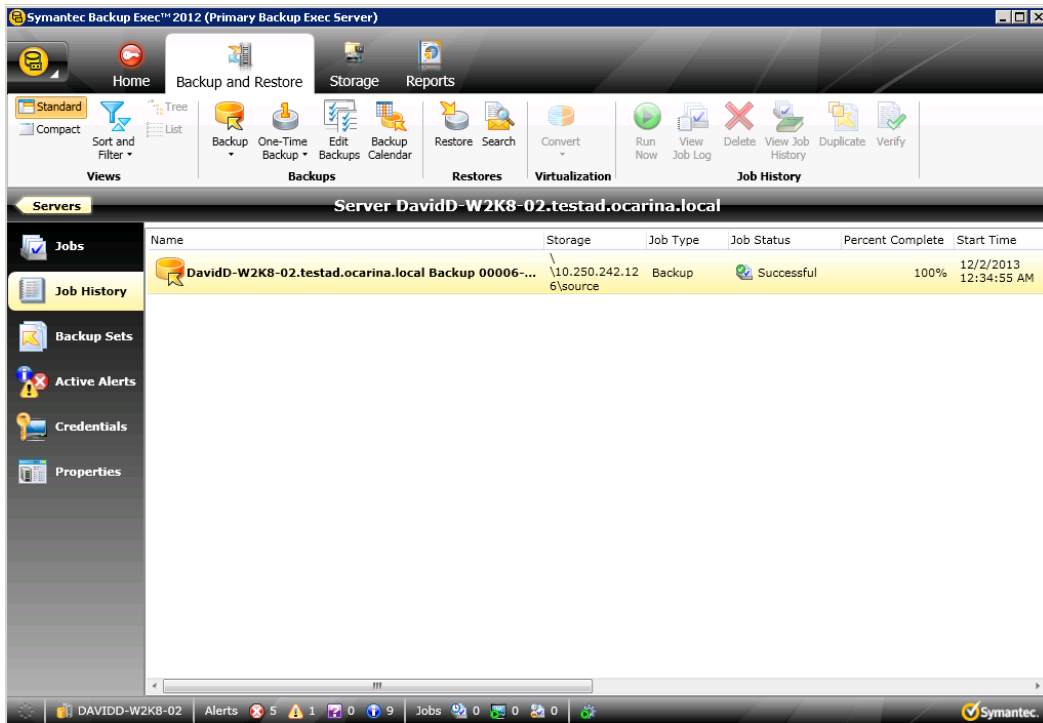
- For Backup Exec 2014/2015, after adding the target DR CIFS container, check that the device was added.



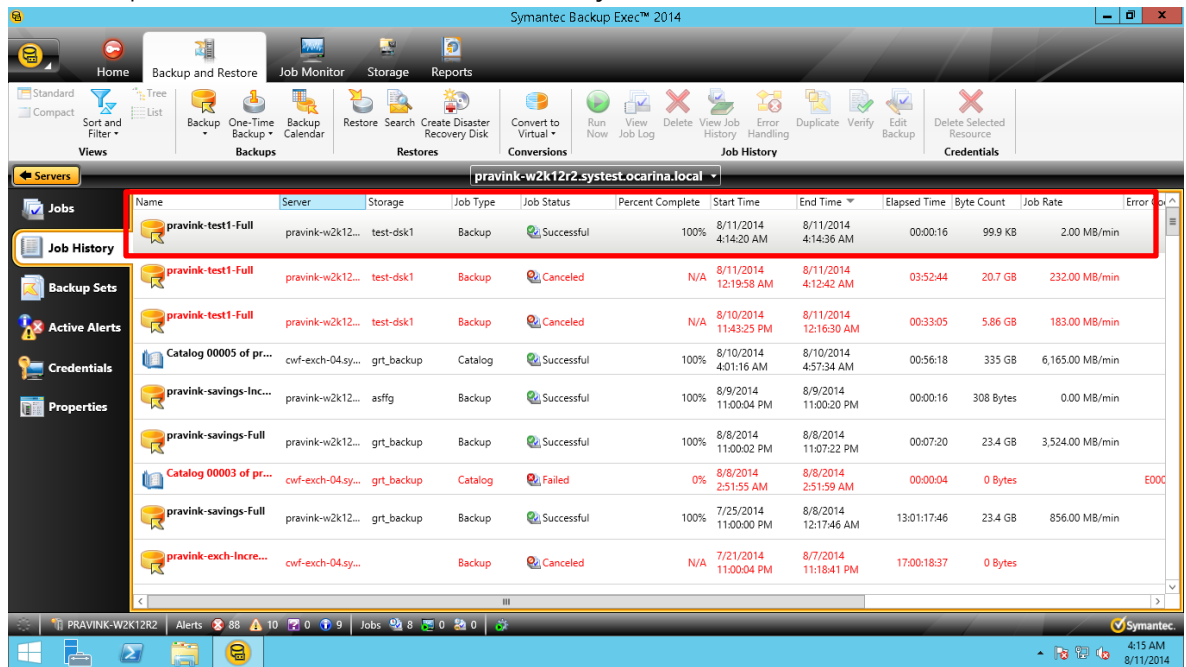
- From the DR1 GUI, on the **Replication** page, click **Create**. Set the 'source' container as the replication source, set the DR2 'target' container as the replication target. Start the replication session.



4. Schedule and run backup jobs to the source Disk Storage Device.

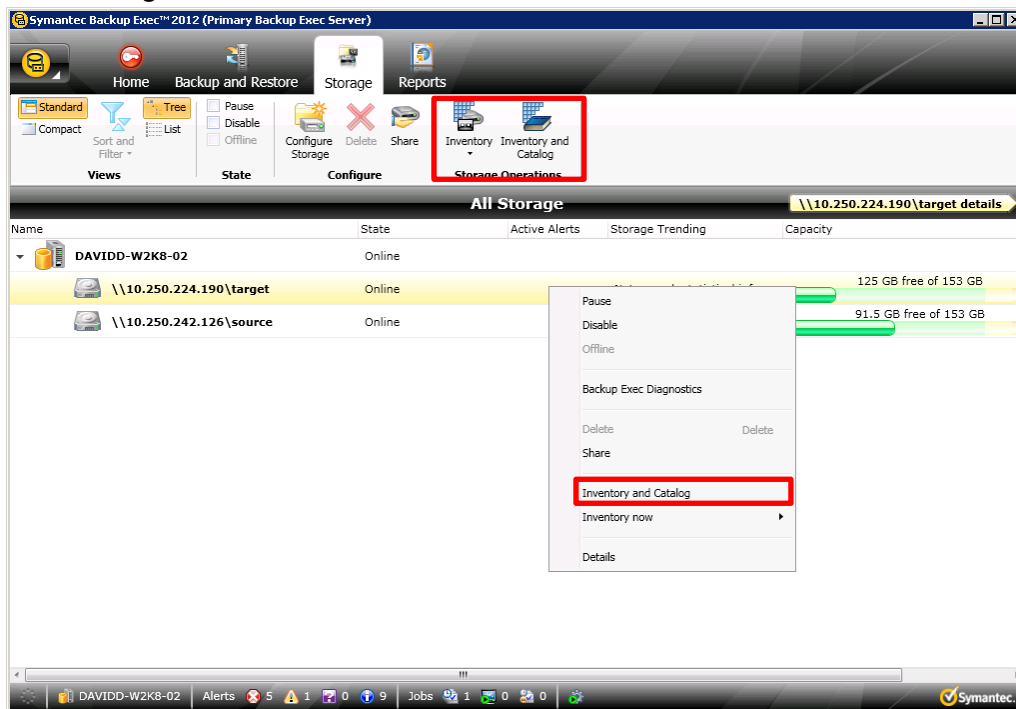


For Backup Exec 2014/2015, view the Job History screen.

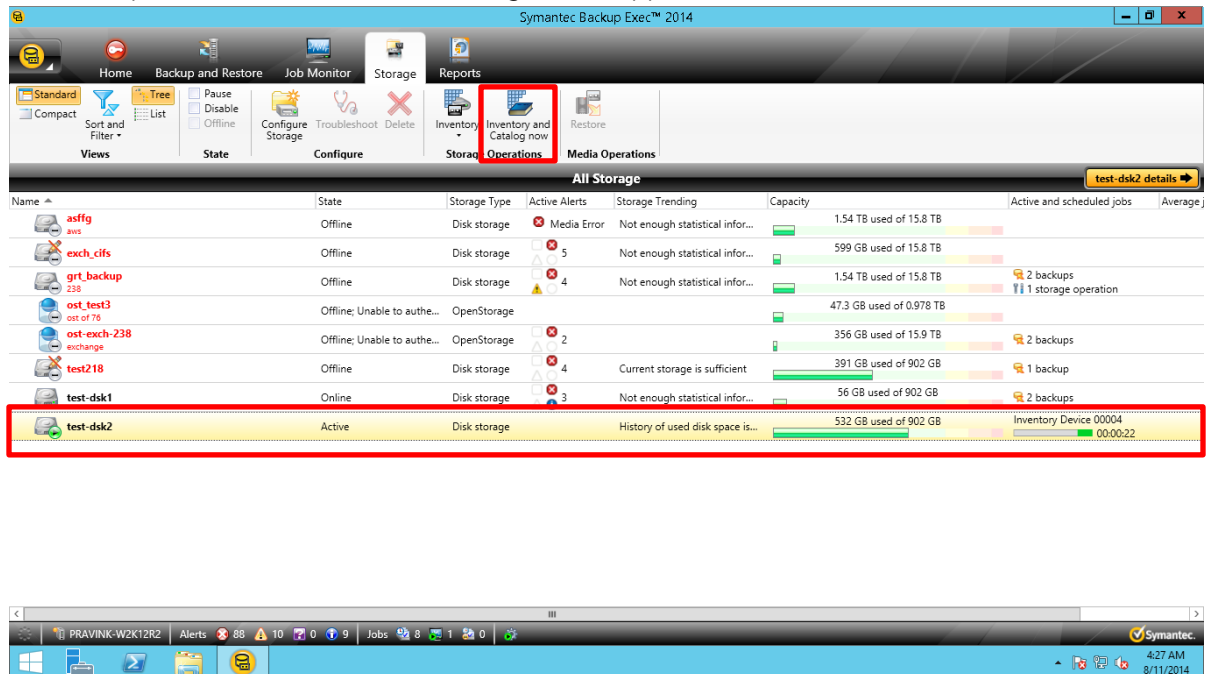


## 2.4.2 Restoring from the replication target

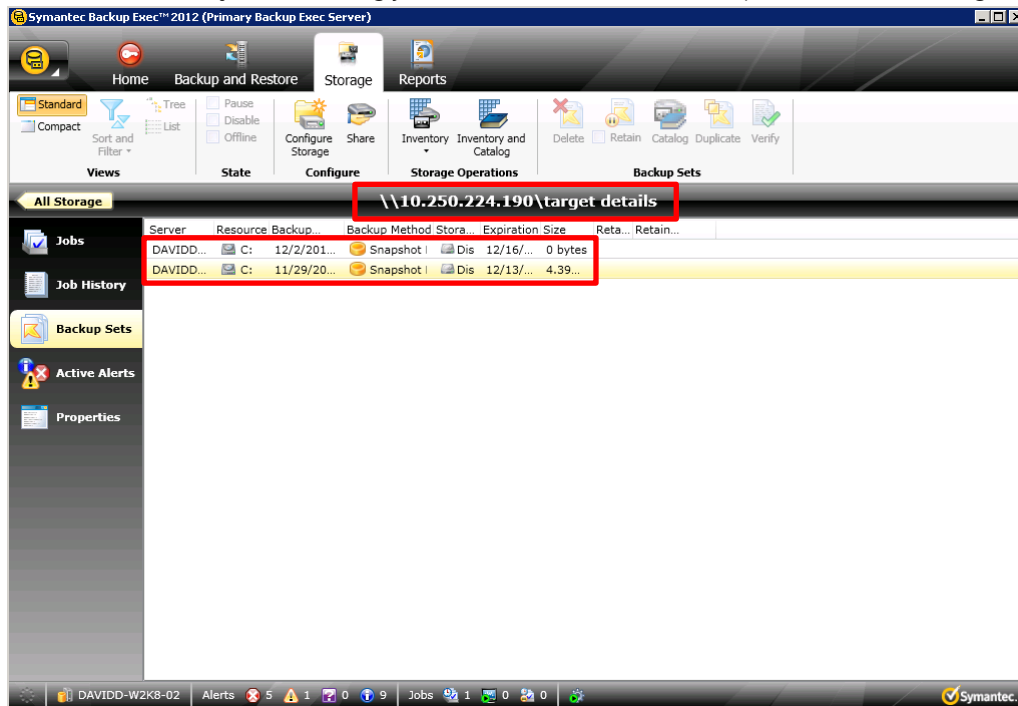
1. Under **Storage > Storage Operations**, right-click the replication target device, and select **Inventory and Catalog**.



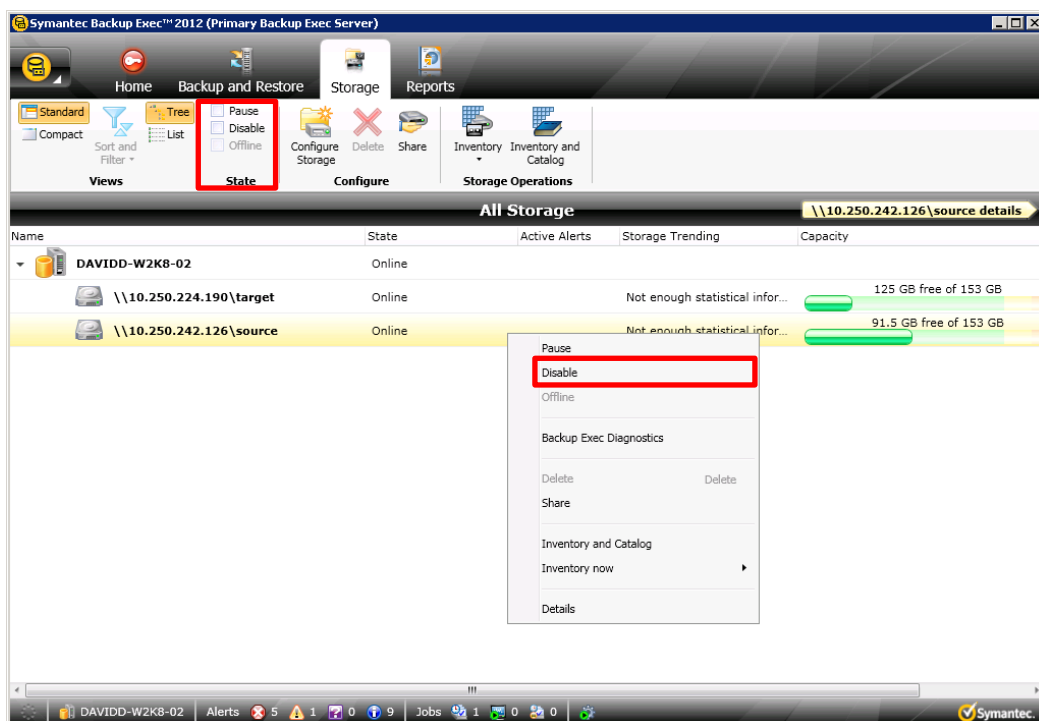
For Backup Exec 2014/2015, the following screen appears.



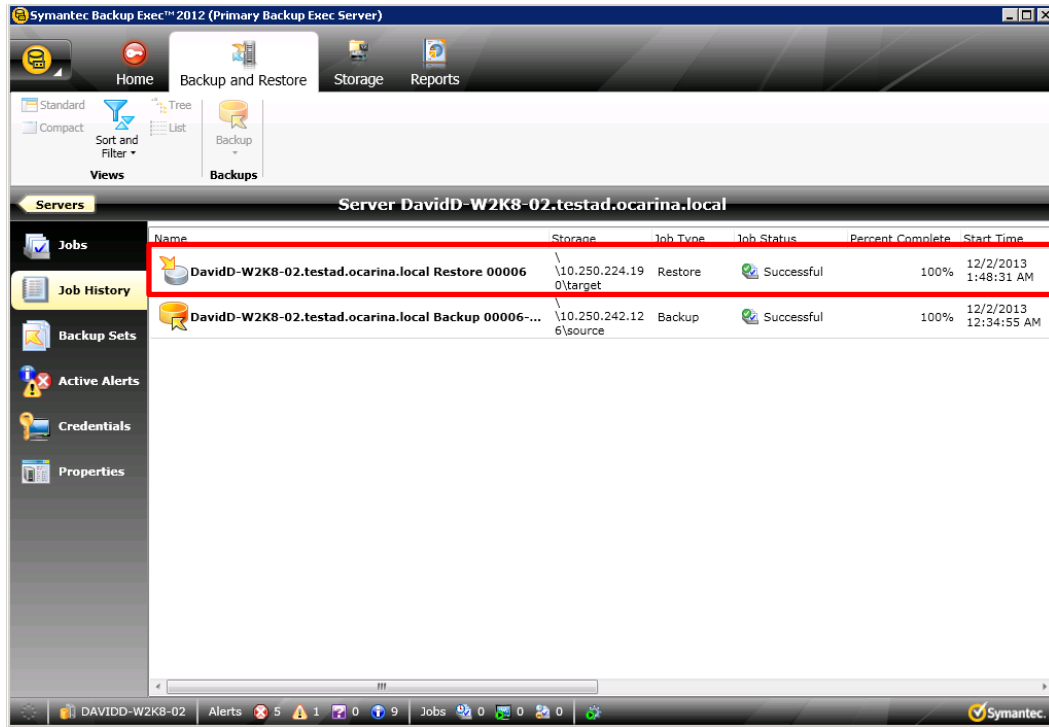
2. After the Inventory and Catalog job is done, check the Backup Sets shown in target storage device.



3. Disable source storage under **Storage > State**, right-click the source storage device, and select **Disable**.



4. Schedule and run a restore job from the target device.



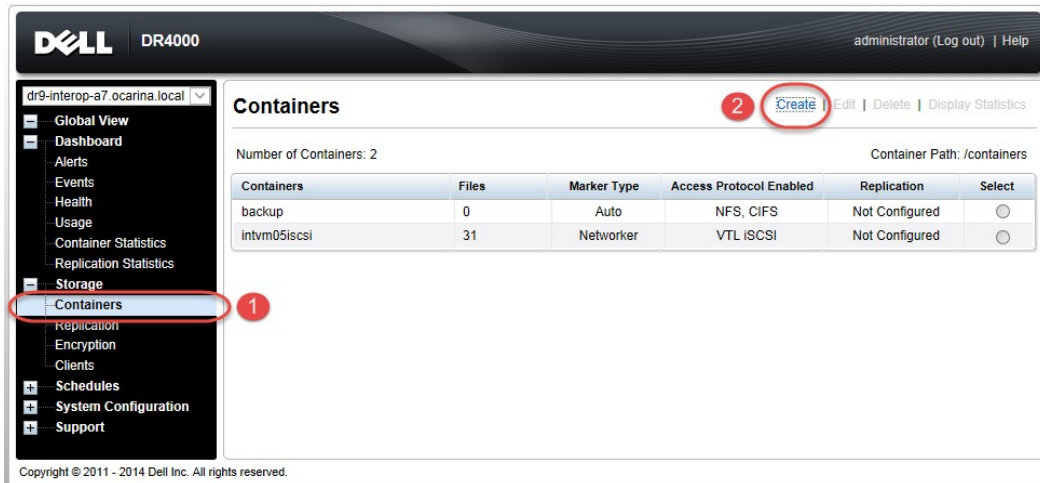
## 3 Configuring VTL

The latest release of the DR Series system (v3.2) adds Virtual Tape Library (VTL) support. This functionality can be accessed by Backup Exec via iSCSI. Basic workflow includes:

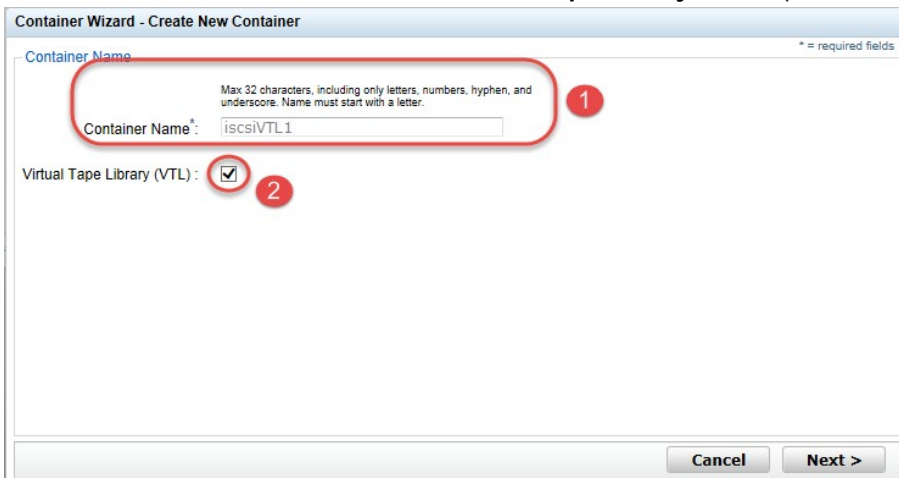
1. DR Series system initial setup
2. Creation of VTL container
3. Setting iSCSI target CHAP credentials
4. Connecting windows Initiator to DR-VTL (See Appendix)
5. Installing Driver/Patch for Library (See Appendix)
6. Configuring DR Series system VTL into Backup Exec
7. Performing the backup
8. Performing a restore
9. Monitoring deduplication, compression and performance

### 3.1 Creating a VTL container

1. Select **Containers** in the left navigation area of the GUI, and then click **Create** at the top of the page.



2. Enter the container name, select the **Virtual Tape Library (VTL)** option, and click **Next**.



3. Select the **iSCSI** Access Protocol. Specify the DMA Access Control by providing the storage node / media node IP Address, IQN or FQDN. For NetVault, you must also specify **Auto** as the Marker Type. Click **Next**.

The screenshot shows the 'Configure Virtual Tape Library' step of the 'Container Wizard - Create New Container' dialog. The 'Container Name and Type' section on the right shows 'iscsiVTL1' and 'VTL'. The 'Access Protocol' section has 'iSCSI' selected, circled with a red '1'. The 'Access Control (initiator):' text box contains 'iqn.1991-05.com.microsoft.2k8r2intvm05', circled with a red '2'. The 'Marker Type' section has 'Auto' selected, circled with a red '3'. At the bottom, there are buttons for '< Back', 'Cancel', and 'Next >'. A legend indicates '\* = required fields'.

4. Finalize VTL creation by clicking **Create a New Container**.

The screenshot shows the 'Configuration Summary' step of the 'Container Wizard - Create New Container' dialog. It summarizes the configuration: 'Container Name and Type' (iscsiVTL1, VTL) and 'Virtual Tape Library' (OEM: no, Tape Size: 10gb, Access Protocol: iSCSI, Access Control: iqn.1991-05.com.microsoft.2k8r2intvm05, Marker Type: Auto). At the bottom, the 'Create a New Container' button is circled in red, along with the '< Back' and 'Cancel' buttons. A legend indicates '\* = required fields'.





## 3.2 Setting the iSCSI target CHAP credentials

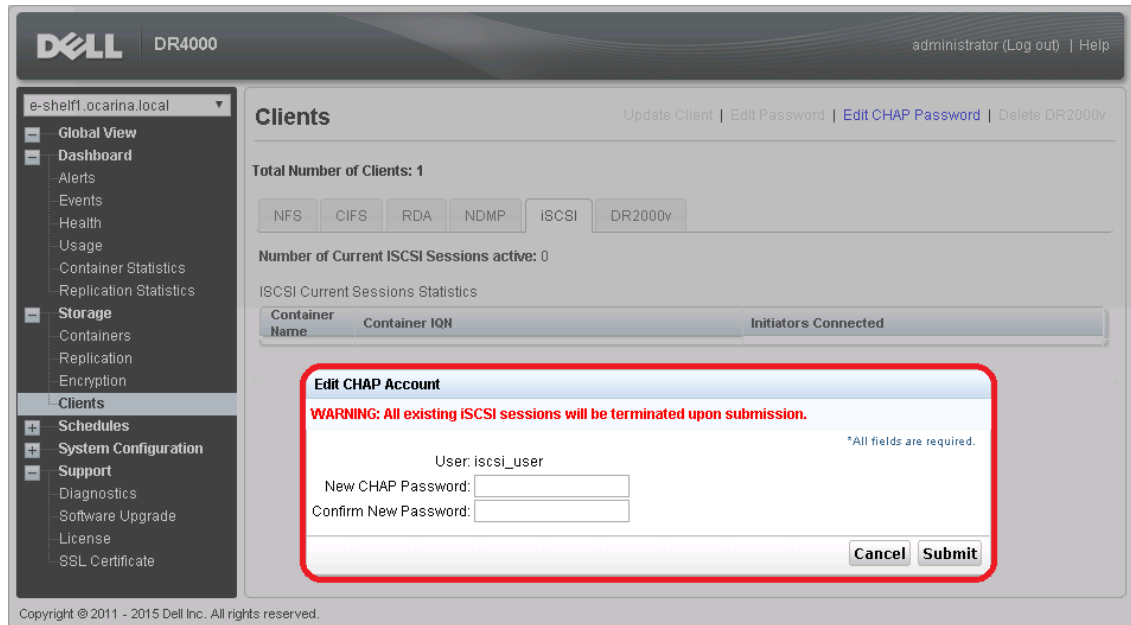
By default the iSCSI username is **"iscsi\_user"** and can be confirmed by reviewing the output of the `iscsi – show user` command. For example:

```
# iscsi --show -user
user : iscsi_user
```

The default iSCSI password is **"St0r@ge!iscsi"**

1. You can modify the password by navigating to **Clients** in the DR Series system GUI and selecting the **iSCSI** tab.
2. Select **Edit CHAP Password** and enter the new password as needed.

**NOTE:** iSCSI CHAP Passwords must be between 12 and 16 characters long



Alternatively you can use the `"iscsi –setpassword"` CLI command to change the iSCSI CHAP Password setting. For example:

```
> iscsi --setpassword
```

```
WARNING: All existing iSCSI sessions will be terminated!
```

```
Do you want to continue? (yes/no) [n]?
```

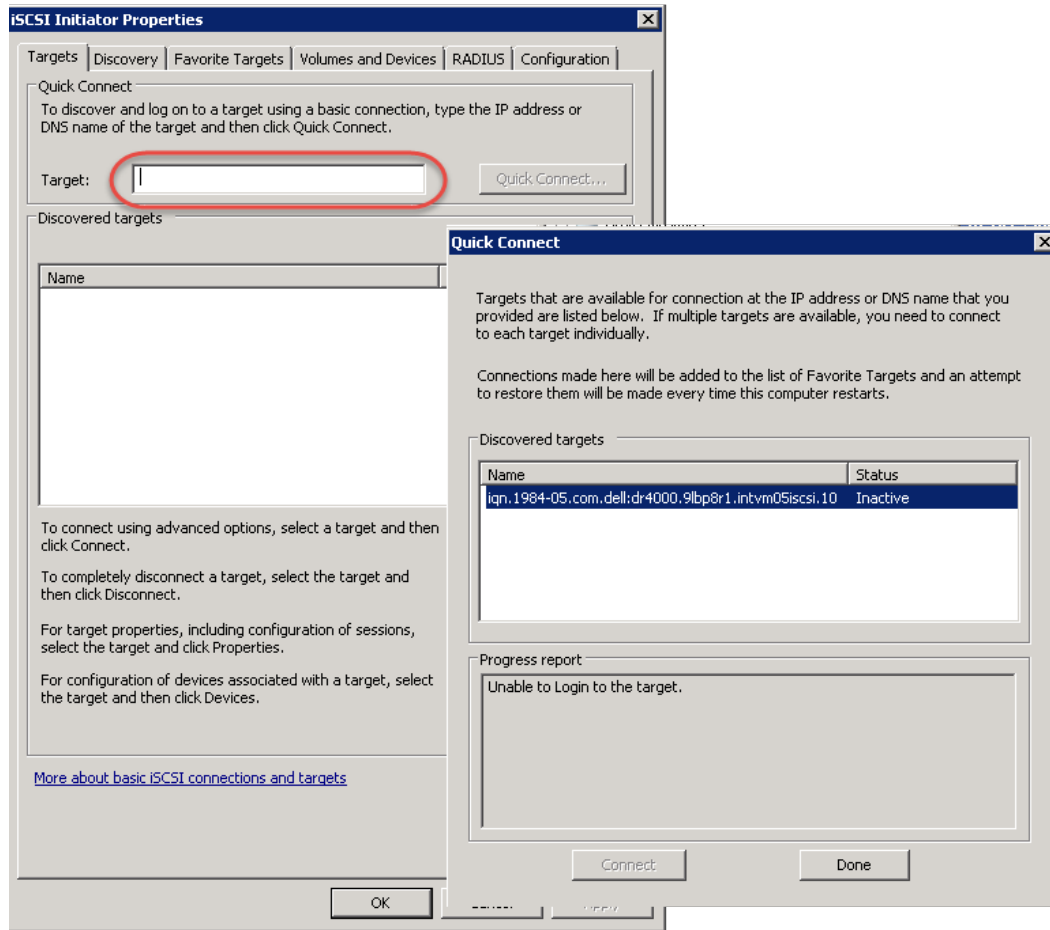
```
Enter new CHAP password:#####
```

```
Re-type CHAP password:#####
```

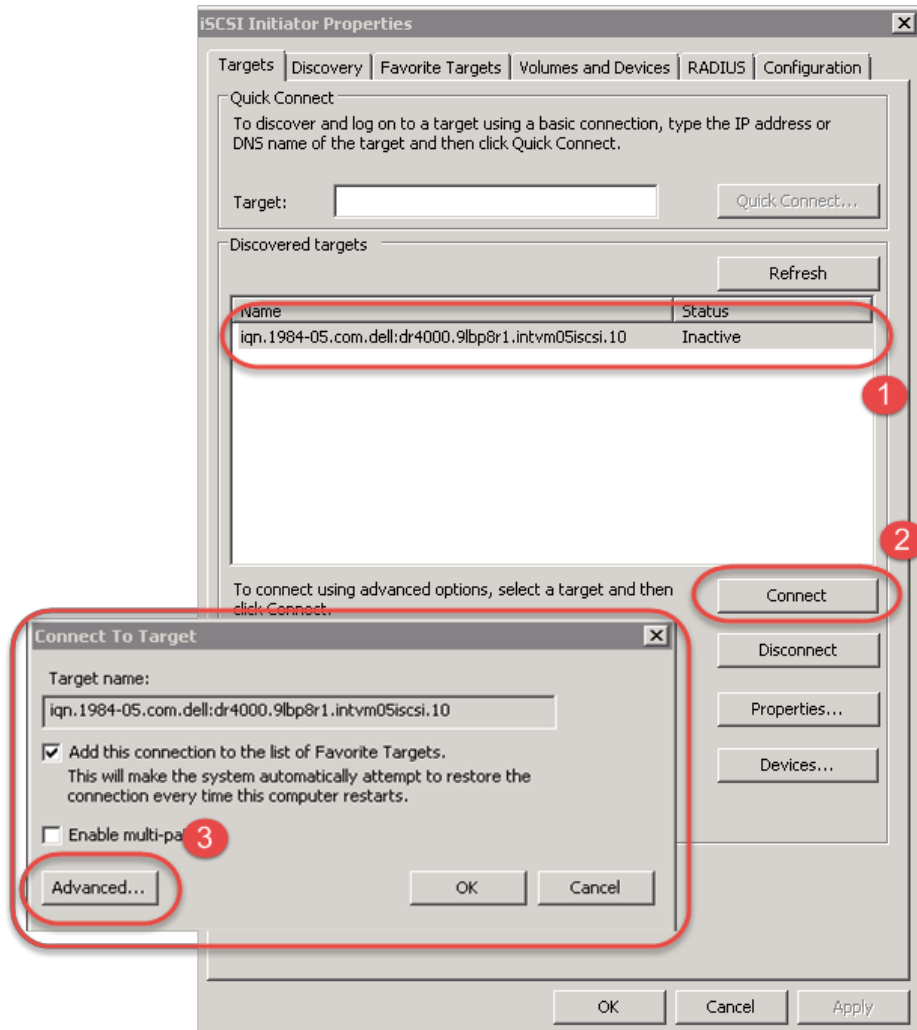


### 3.3 Configuring the iSCSI target – Windows

1. Configure the iSCSI Initiator Software for Windows by providing the IP or FQDN of the DR Series system in the Quick Connect, **Target** field. Click **Quick Connection** to open the Quick Connect dialog box, which indicates a connection was made but is set as inactive.



2. Close the dialog box and proceed by selecting the newly discovered target. This target will have an Inactive Status as it requires authentication parameters to be provided for iSCSI logon. Select the Target from the list, click the **Connect** button, and then in the Connect To Target dialog box, click the **Advanced** button.



3. In Advanced Settings, select to **Enable CHAP log on** and enter the User Name and Target Secret / Password. Select **OK**. Refer to Appendix A for further details about accounts and credentials.

**Advanced Settings**

General | IPsec

Connect using

Local adapter: Default

Initiator IP: Default

Target portal IP: Default

CRC / Checksum

Data digest  Header digest

**Enable CHAP log on** **1**

CHAP Log on information

CHAP helps ensure connection security by providing authentication between a target and an initiator.

To use, specify the same name and CHAP secret that was configured on the target for this initiator. The name will default to the Initiator Name of the system unless another name is specified. **2**

Name: dr9-interop-a7

Target secret: ●●●●●●●●

Perform mutual authentication

To use mutual CHAP, either specify an initiator secret on the Configuration page or use RADIUS.

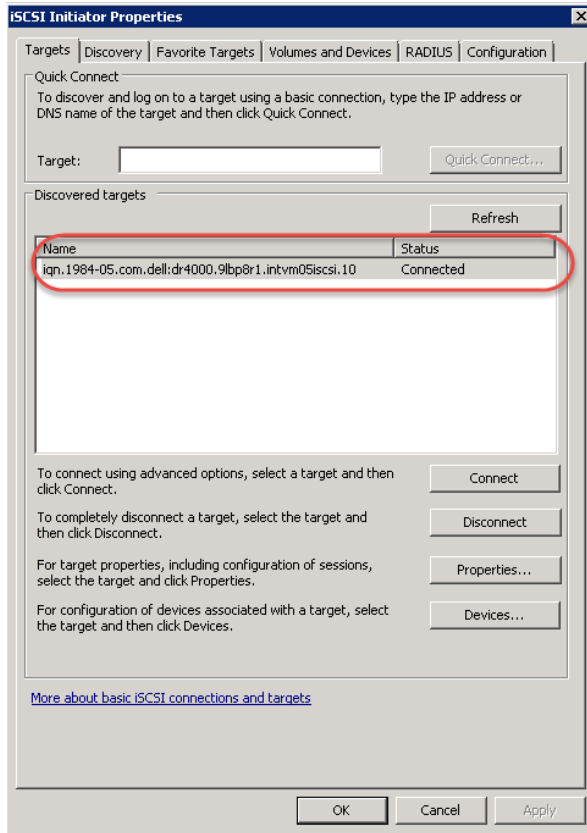
Use RADIUS to generate user authentication credentials

Use RADIUS to authenticate target credentials

OK Cancel Apply

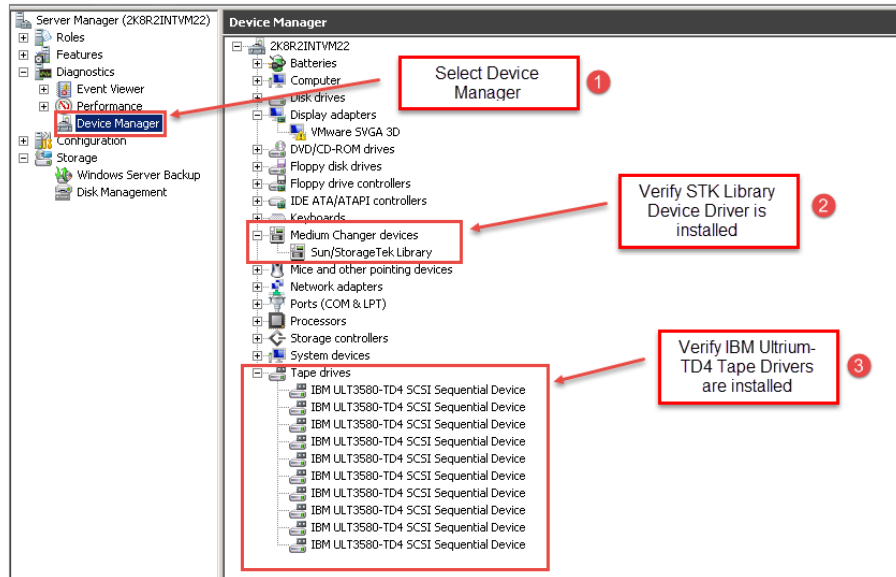


The iSCSI target should now appear as connected, and device discovery can now proceed.



4. Open the Server Manager Snap-in and verify that the newly connected devices show up in the Device Manager. Verify that the STK Library and IBM Ultrium-TD4 Device Drivers are installed.

**Note:** Refer to the article at <http://catalog.update.microsoft.com/v7/site/home.aspx> for information about acquiring Microsoft Device Drivers, e.g., StorageTek Library Drivers.



### 3.4 Configuring the iSCSI target – Linux

Before you begin this procedure, ensure that the iSCSI initiator is installed (iscsi-initiator-utils). For example:

```
yum install iscsi-initiator-utils ; /etc/init.d/iscsi start
```

To configure the iSCSI target for Linux, follow these steps.

1. Add the CHAP Authentication details for the DR Series system on the Linux Initiator as follows:
  - a. Edit /etc/iscsi/iscsid.conf and un-comment the following line:

```
node.session.auth.authmethod = CHAP
```

- b. Modify the following lines:

```
# To set a CHAP username and password for initiator
```

```
# authentication by the target(s), uncomment the following lines:
```

```
node.session.auth.username = iscsi_user
```

```
node.session.auth.password = St0r@ge!iscsi
```

2. Set the Discovery Target Node(s) by using this command:

```
iscsiadm -m discovery -t st -p <IP or IQN of DR>
```

For example:

```
iscsiadm -m discovery -t st -p 10.8.230.108
```



3. Enable logon to the DR Series system iSCSI VTL target(s) by using the following command:

```
iscsiadm -m node --portal <IP or IQN of DR:PORT> --login
```

For example:

```
iscsiadm -m node --portal "10.8.230.108:3260" --login
```

4. Display the open session(s) with DR VTL(s) by using the following command:

```
iscsiadm -m session
```

For example:

```
iscsiadm -m session = tcp: [8] 10.8.230.108:3260,1 iqn.1984-05.com.dell:dr4000.3071067.interoprhel52n1.30
```

5. Review dmesg or /var/log/messages for details about the tape devices created upon adding the DR Series system iSCSI VTL.

## 3.5 Adding additional media to the VTL container

**Note:** With a VTL container, it is very easy to add additional tapes when required. It is recommended to add tapes in the increments of 50 and 100 to facilitate easy inventory from Backup Exec. Check the Backup Exec recommendations for the maximum number of tapes supported.

1. To add media to an existing VTL container click **Containers** in the DR Series system GUI.
2. Select and edit the target VTL container.
3. In the resulting dialog box, in the field **Add More Tape (no of Tape)**, enter the number of tapes to add to the VTL container.



DELL DR4000 administrator (Log out) | Help

dr9-interop-a7.ocarina.local

**Containers** Create Edit Delete | Display Statistics

Number of Containers: 5 Container Path: /containers

Containers	Files	Marker Type	Access Protocol Enabled	Replication	Select
backup	0	Auto	NFS, CIFS	Not Configured	<input type="radio"/>
intvm05_ndmp	31	Unix Dump	VTL NDMP	Not Configured	<input type="radio"/>
intvm05iscsi	31	Networker	VTL ISCSI	Not Configured	<input type="radio"/>
intvm05iscsi2	31	Networker	VTL ISCSI	Not Configured	<input type="radio"/>
TEST_VTL_LALA	31	None	VTL NDMP	Not Configured	<input checked="" type="radio"/>

**Edit Container: TEST\_VTL\_LALA**

Configure Virtual Tape Library \* = required fields

Is OEM:

Tape Size:  800GB  400GB  200GB  
 100GB  50GB  10GB

Access Protocol:  NDMP  ISCSI  No Access

Access Control: FQDN or IP

Add More Tape (no. of tape):

Marker Type:  Unix Dump  
 None

Container Name and Type  
 TEST\_VTL\_LALA  
 VTL

Cancel Next >





Alternatively you can use the “vtl –update\_carts” cli command for this operation. For example:

```
> vtl -update_carts --name TEST_VTL_LALA -add -no_of_tapes 10
```

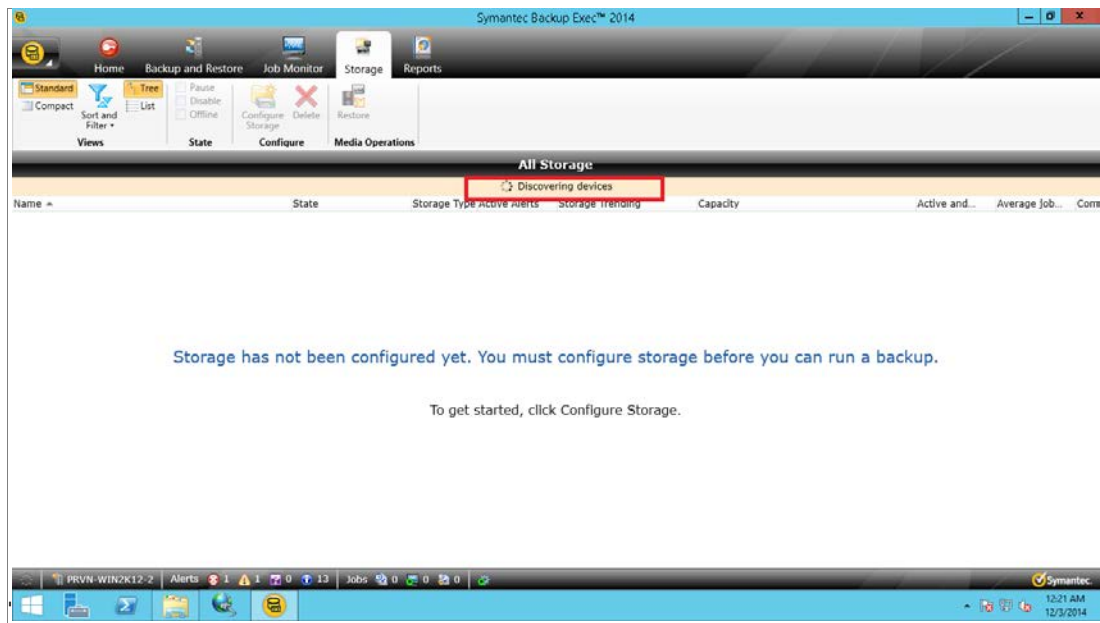
Created 10 cartridges

## 3.6 Configuring the DR Series system VTL in Backup Exec

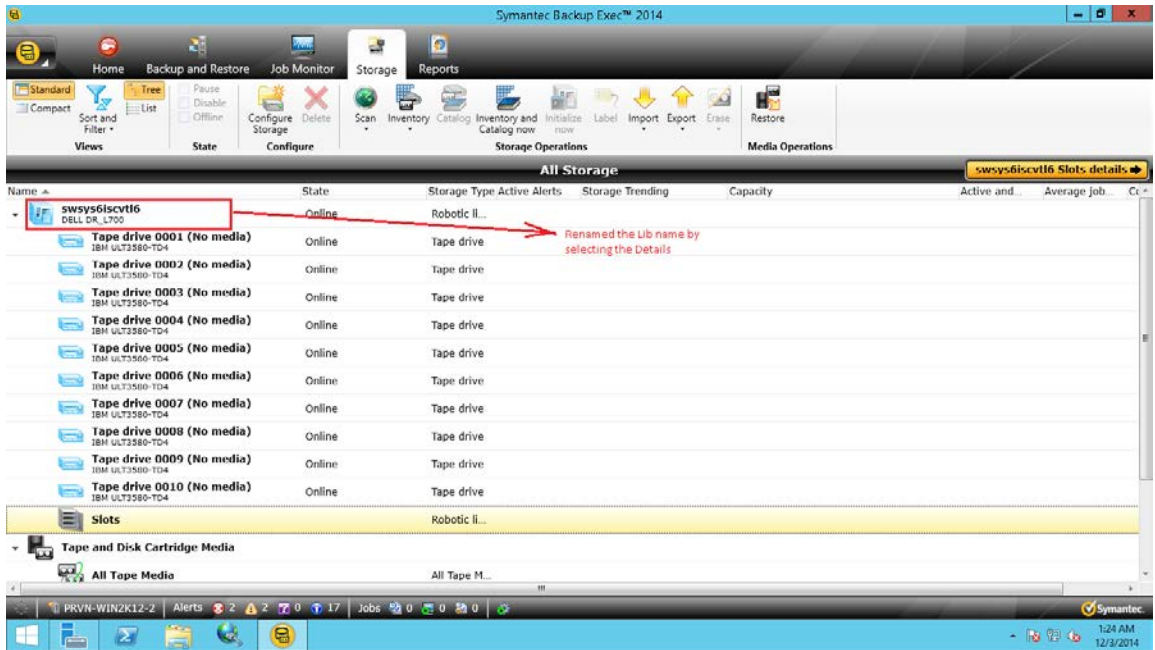
Before you configure the DR Series system VTL in Backup Exec, you need to present the DR Series system VTL to the Windows host through iSCSI. See the preceding section, “Configuring the iSCSI target – Windows” for more information.

After the DR Series system VTL has been connected to the Windows host running Backup Exec, do the following steps.

1. Restart Backup Exec Services to discover the newly attached VTL container.
2. Go to the **Storage** tab to monitor the VTL discovery.

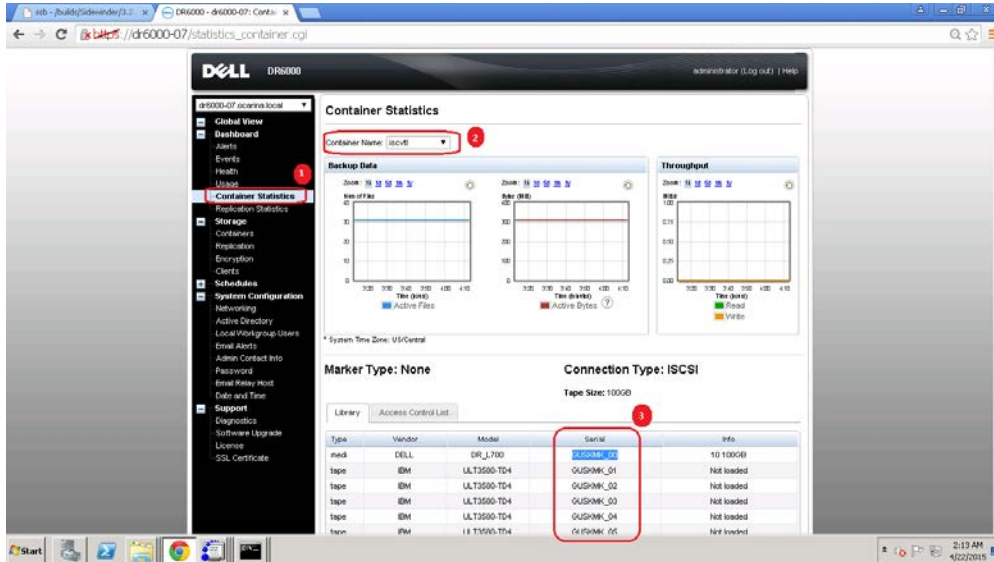


After discovery, the VTL and all drives are listed on the Storage tab.



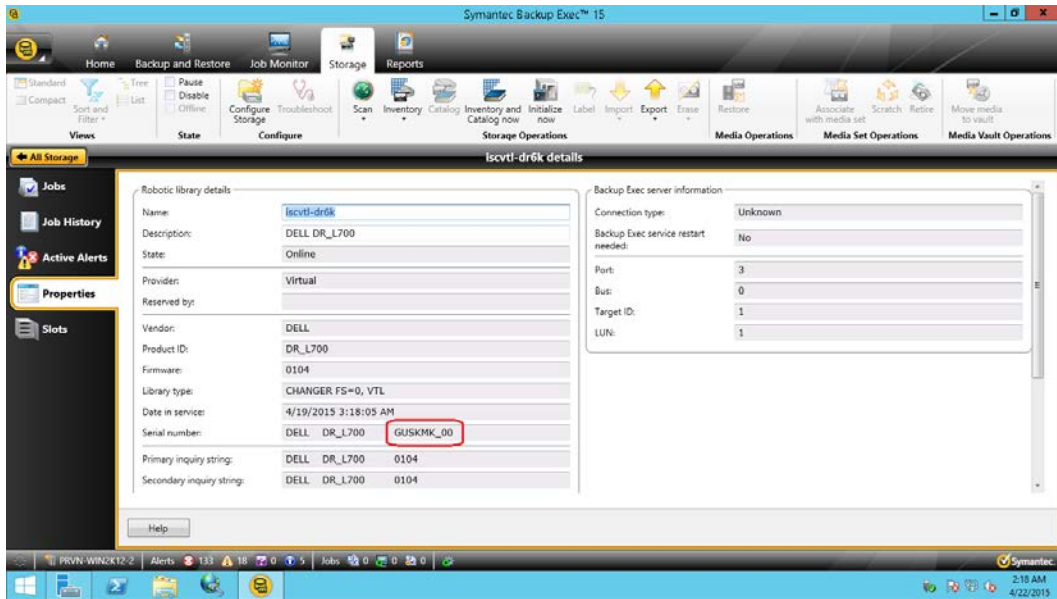
There are four supported VTL types supported in the DR Series system, and they can be configured with Backup Exec. The different VTLs can be identified by comparing the **Serial** number from Backup Exec and VTL container.

3. You can identify the VTL by locating the serial number in the DR Series system GUI by navigating to Container Statistics, selecting the container name and clicking the Library tab.

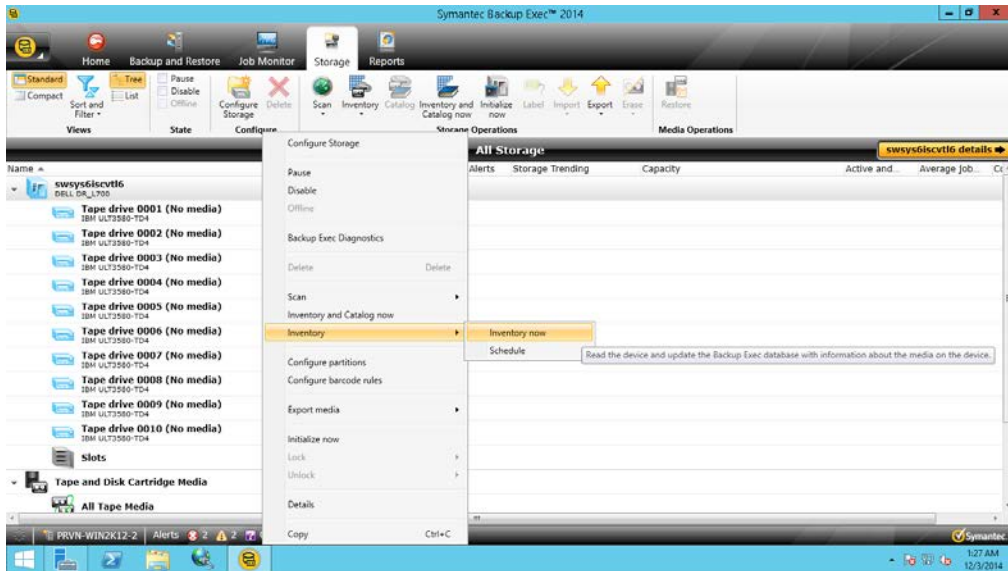




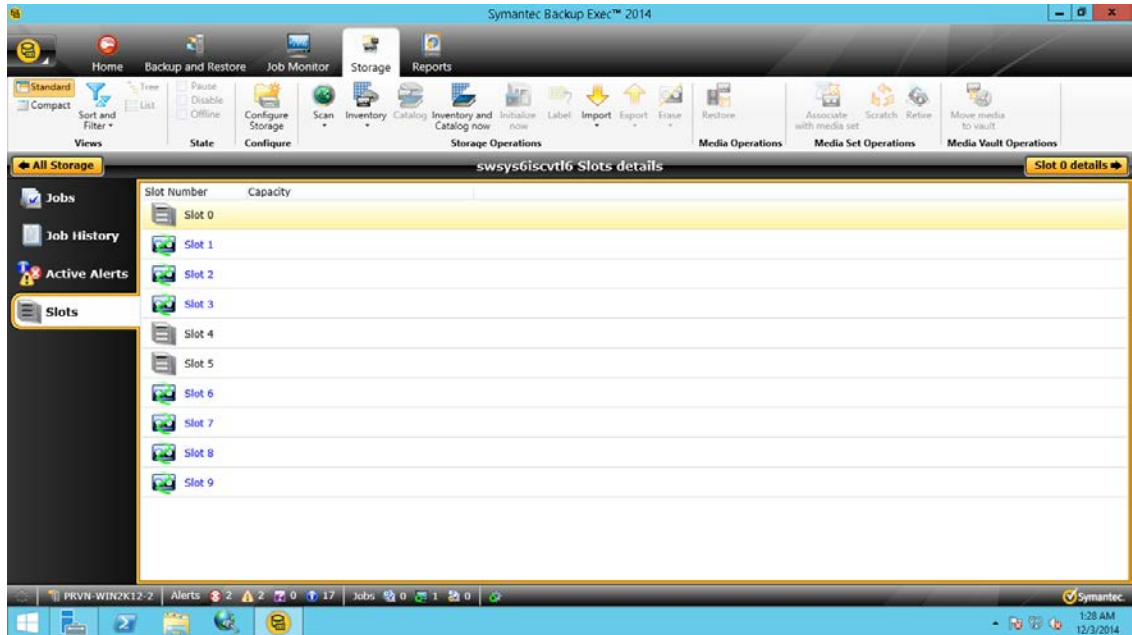
Or, on the Backup Exec Server, on the Storage Tab go to **Library > Details**.



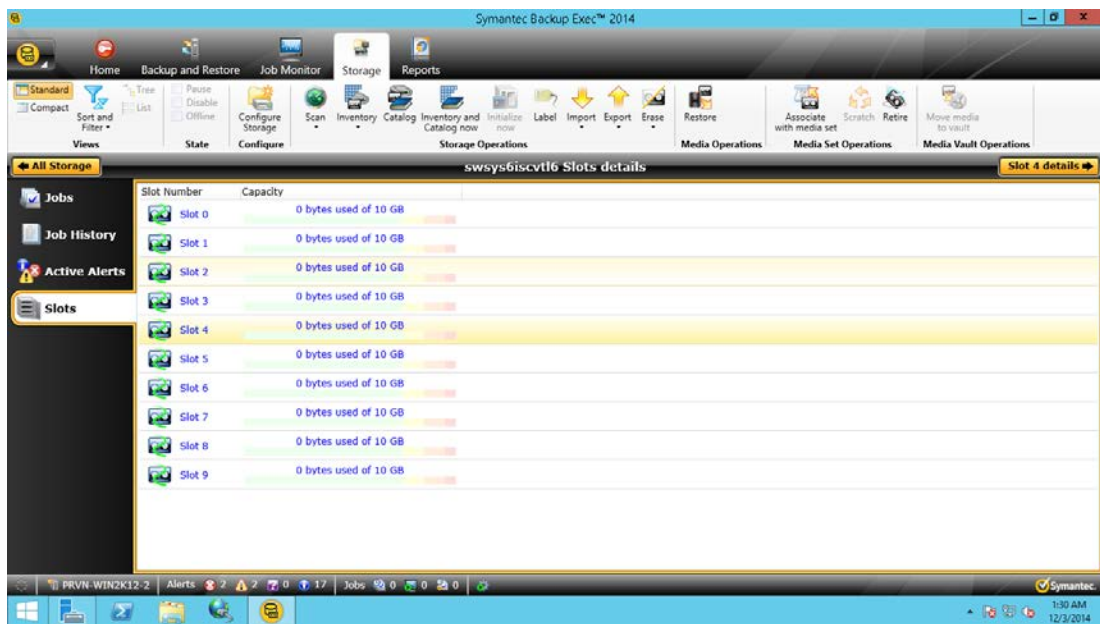
4. Run the Inventory to mount the media in the drive and read the media label by right-clicking **Library > Inventory > Inventory Now**.



5. To see slot level details before running Inventory, on the Storage tab, select **Details > Select Slots**.



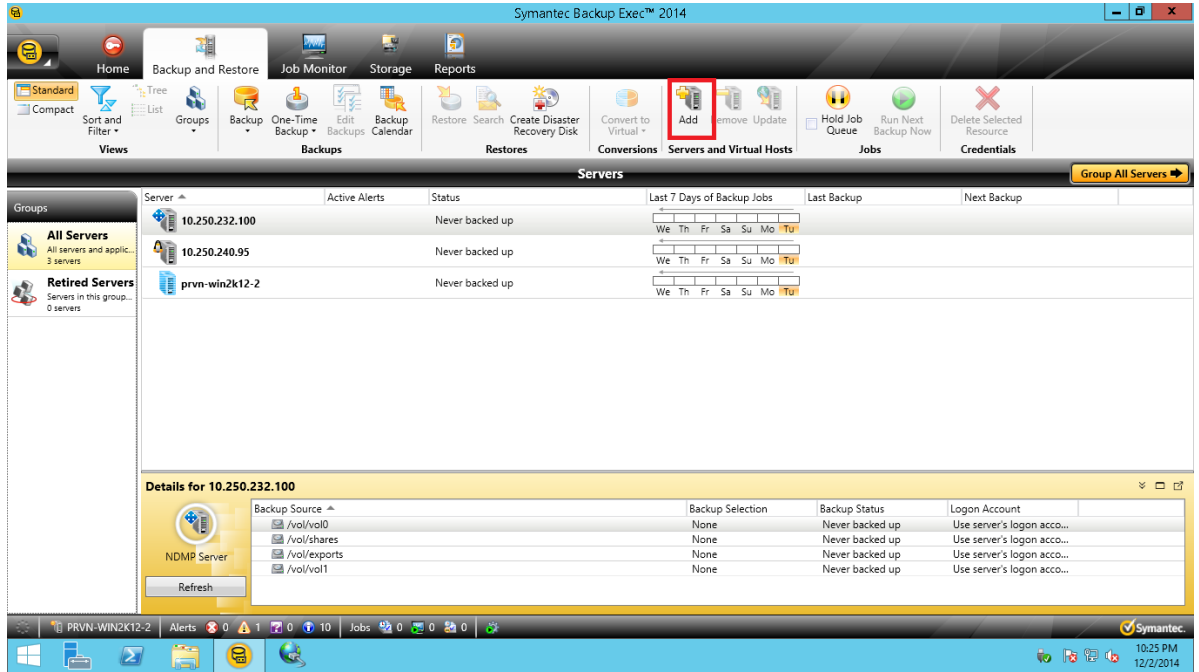
After Inventory –



## 3.7 Performing backup and restore using DR VTL

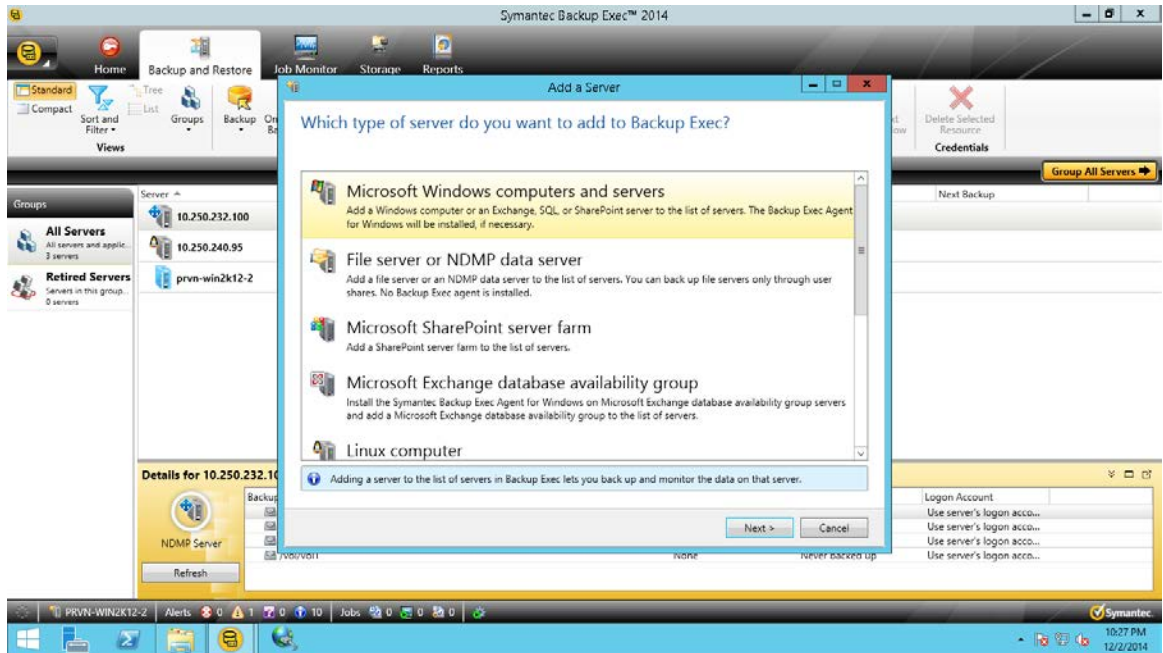
This section describes file-based backup and restore. To get starting, you should install/push the Backup Exec agent on the client that has the files that need to be protected.

1. On the Backup and Restore tab, click the **Add** button to add the client machine.

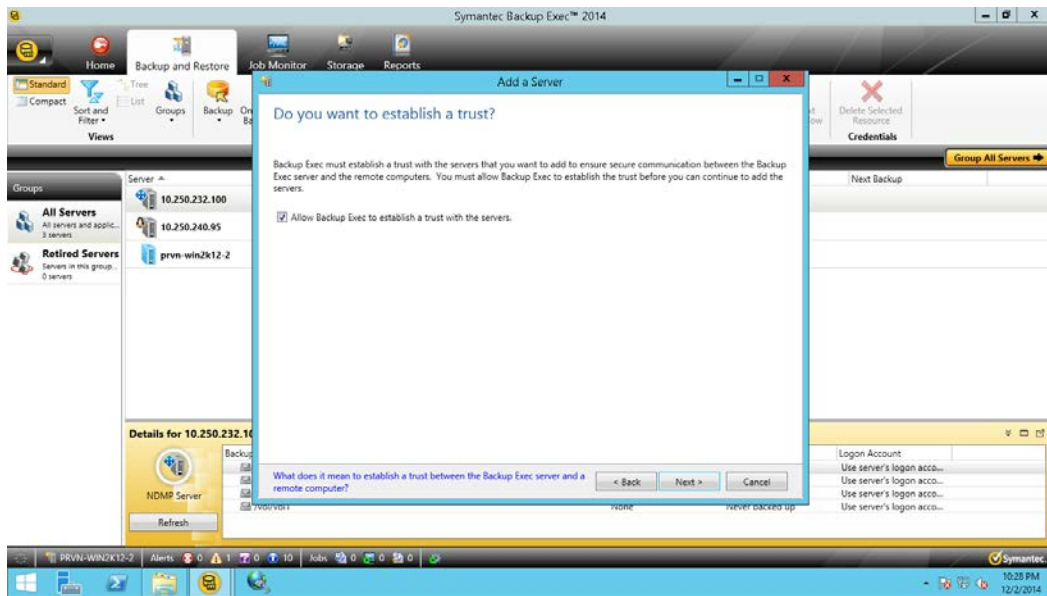


2. In the Add a Server window, select the type of client to add – Windows/Linux/NDMP.

**NOTE:** For a Linux client addition, you need to install the RALUS package. See Appendix B for information about installing the RALUS package on the Linux client.

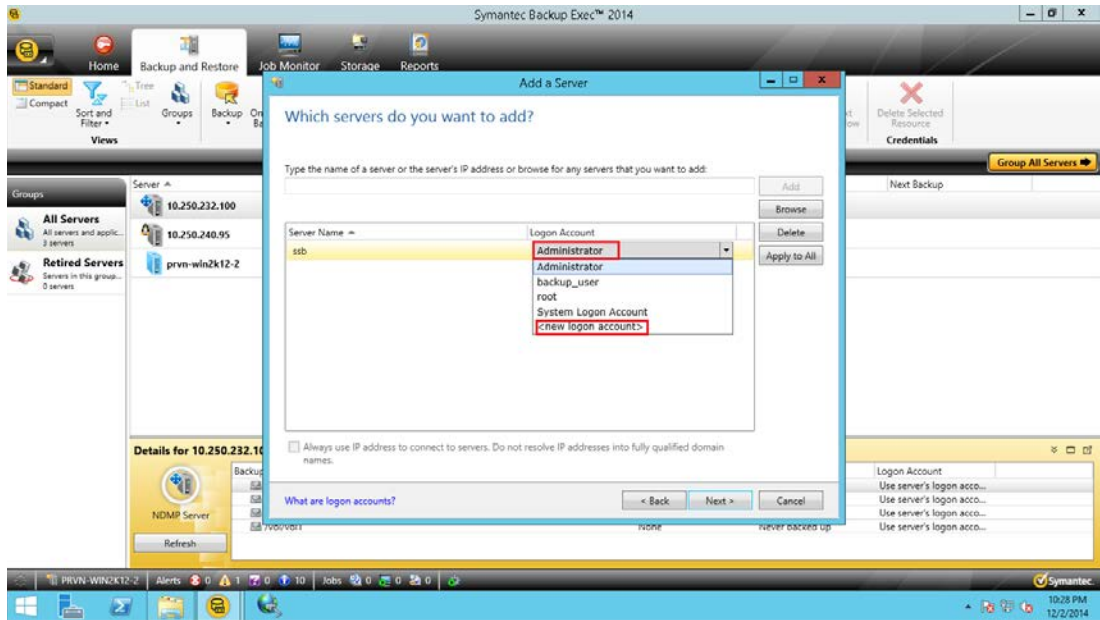


3. Using the Default settings, click **Next** to proceed.

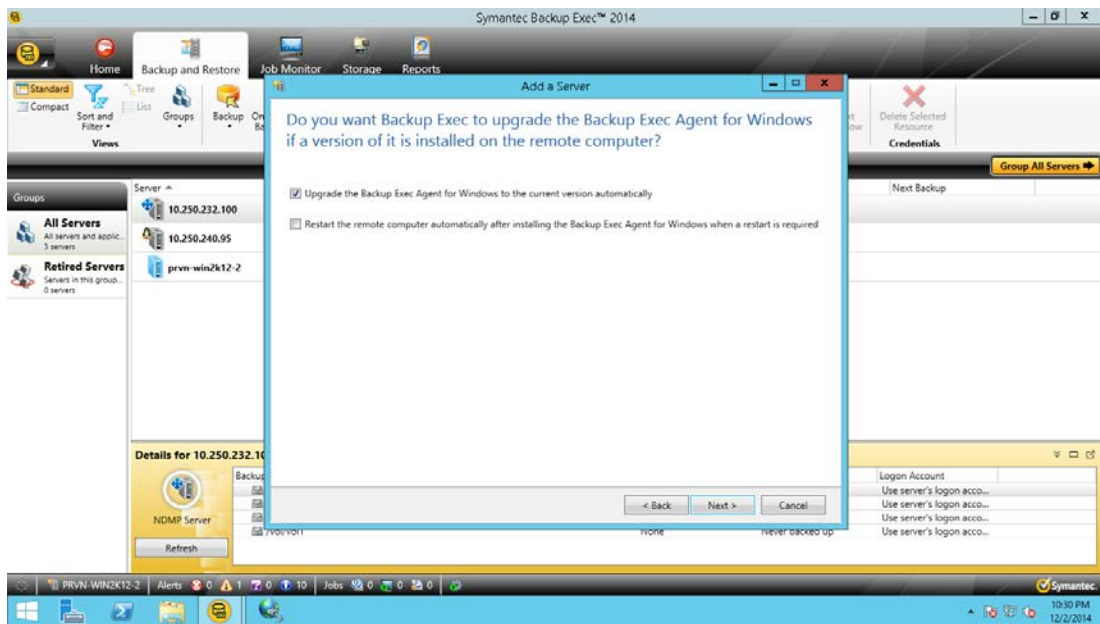


4. Provide the access credentials for the server you want to add. Select from the drop down or create new logon details as required.



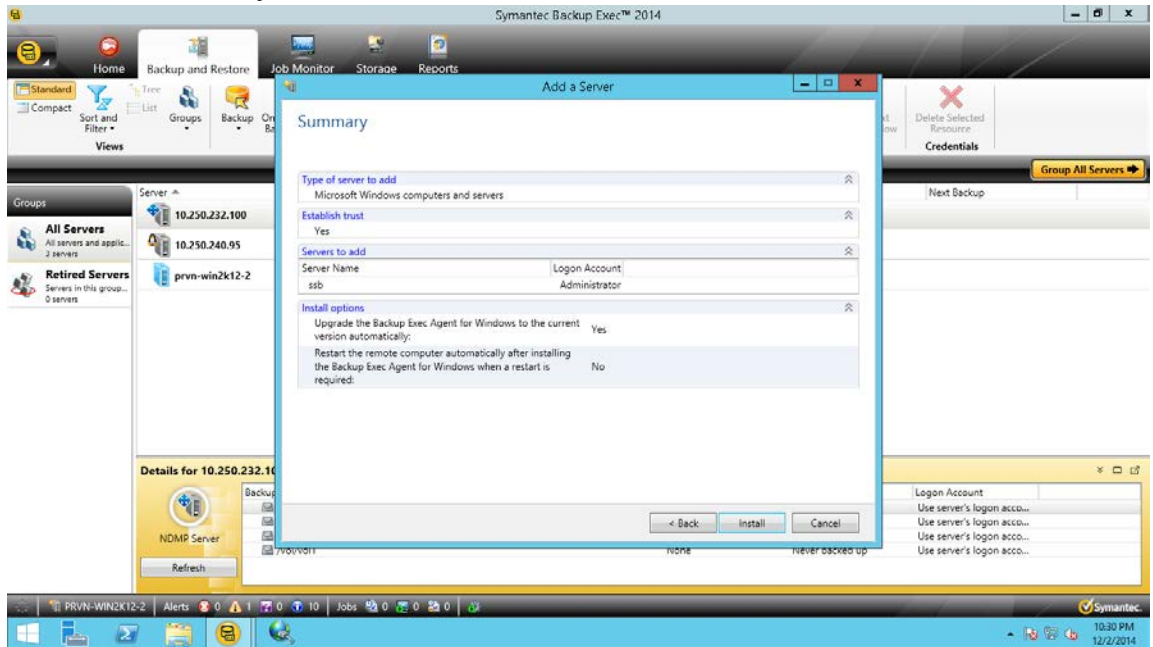


5. Using the default settings, click **Next** to proceed.

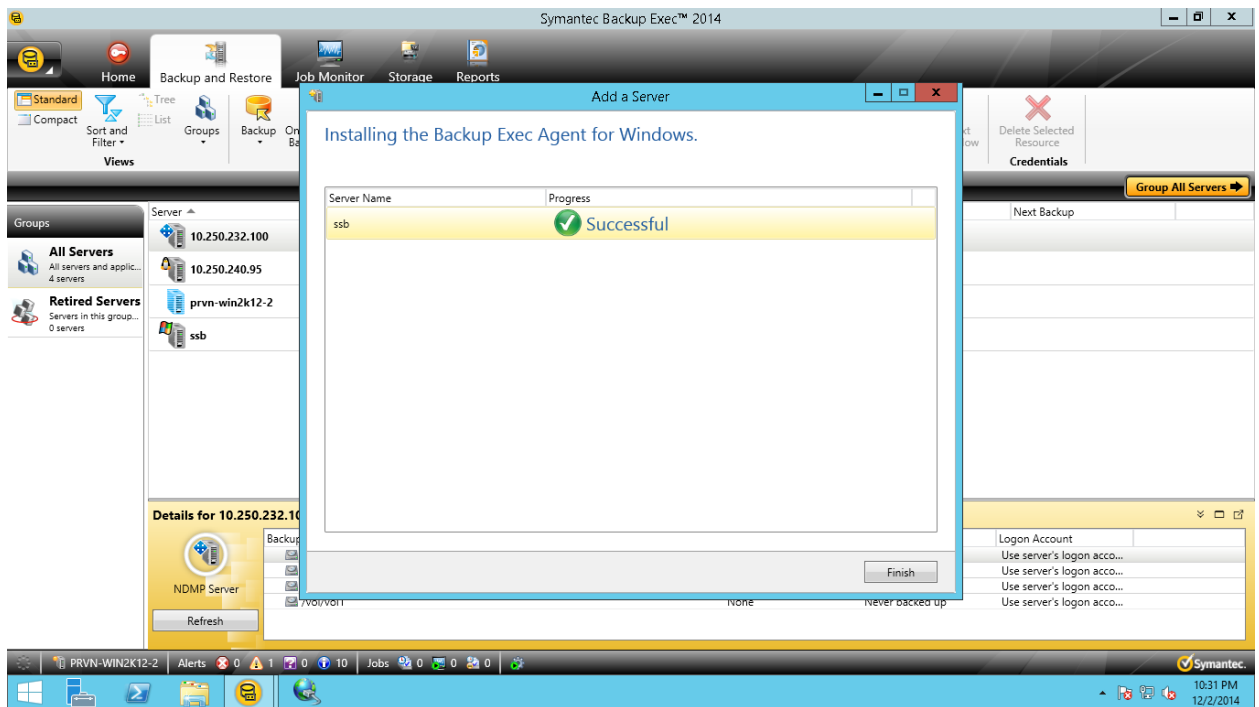




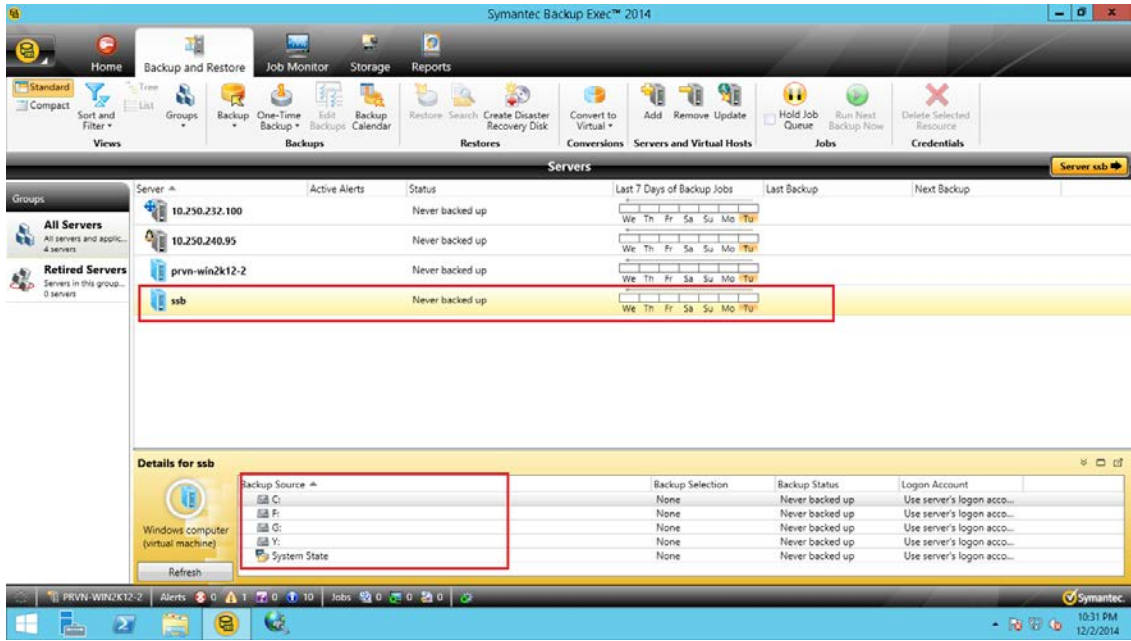
6. On the final summary screen, click **Install**.



The following screen shows the successful installation of a Remote Backup Exec Agent on the server.

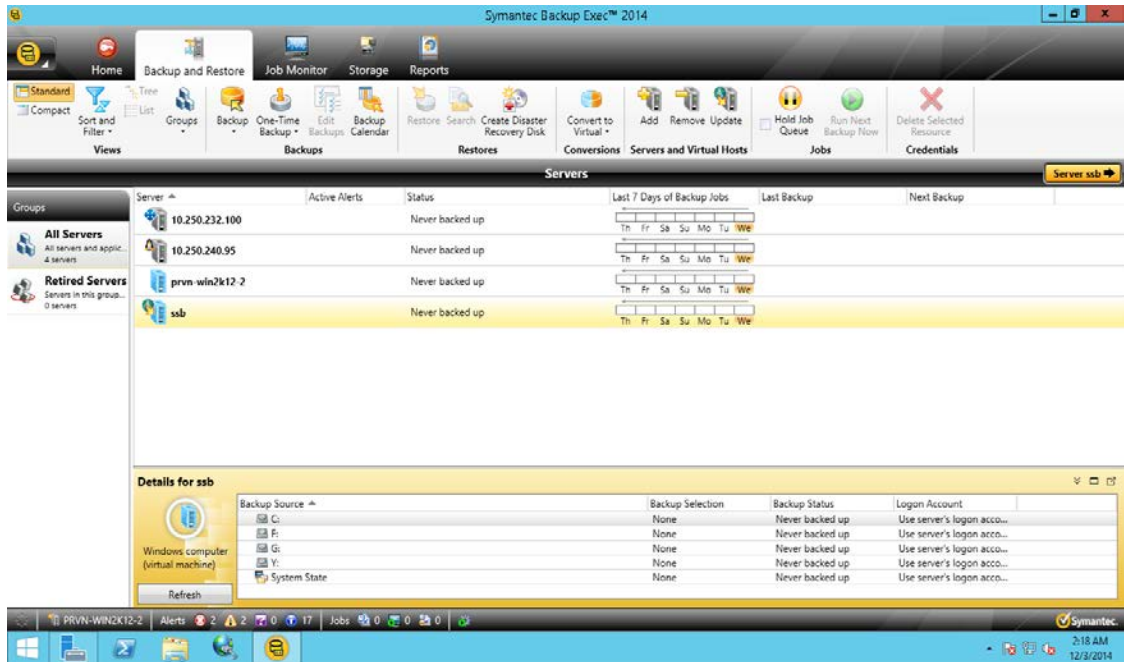


The Backup and Restore tab shows the newly added server and details as shown in following screen.

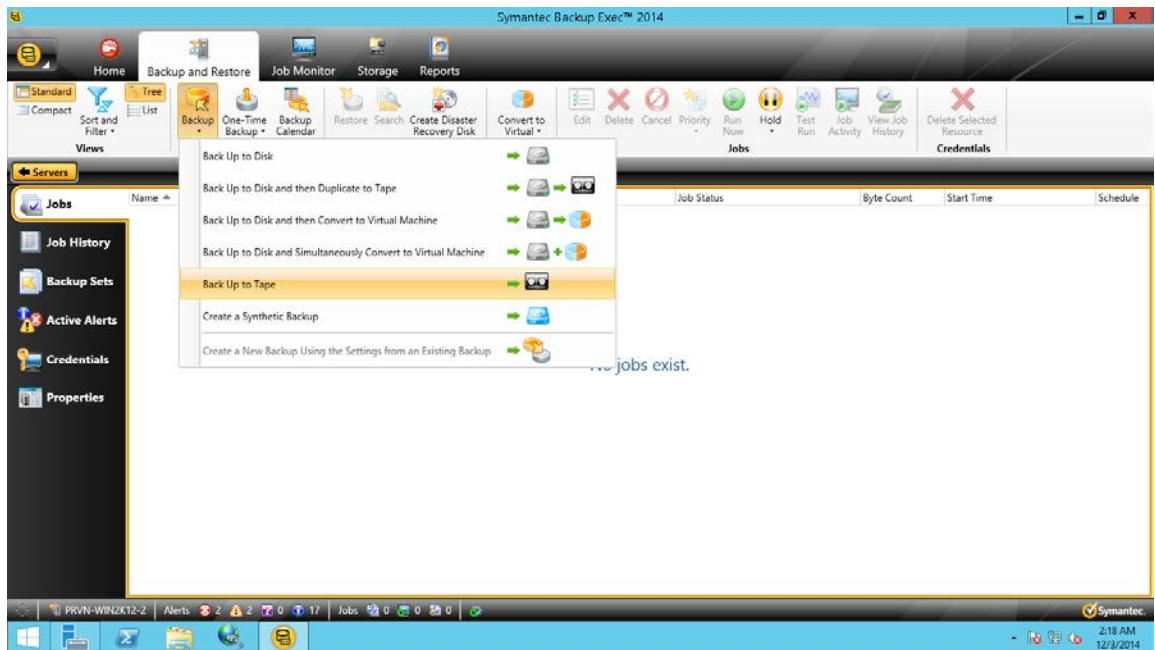


7. On the Backup and Restore tab, select the server that contains the data to back up and go to Details.

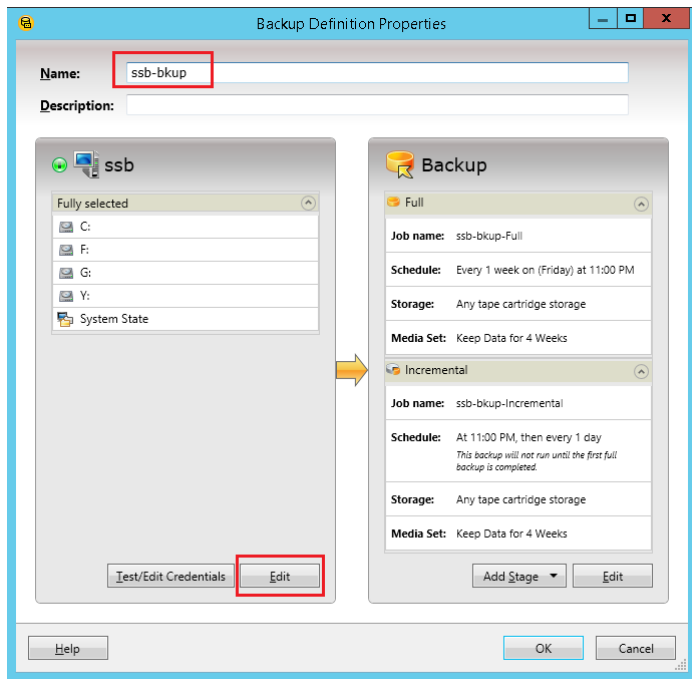




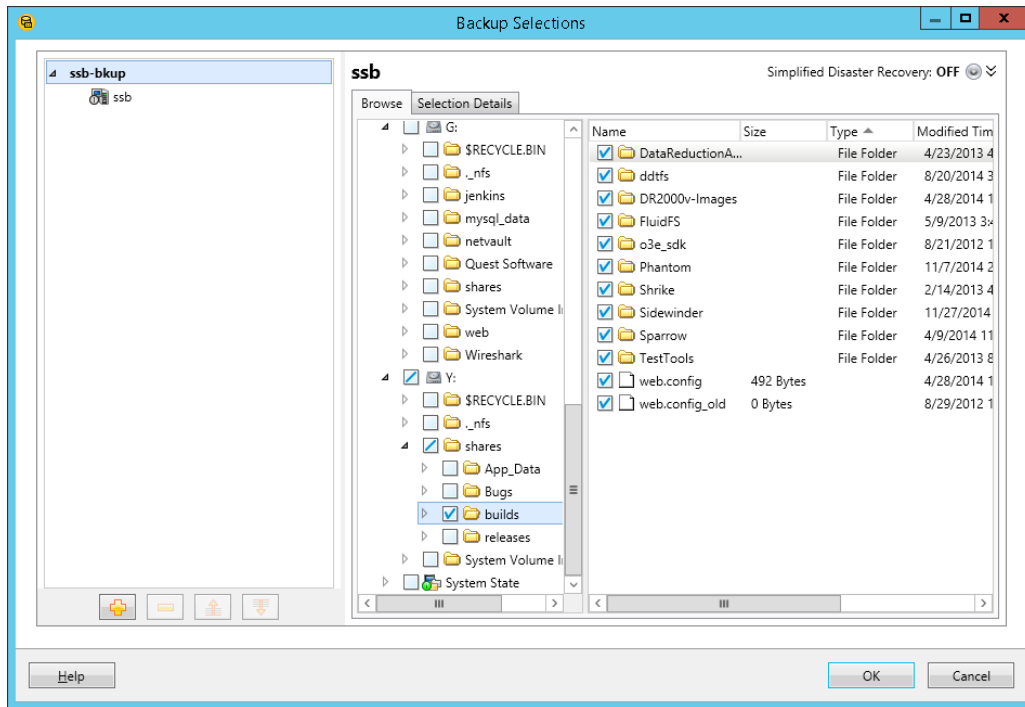
8. Select **Backup > Back up to Tape**.



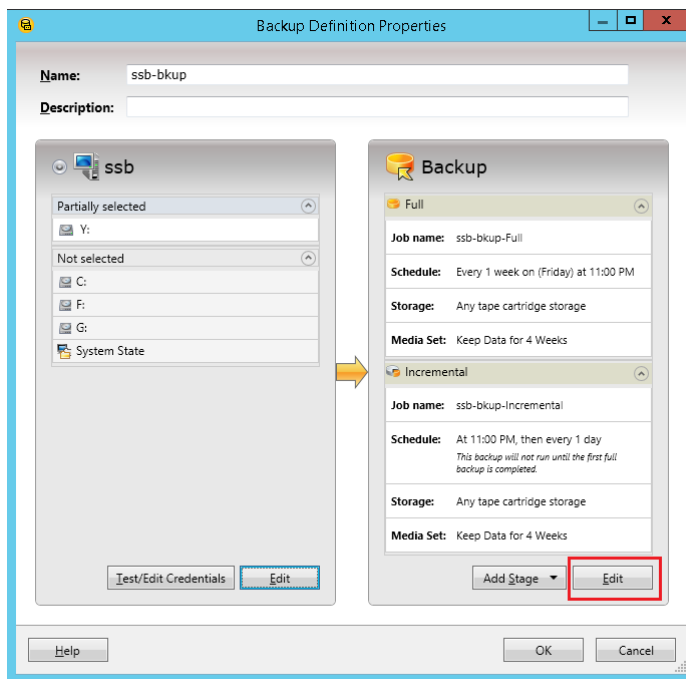
9. Enter a name for the policy and click **Edit** to select the server file systems.



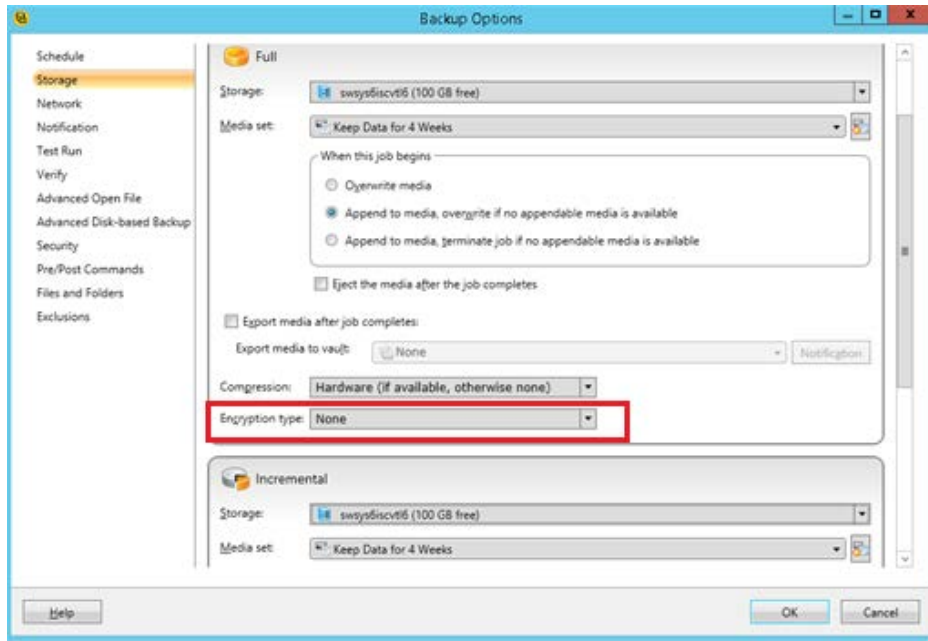
10. Browse and select the data to back up and click **OK** to continue.



11. Click the **Edit** button to update backup settings and provide the storage location.

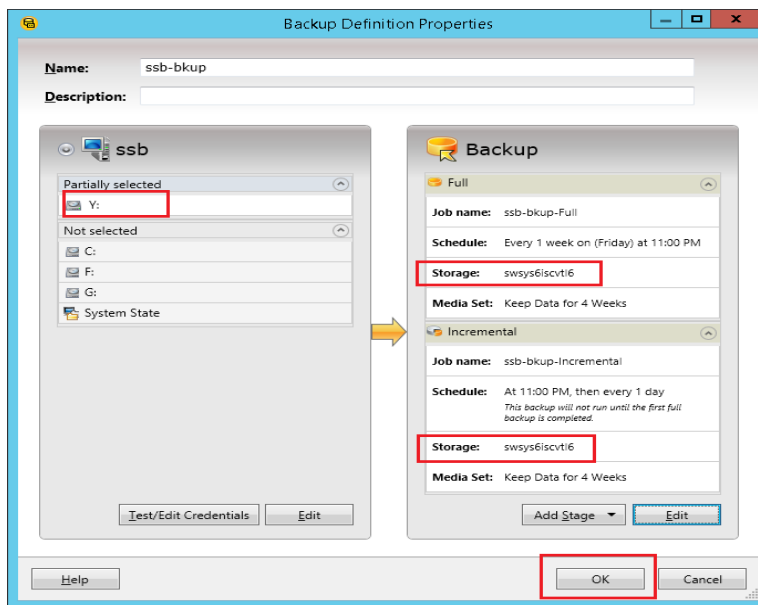


12. Click the **Storage** link on the left pane and select the required tape library as the storage unit.

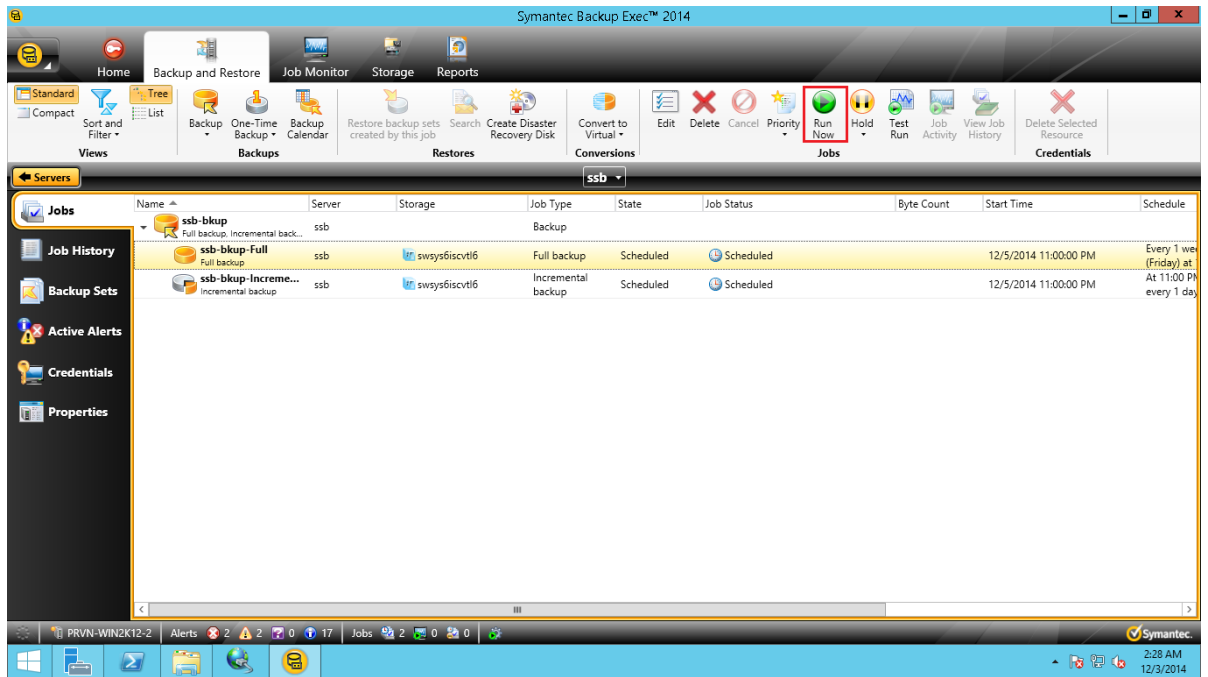


**NOTE:** Ensure that Encryption is turned off by setting it to "None". The DR Series system provides an encryption mechanism which should be enabled from within the DR Series system GUI or CLI. See the *DR Series System Administration Guide* for more information about enabling encryption.

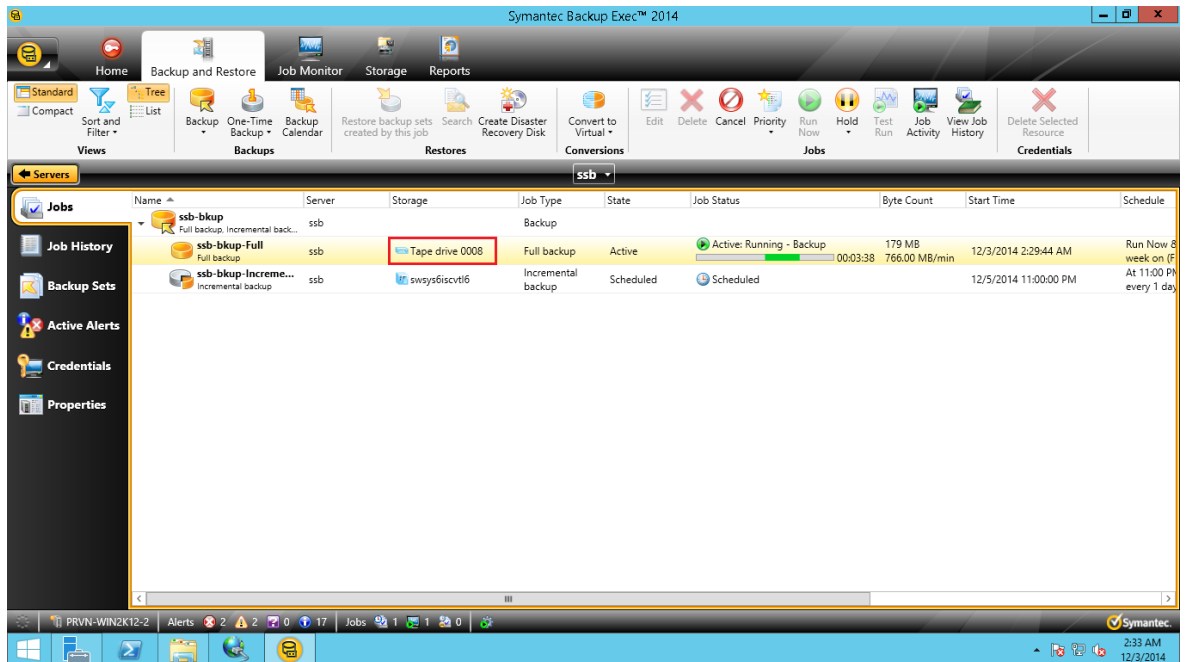
13. Review the final selections and click **OK**.



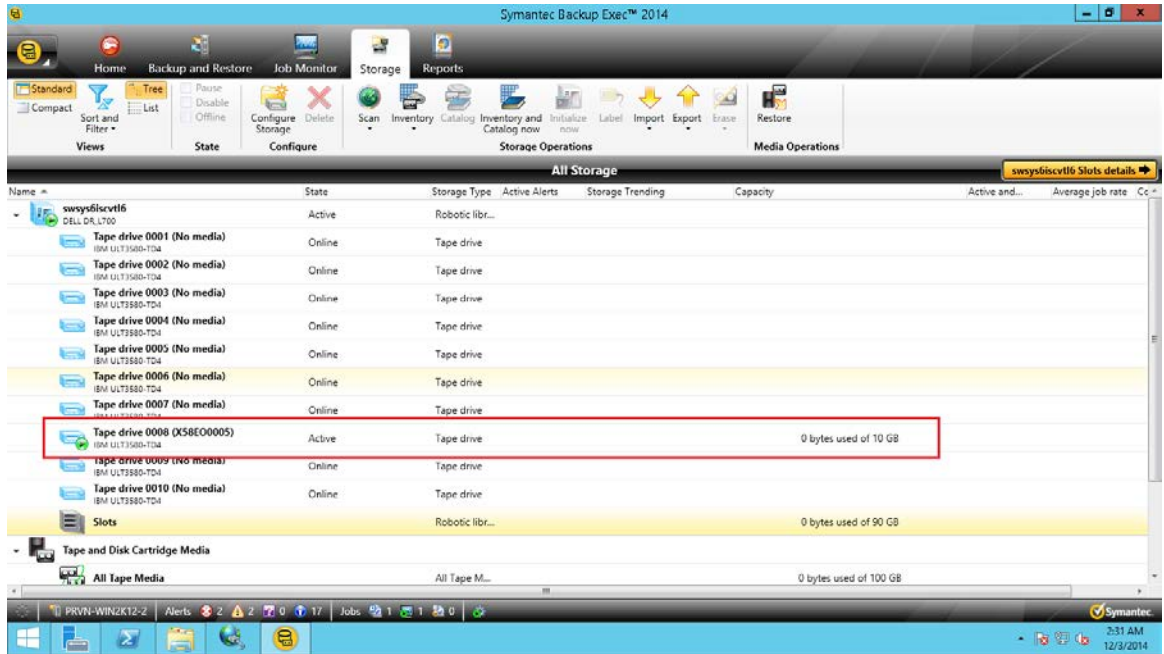
14. To run a backup job, select the backup policy (FULL schedule) and click **Run Now**.



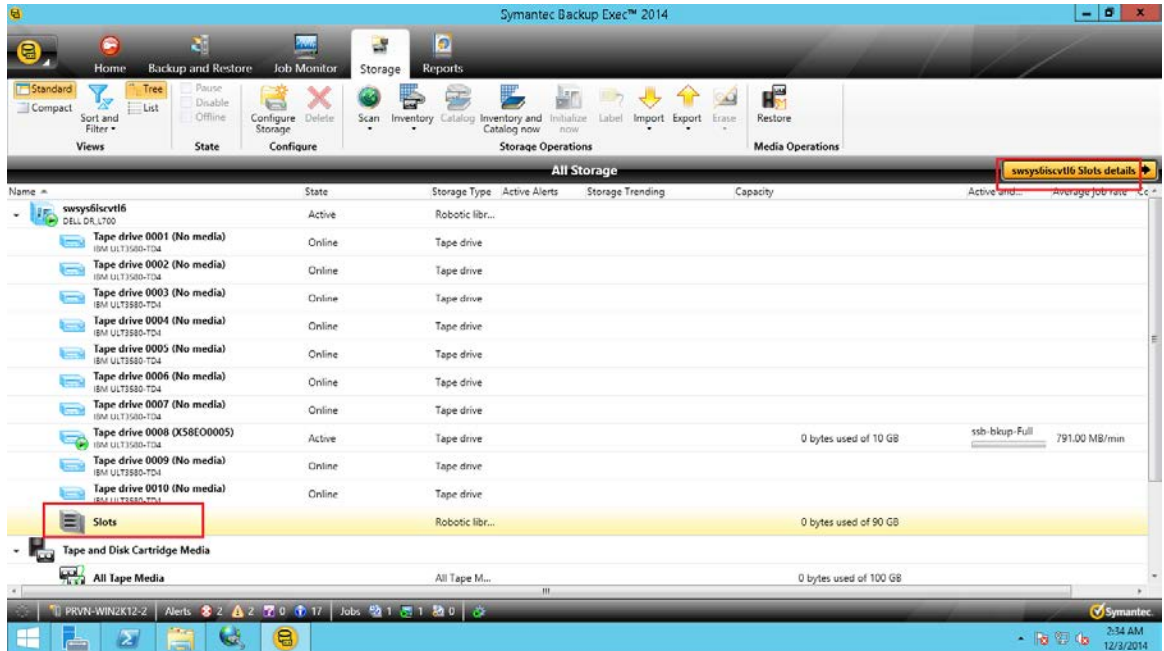
The backup progress can be seen in the Backup and Restore as well as the tape drive being used for the job.



15. Go to the Storage tab to see the tape drive in use and the media ID used for writing data.

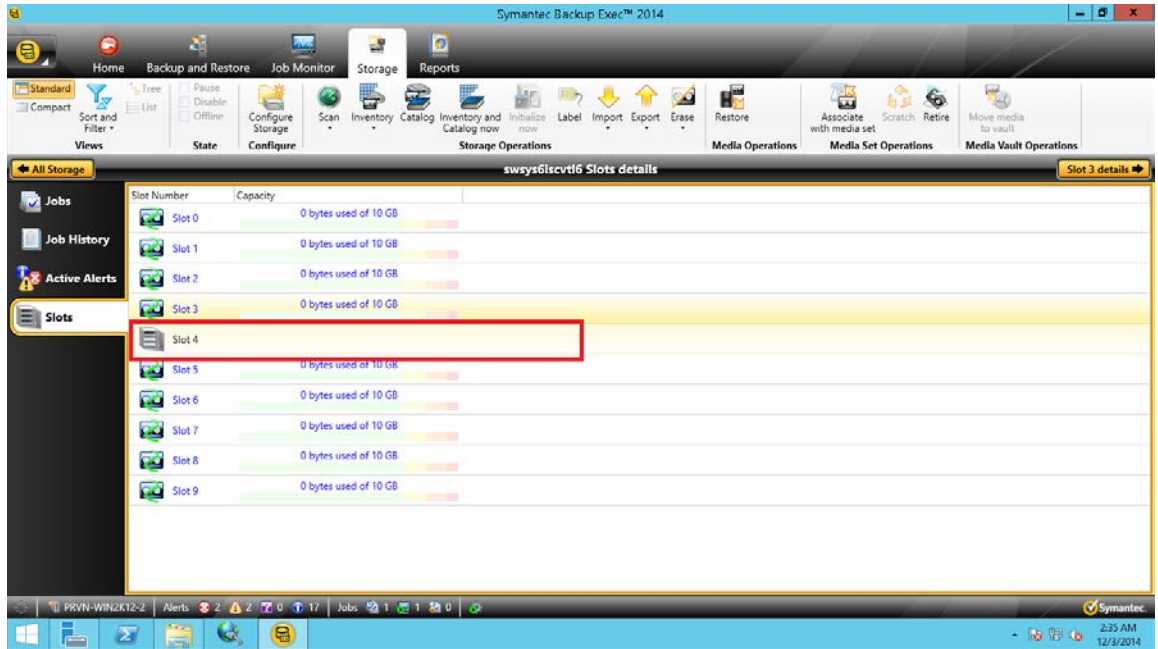


The capacity details can also be seen on the Storage tab against Slots.

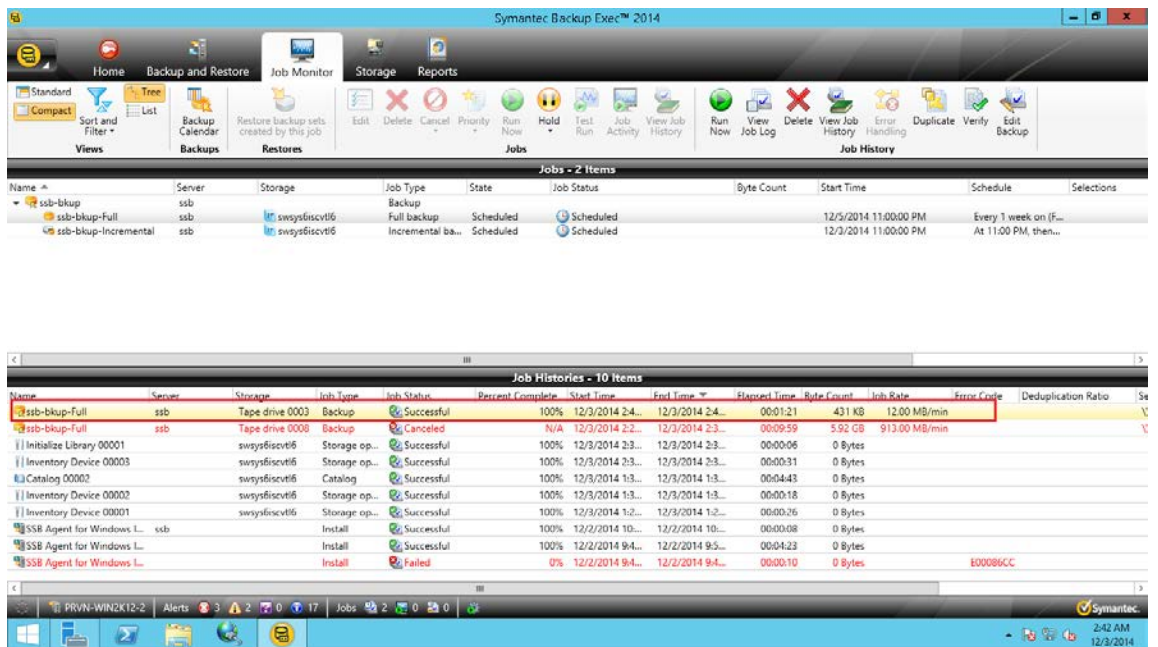




16. Go to **Slots > Details** to see the media available and media loaded in drive

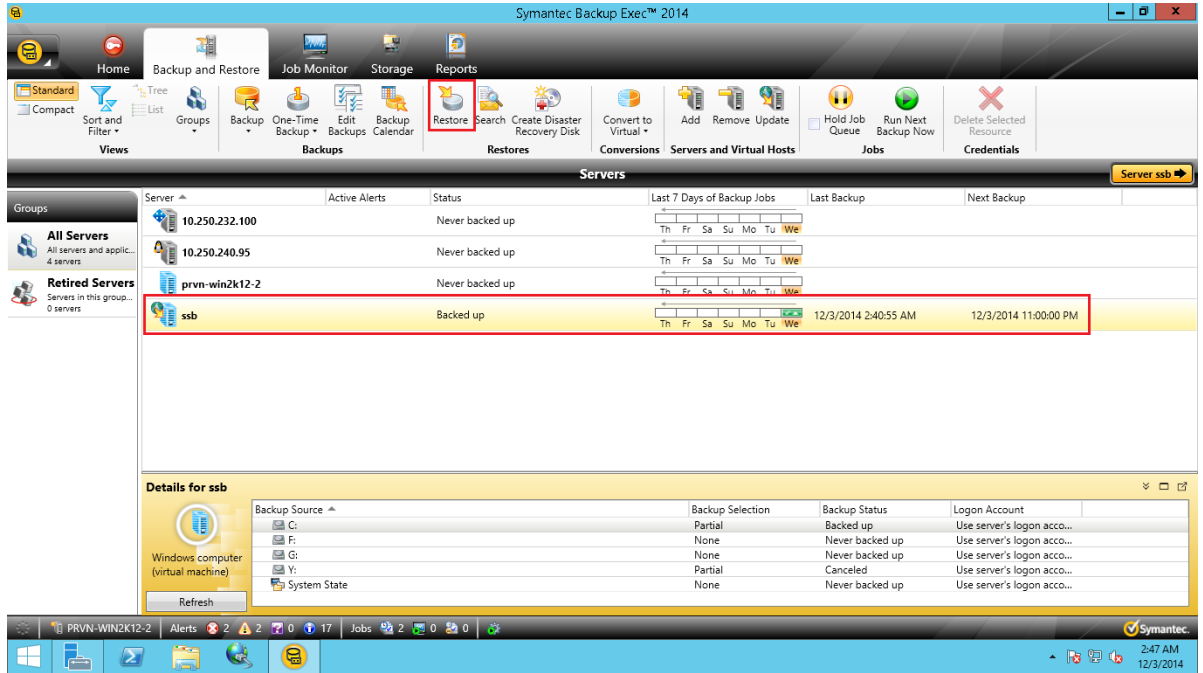


17. You can monitor the job status on the Job Monitor tab.

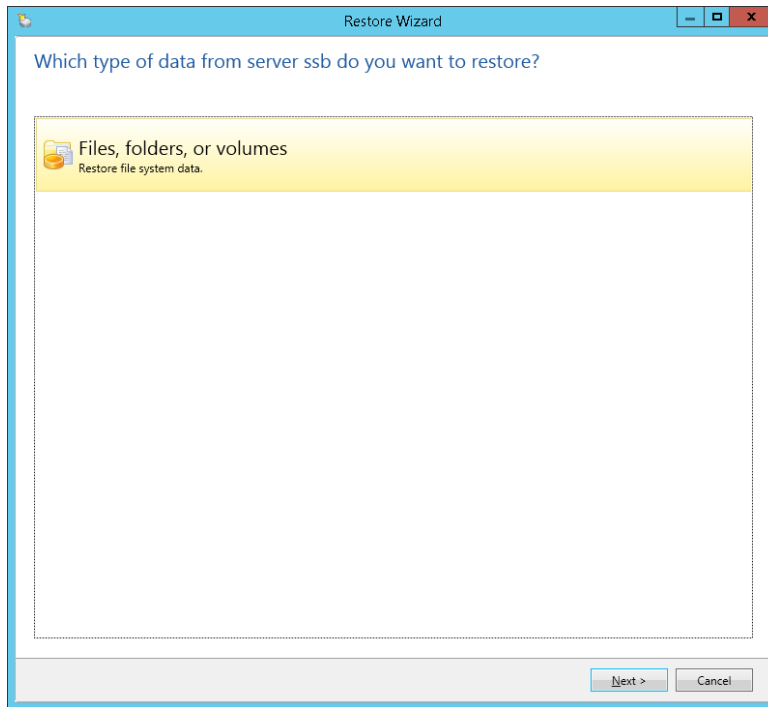


## 3.8 Restoring from tape

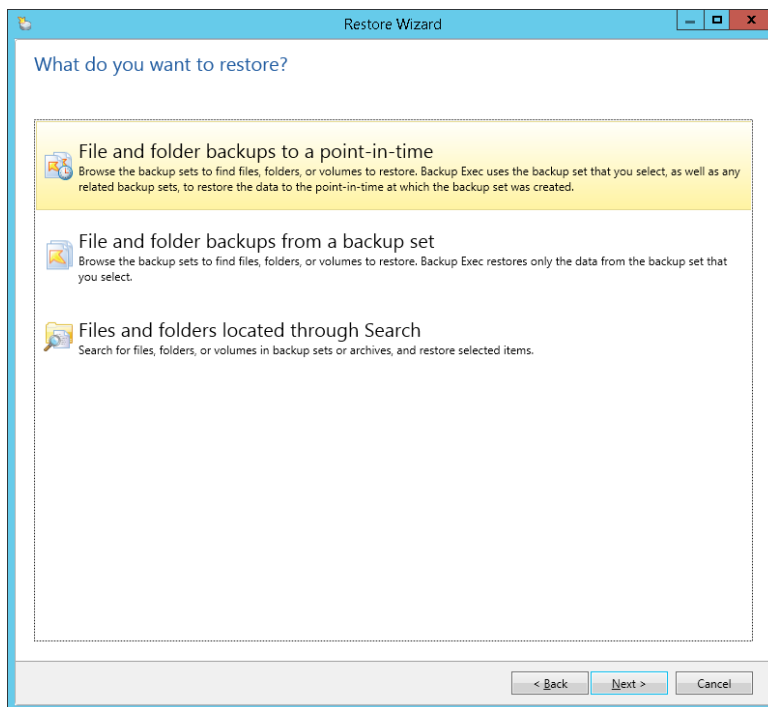
1. On the Backup and Restore tab, click the **Restore** button.



2. Using the default options, click **Next**.

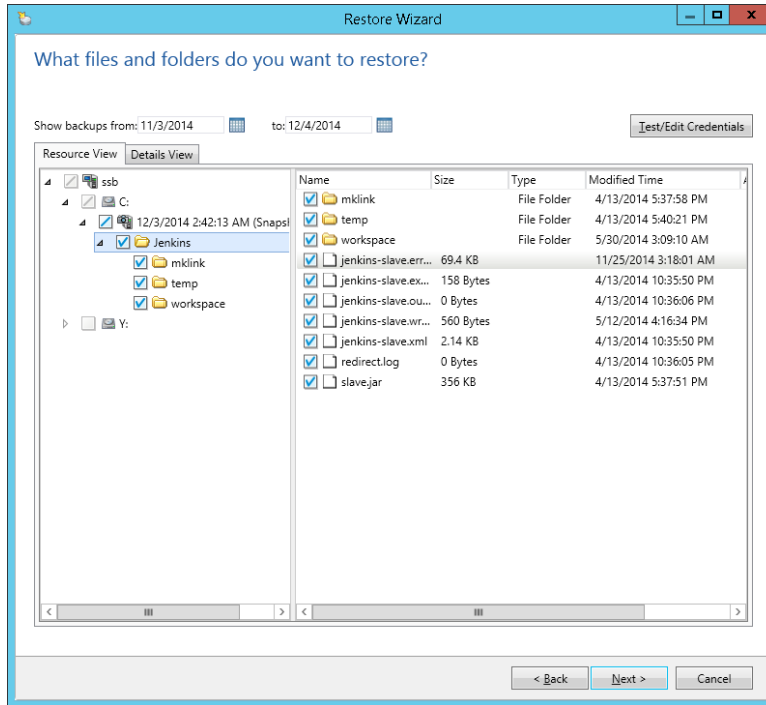


3. Using the default options or settings, click **Next**.

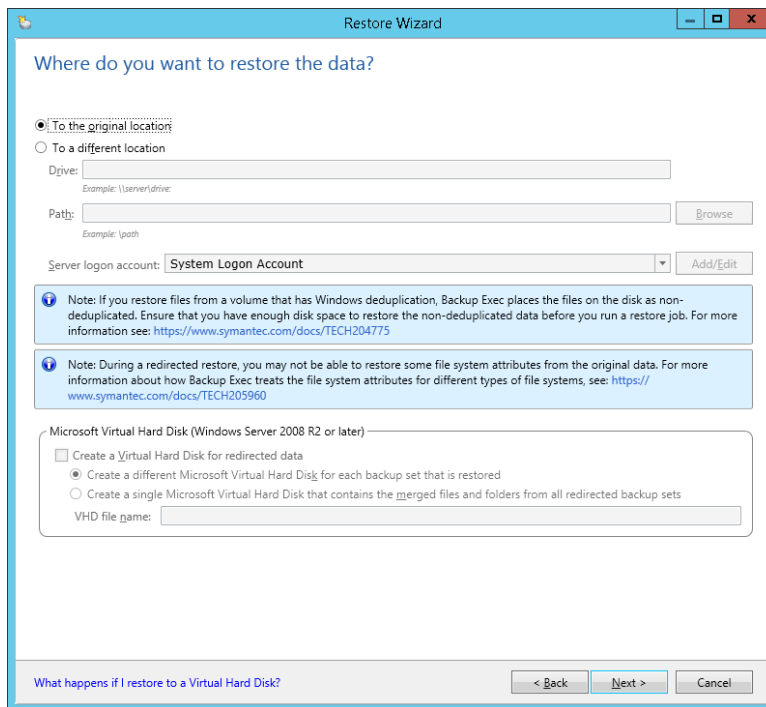


4. Select the data to restore from the appropriate snapshot and click **Next** to proceed.

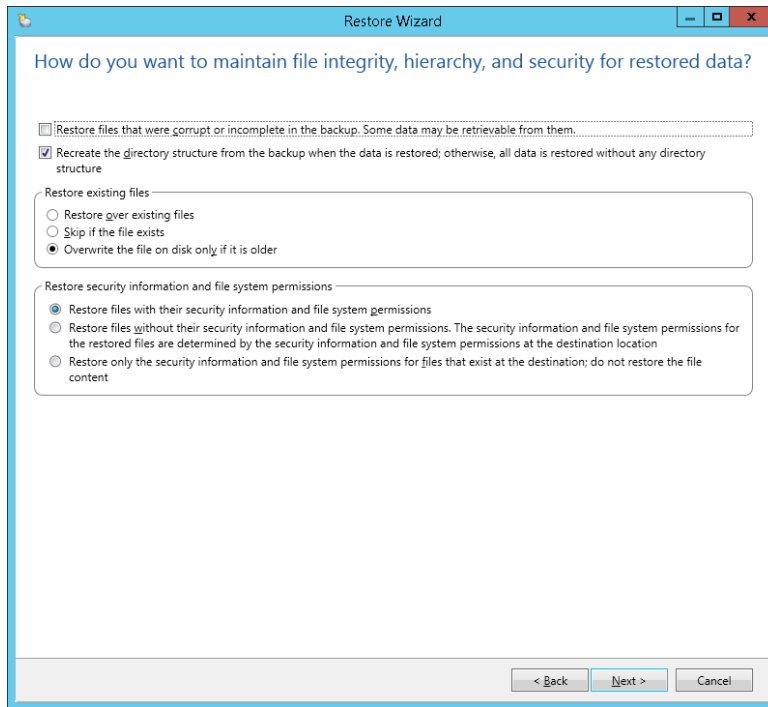




5. Select the default settings if you are restoring to the original location of the data, or specify the new location and click **Next**.

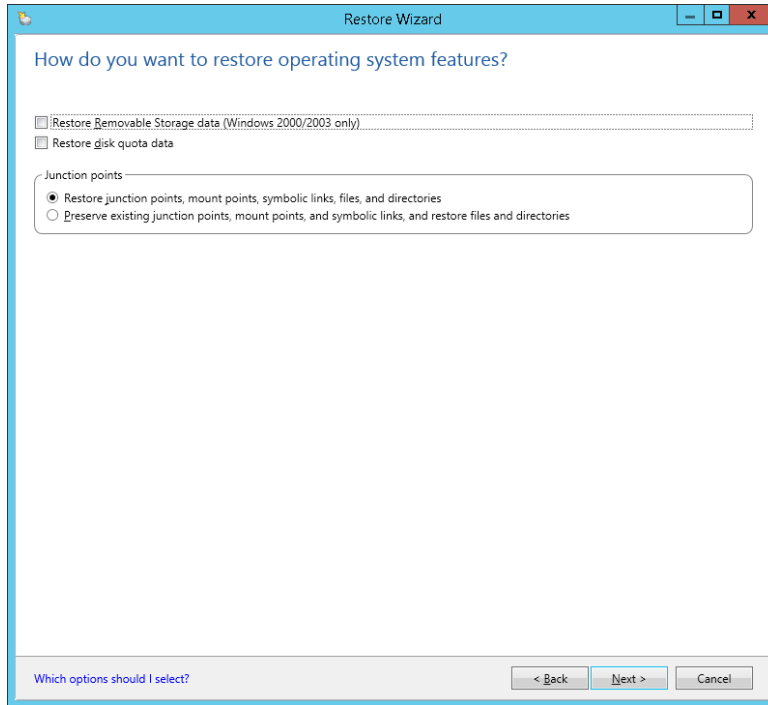


6. Using the default settings, click Next.

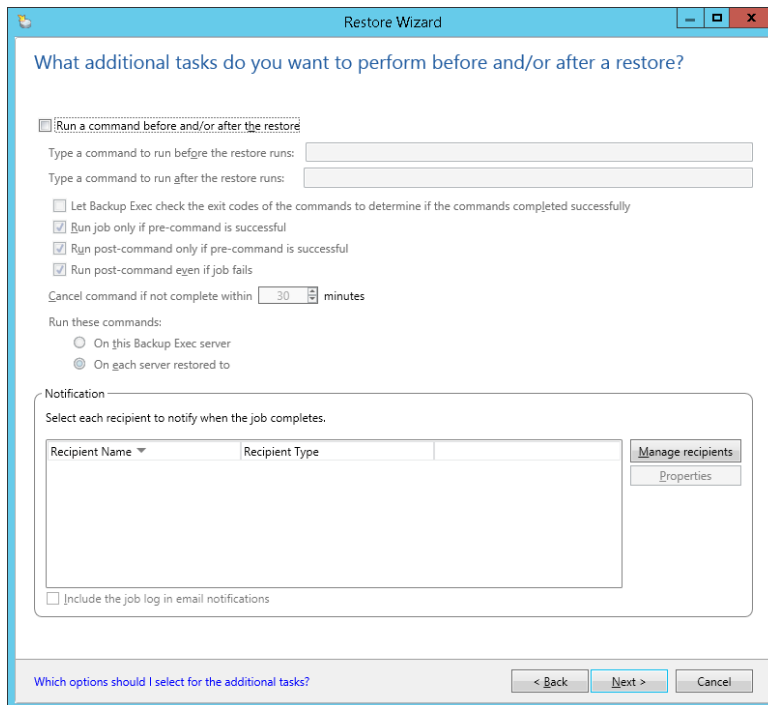


7. Using the default settings, click **Next** to proceed.

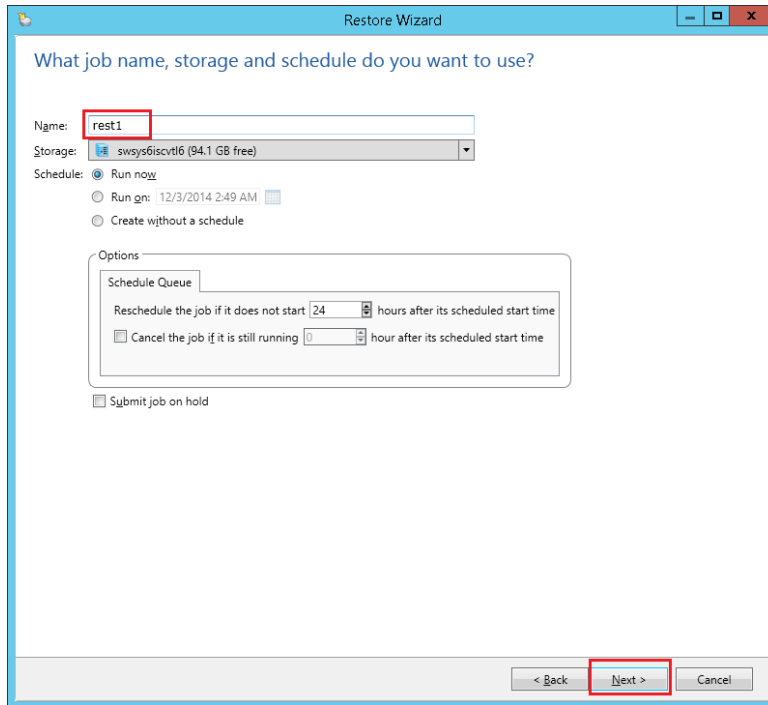




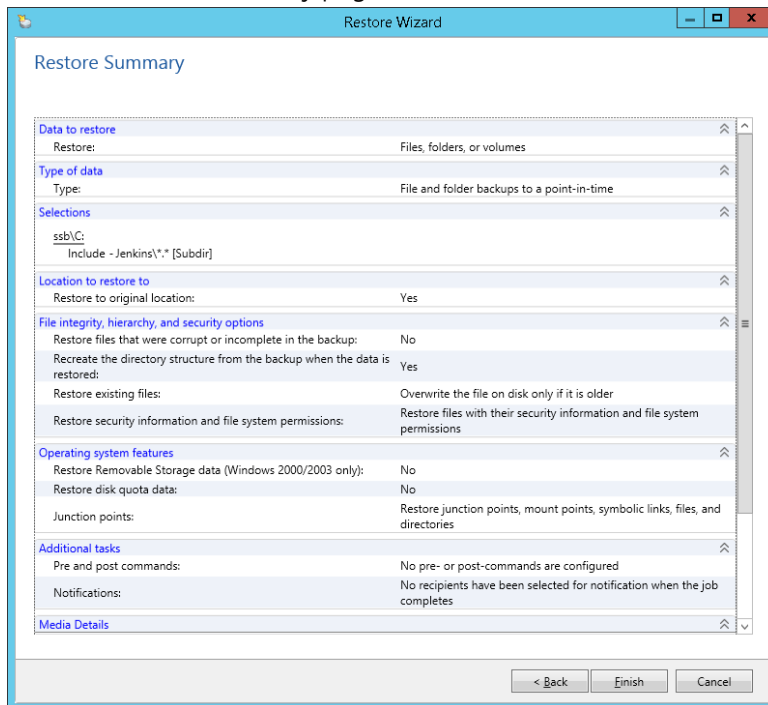
8. Using the default settings, click **Next** to proceed.



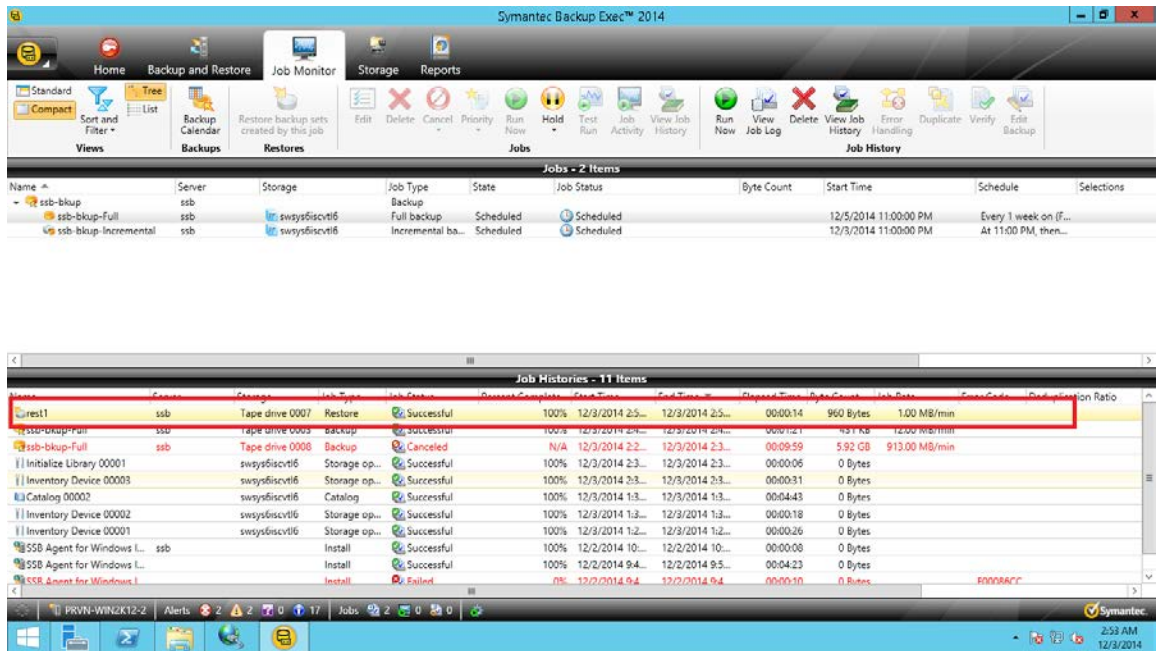
9. Enter a name for the restore job and schedule it as required, or select **Run now** to start the restore job immediately. Click **Next**.



10. On the Restore Summary page, click **Finish**.



11. On the Job Monitor tab you can see the restore status.





## 4 Configuring an OST container on the DR Series system for use with Symantec Backup Exec Server 2014/2015

### 4.1 Creating an OST container

1. Select **Containers** in the left navigation area of the DR Series system GUI, and then click **Create** at the top of the page.

The screenshot shows the Dell DR4000 GUI. The left navigation pane is open, and 'Containers' is selected, indicated by a red circle and the number 1. The main content area displays the 'Containers' page, which includes a table of existing containers and a 'Create' button at the top right, also highlighted with a red circle and the number 2.

Containers	Files	Marker Type	Access Protocol Enabled	Replication	Select
backup	0	Auto	CIFS	Not Configured	<input type="radio"/>
ndmpvtl	31	None	VTL NDMP	Not Configured	<input type="radio"/>
vm_cifs2	4	None	CIFS	Online	<input type="radio"/>
vol_be_cifs1	24	None	CIFS	Online	<input type="radio"/>
vol_be_ost1	13	None	Symantec OST	N/A	<input type="radio"/>

2. Enter a Container Name and then click **Next**.

The screenshot shows the 'Container Wizard - Create New Container' dialog box. The 'Container Name' field is filled with 'BE\_OST' and is highlighted with a red circle. The 'Next >' button at the bottom right is also highlighted with a red circle.

Container Name\*:

Virtual Tape Library (VTL):

Cancel

3. Select **Symantec OpenStorage (OST)** as the access protocol and click **Next**.

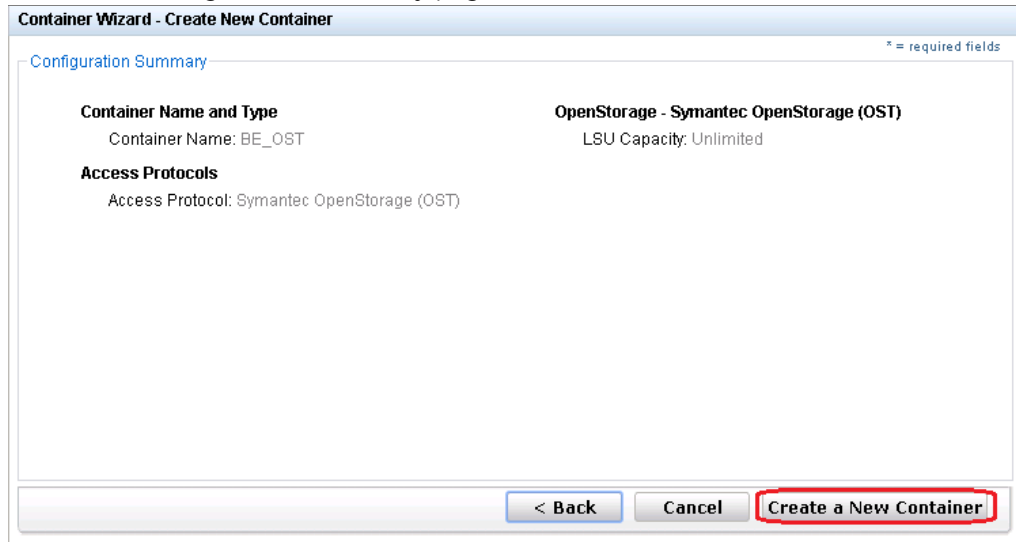
The screenshot shows the 'Container Wizard - Create New Container' dialog box. The title bar reads 'Container Wizard - Create New Container' and there is a note '\* = required fields' in the top right. The main area is titled 'Select Access Protocols'. Under 'Storage Access Protocol:', there are three radio button options: 'Dell Rapid Data Storage (RDS)', 'Symantec OpenStorage (OST)', and 'NAS (NFS, CIFS)'. The 'Symantec OpenStorage (OST)' option is selected and highlighted with a red box. To the right, under 'Container Name and Type', the value 'BE\_OST' is displayed. At the bottom, there are three buttons: '< Back', 'Cancel', and 'Next >'. The 'Next >' button is highlighted with a red box.

4. Set the capacity of the OST LSU as needed, and click **Next**.

The screenshot shows the 'Container Wizard - Create New Container' dialog box. The title bar reads 'Container Wizard - Create New Container' and there is a note '\* = required fields' in the top right. The main area is titled 'Configure OpenStorage'. Under 'LSU Capacity:', there are two radio button options: 'Unlimited' and 'Quota'. The 'Unlimited' option is selected and highlighted with a red box. The 'Quota' option is followed by a text input field and '(GIB) ?'. To the right, under 'Container Name and Type', the value 'BE\_OST' is displayed. Below that, under 'Access Protocols and Marker Type', the value 'Symantec OpenStorage (OST)' is displayed. At the bottom, there are three buttons: '< Back', 'Cancel', and 'Next >'. The 'Next >' button is highlighted with a red box.

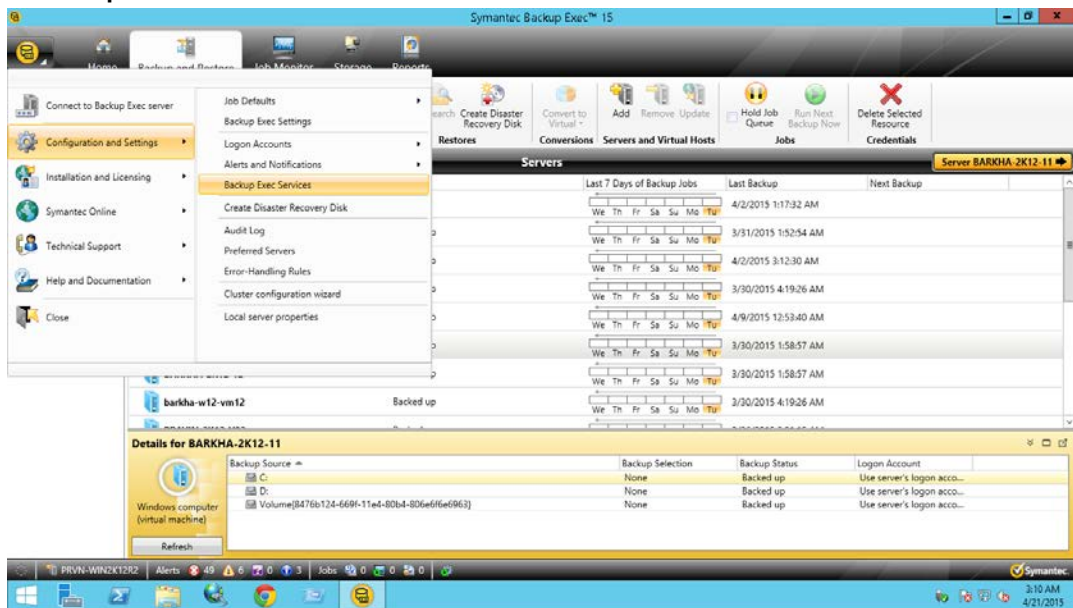


- Review the configuration Summary page, and then click **Create a New Container**.

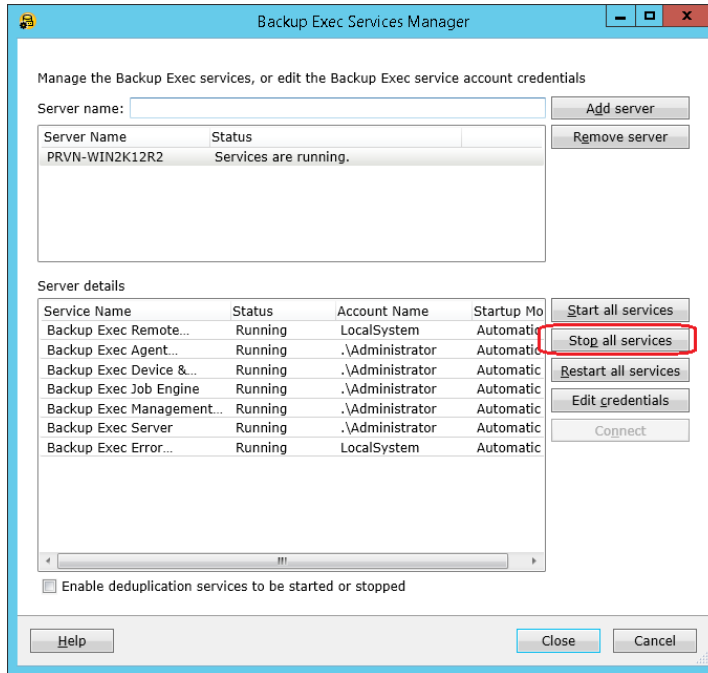


## 4.2 Installing the OST plugin

- Launch the Backup Exec Admin Console. Click **Home**, and then select **Configuration and Settings > Backup Exec Services**.

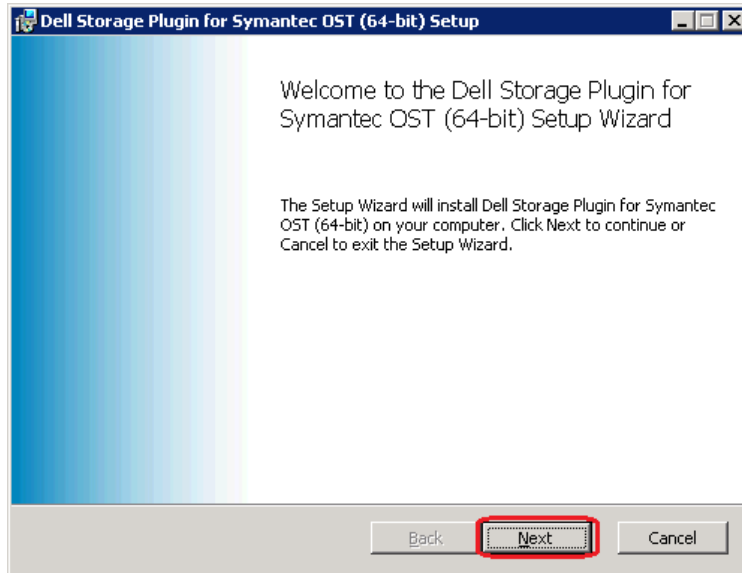


2. On the Services Manager page, click **Stop all Services**.

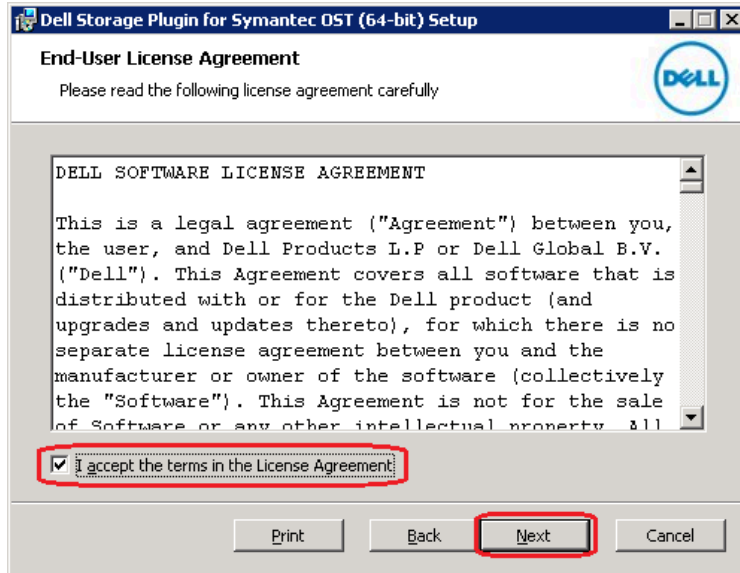


You now can install the OST Plugin (after all Backup Exec services have been stopped). You can get the installation packages from the list of binaries provided by Dell, Inc.

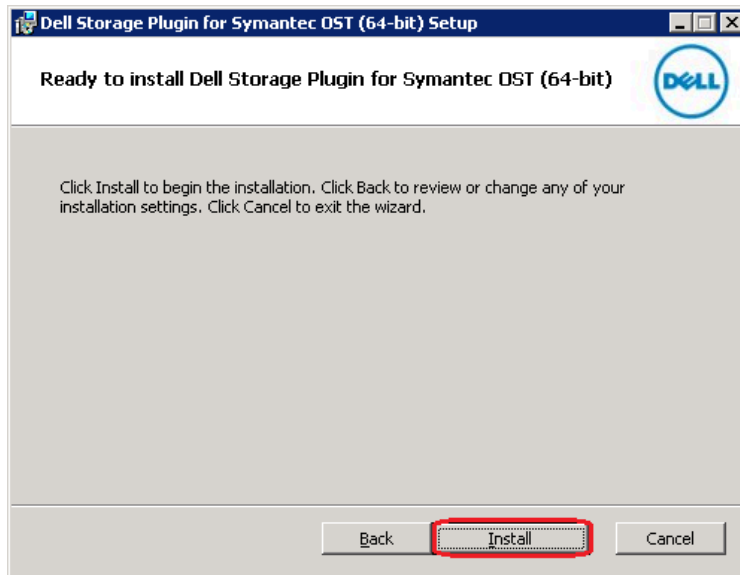
3. In the Dell Storage Plugin Installation dialog box, click **Next**.



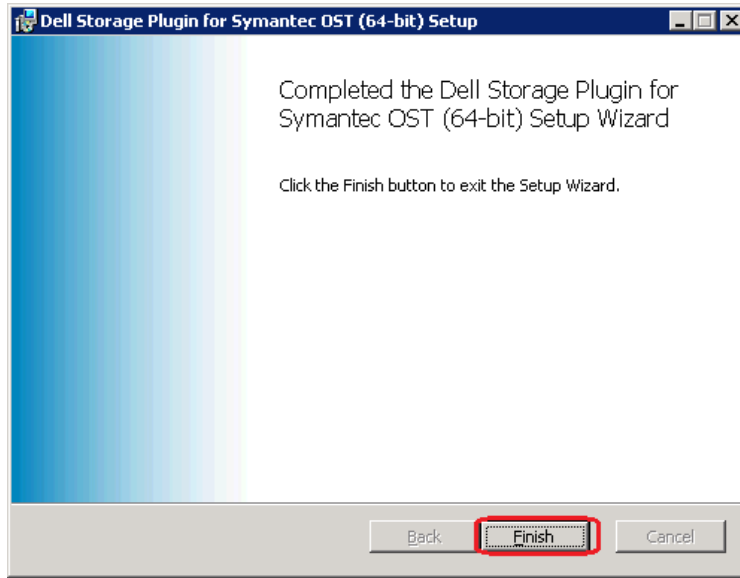
4. Accept the License agreement and click **Next**.



5. Click the **Install** button to proceed with installation.

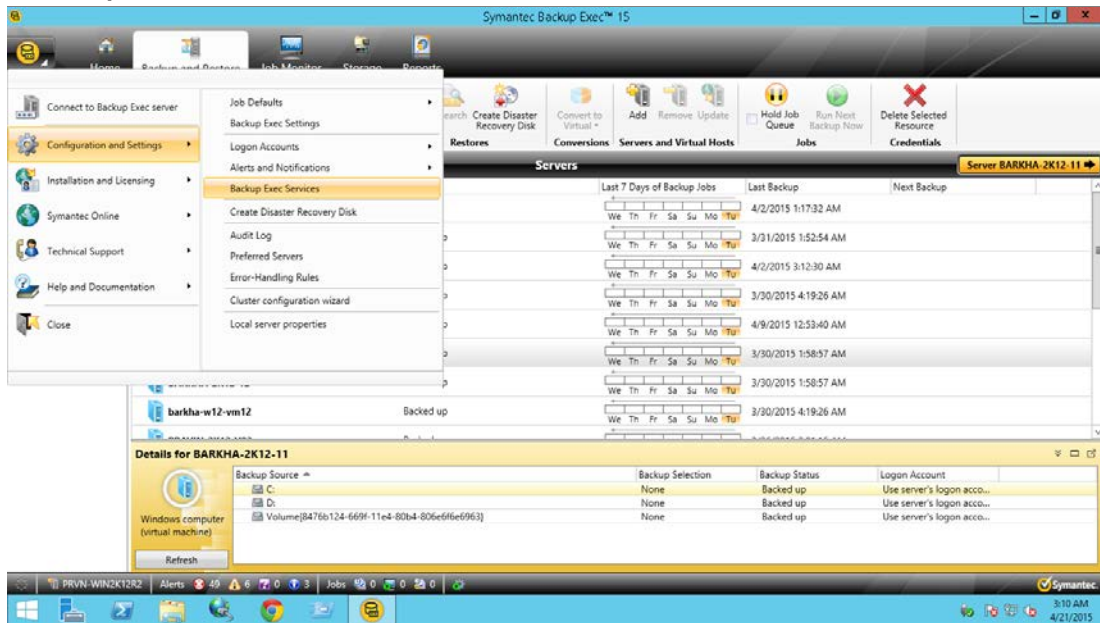


- Click **Finish** to complete the installation of the OST plugin.

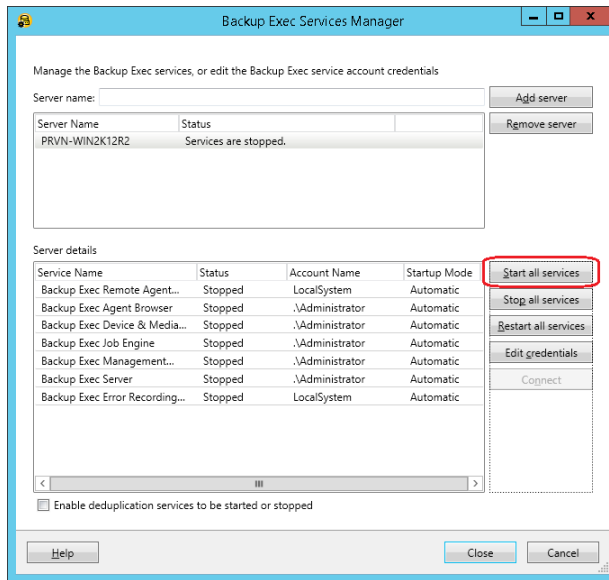


## 4.3 Configuring the OST device in Backup Exec

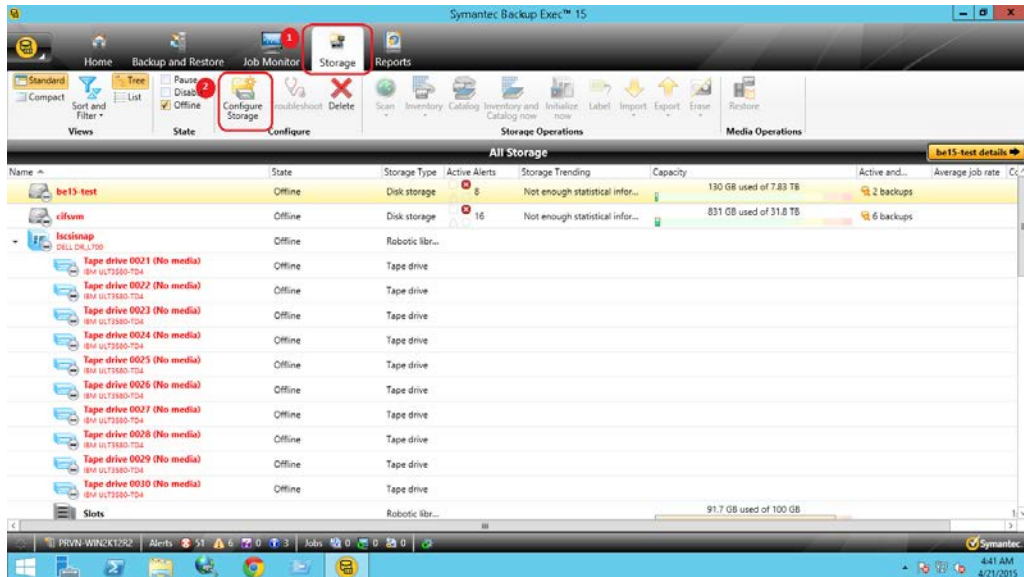
- Launch the Backup Exec Admin Console. Click **Home**, and then select **Configuration and Settings > Backup Exec Services**.



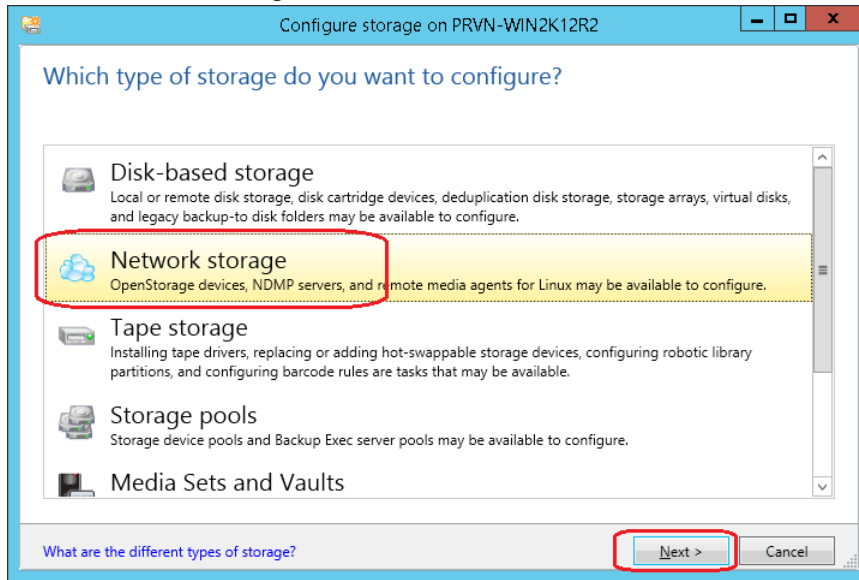
2. On the Services Manager page, click **Start all Services**.



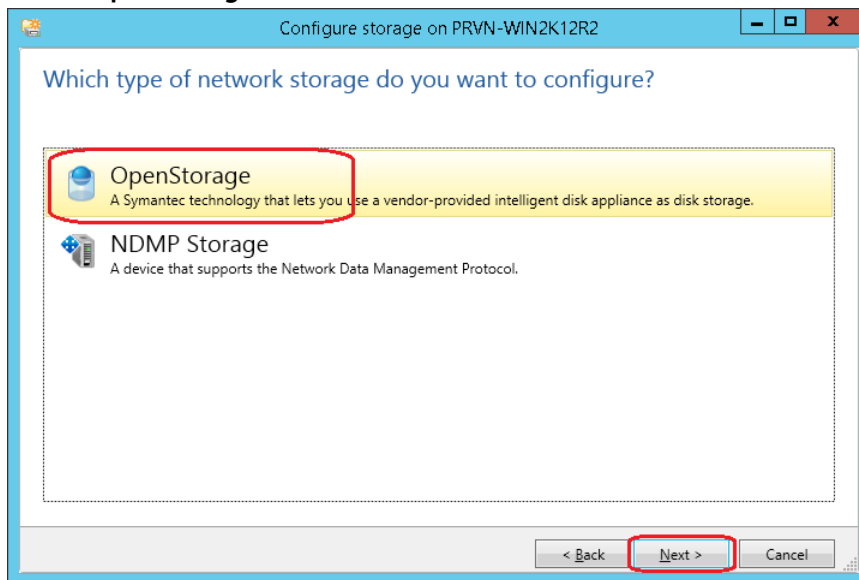
3. On the Storage tab, select **Configure Storage**.



4. Select **Network Storage**, and click **Next**.

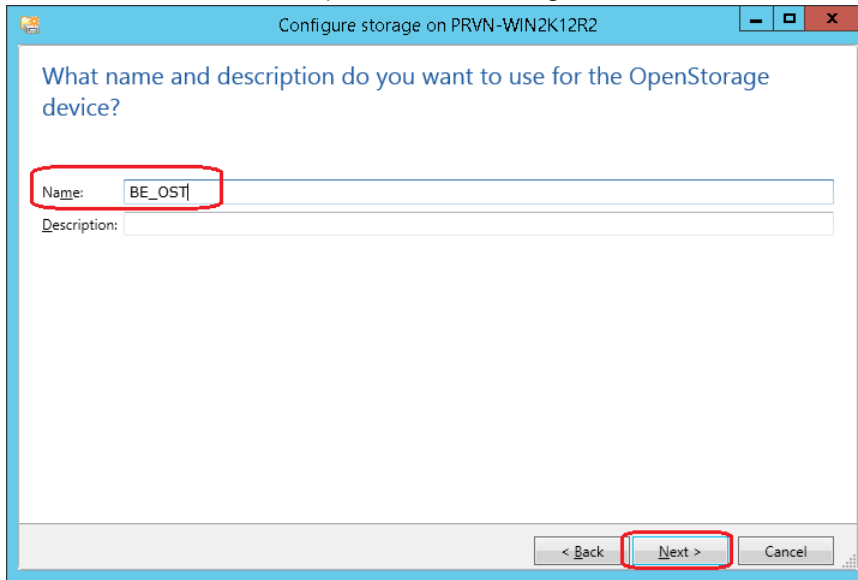


5. Select **OpenStorage**, and click **Next**.

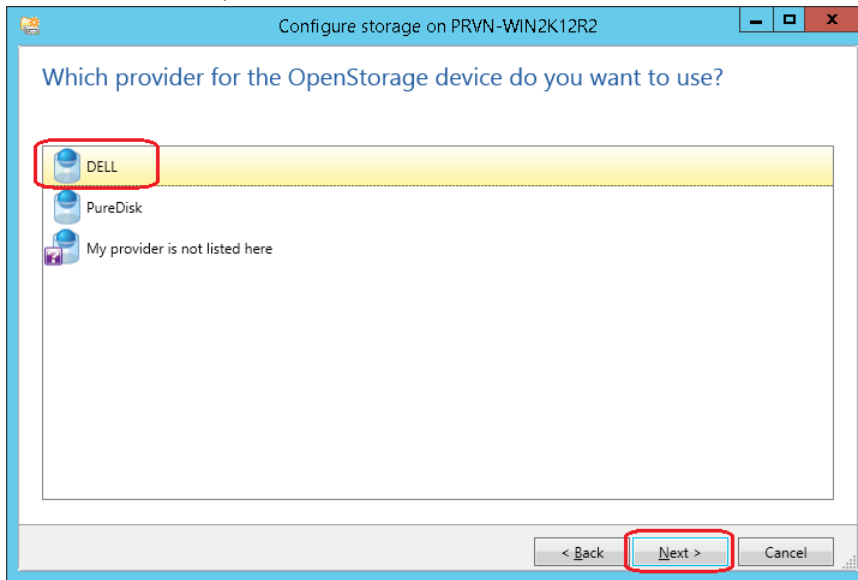




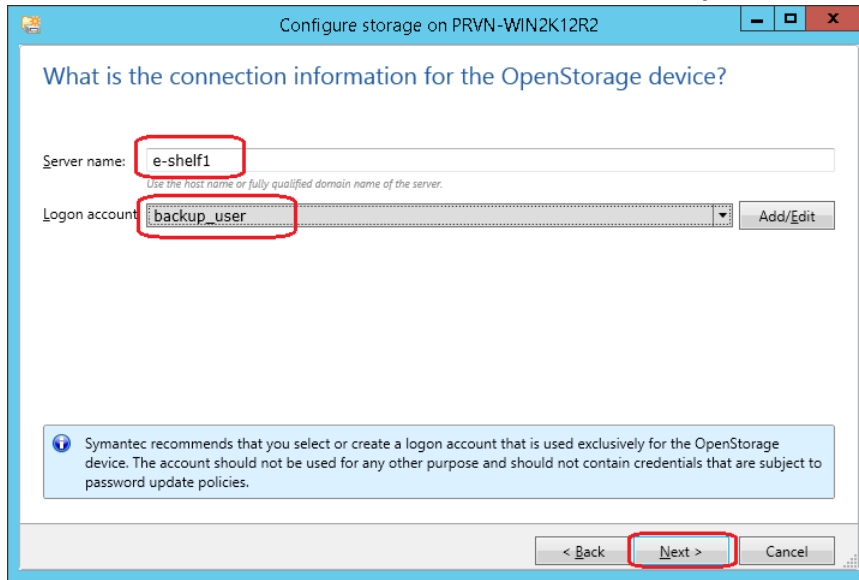
6. Enter the name and description for the configured OST device, and click **Next**.



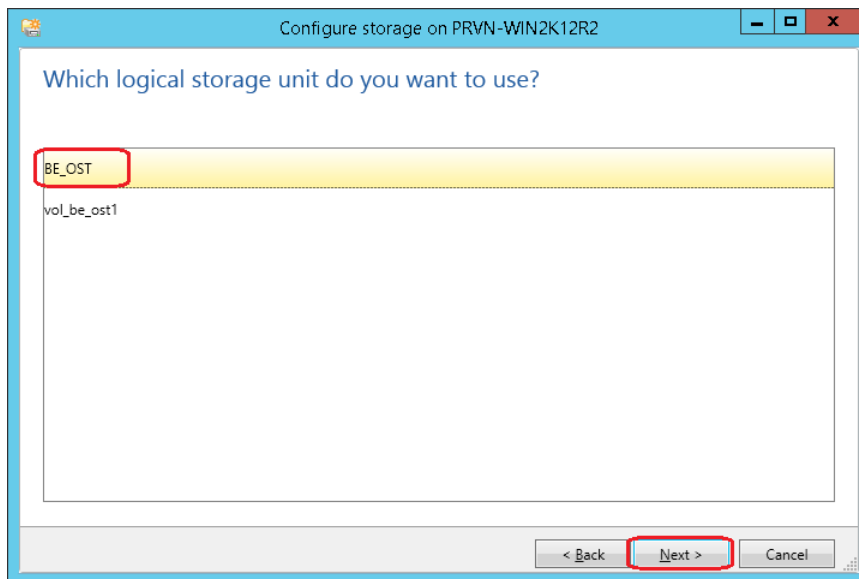
7. Select Dell as the provider and click **Next**.



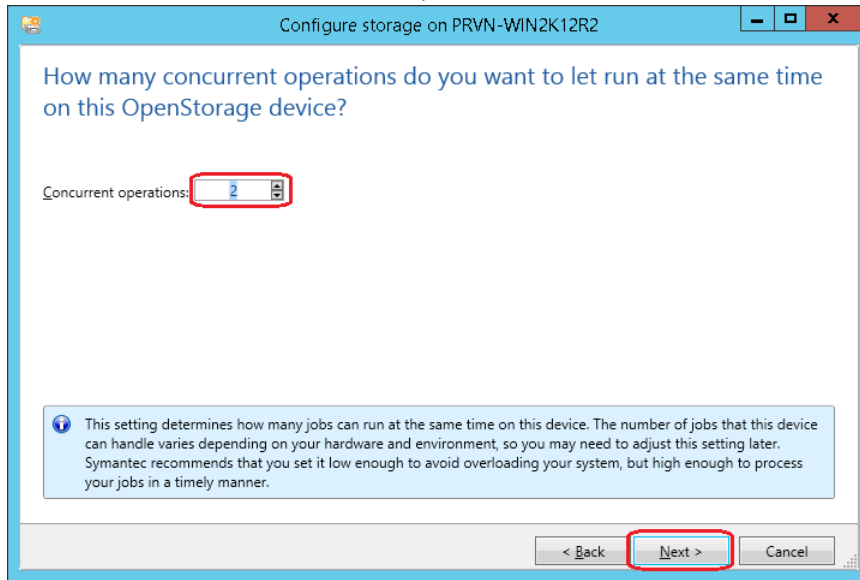
8. Enter the Server name (IP or FQDN) and select the **Backup\_user** as the logon account.



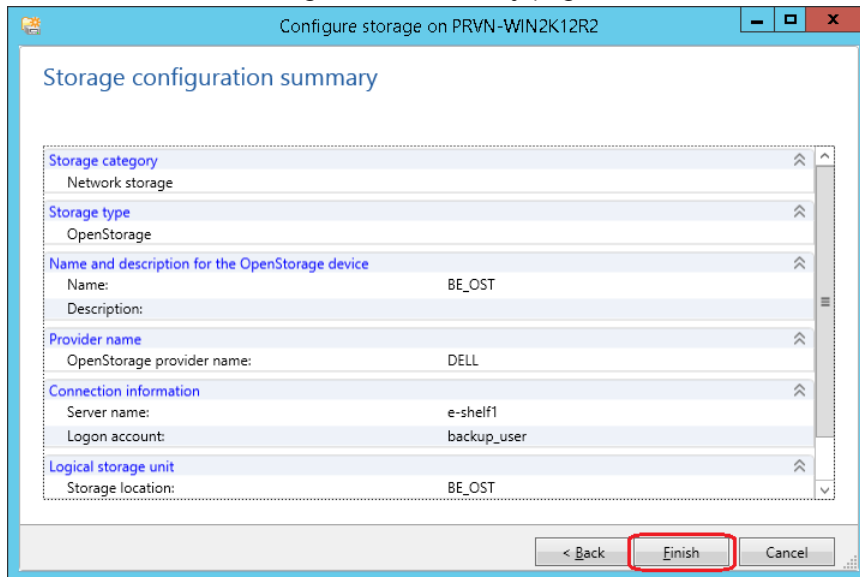
9. Select the created OST container from the list and click **Next**.



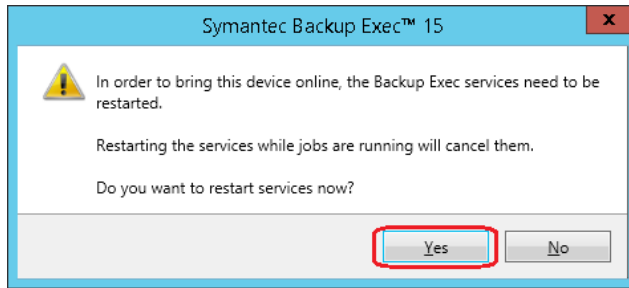
10. Enter the number of concurrent operations to run on the OST device and click **Next**.



11. Click **Finish** on the configuration summary page.



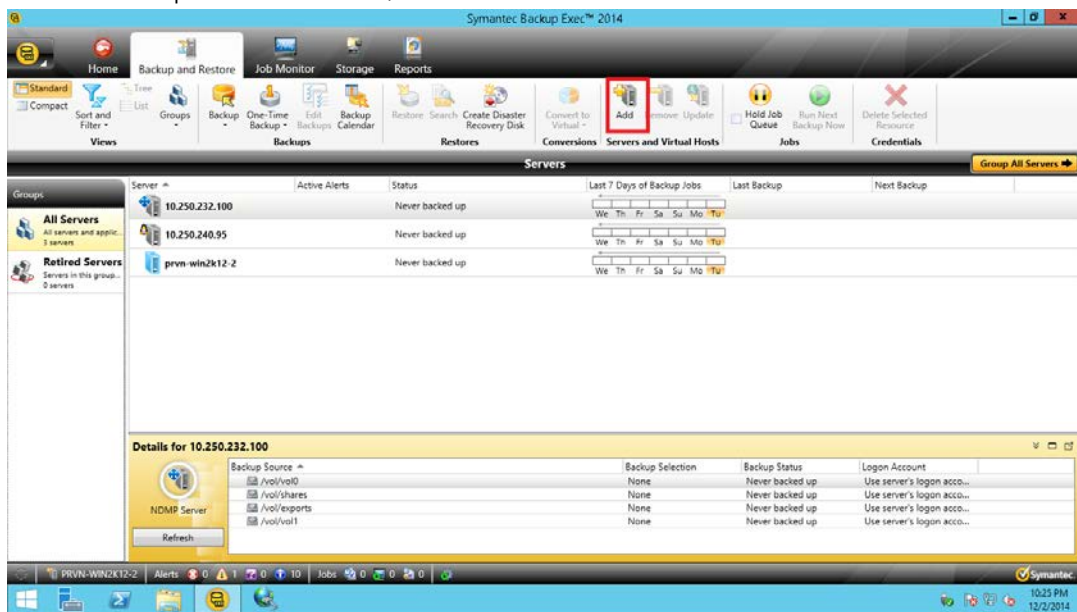
12. When prompted, click **Yes** to restart the Backup Exec Services.



## 4.4 Performing backup and restore using the DR Series system OST device

This procedure describes how to perform file-based backup and restore. You need to install/push the Backup Exec agent on the client on which files need to be protected.

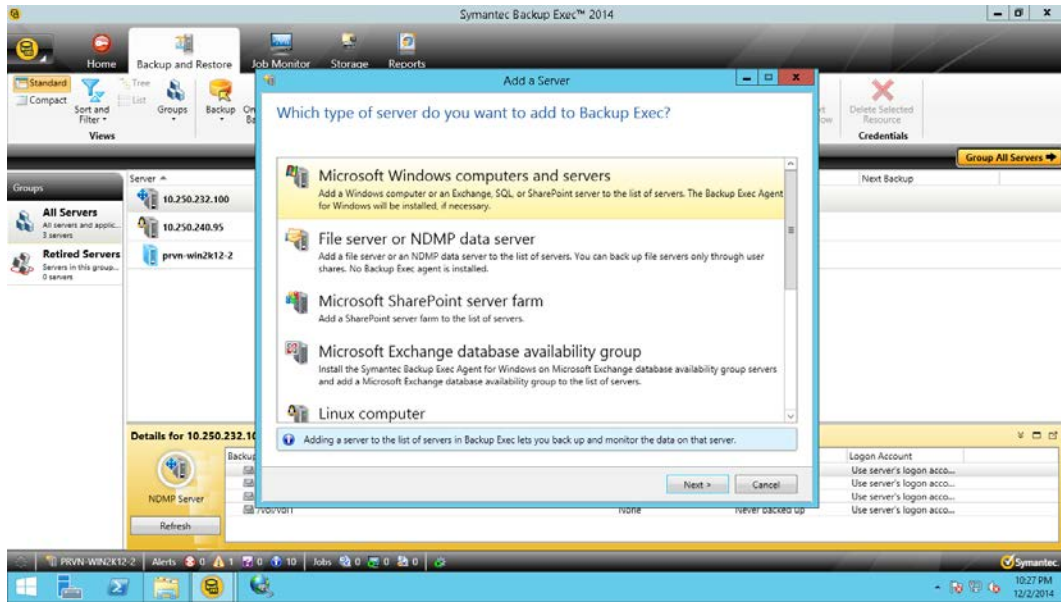
1. On the Backup and Restore tab, click **Add** to add the client machine.



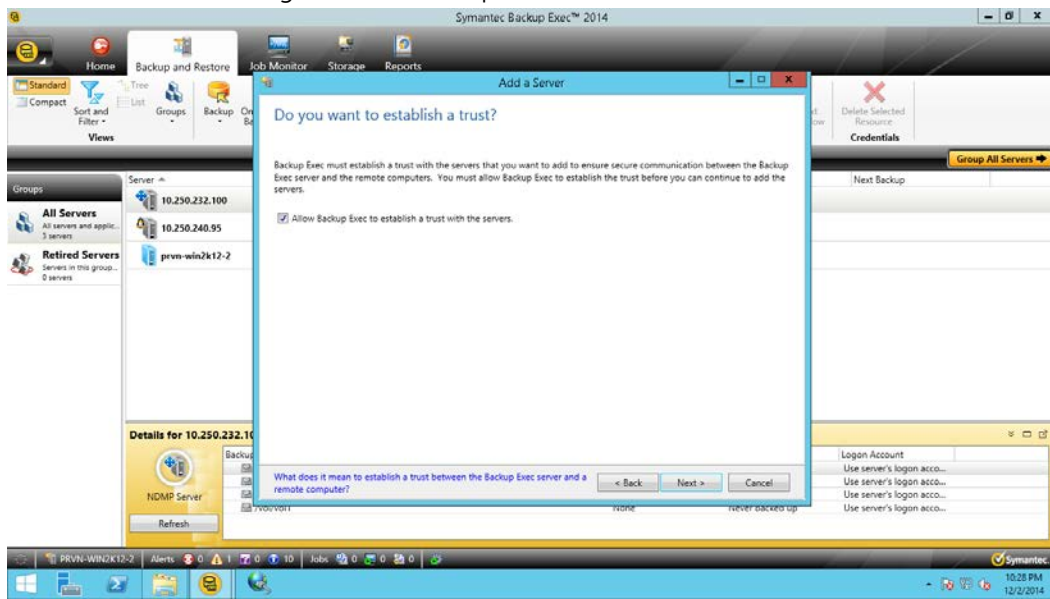
2. In the Add a Server dialog box, select the type of client to add as **Windows/Linux/NDMP**.

**Note:** If you are adding a Linux client, you need to install the RALUS package before adding.



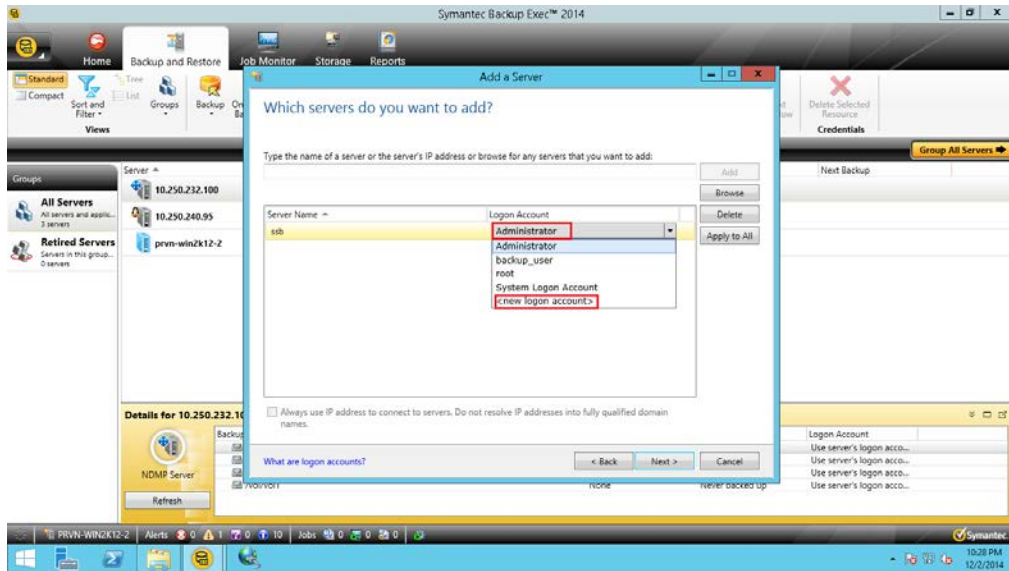


3. With the Default settings, click **Next** to proceed.

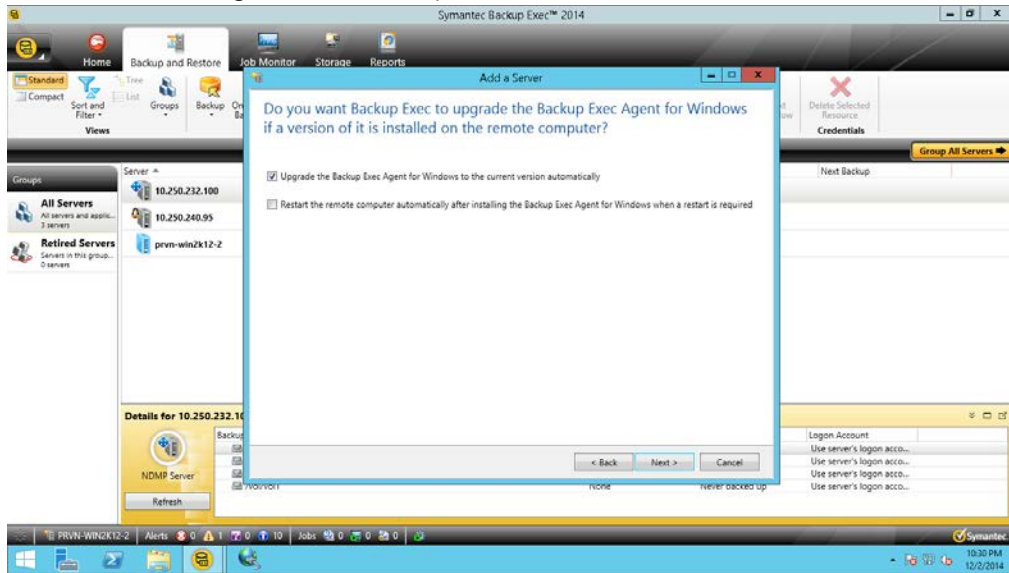


4. Provide the access credentials for the server you want to add. Select from the drop down or create new logon details if required.

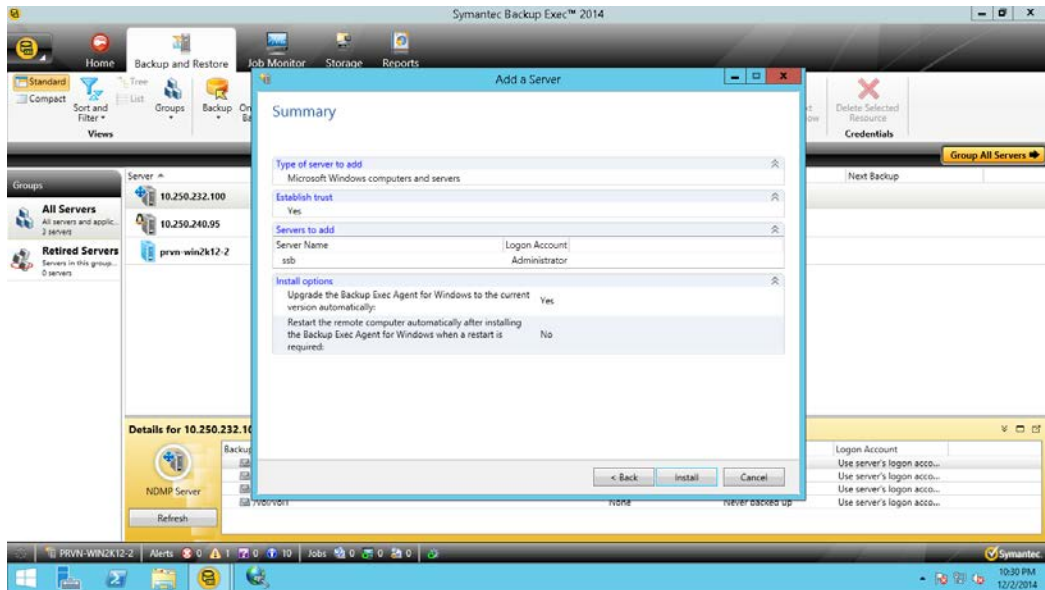




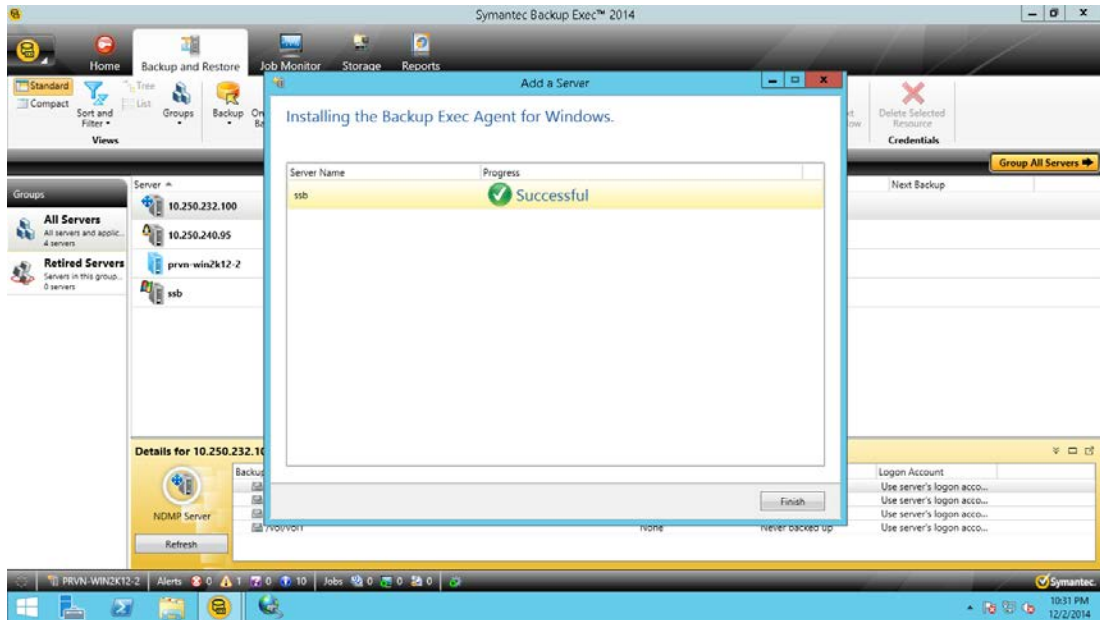
5. With Default settings, click **Next** to proceed.



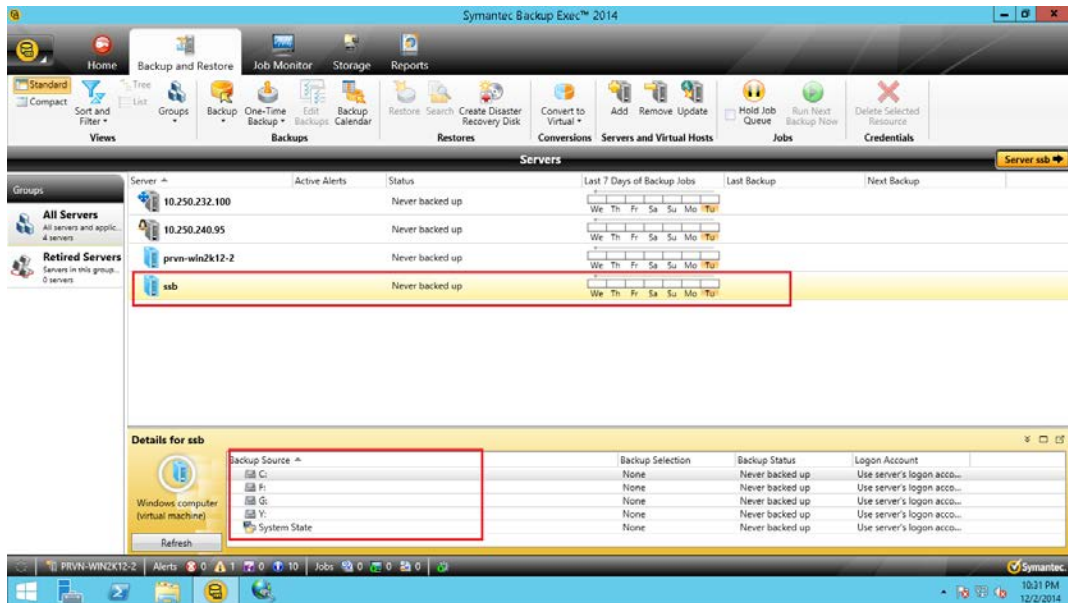
6. Click **Install** on the final summary screen.



A notification appears of the successful installation of Remote Backup Exec Agent on the server.

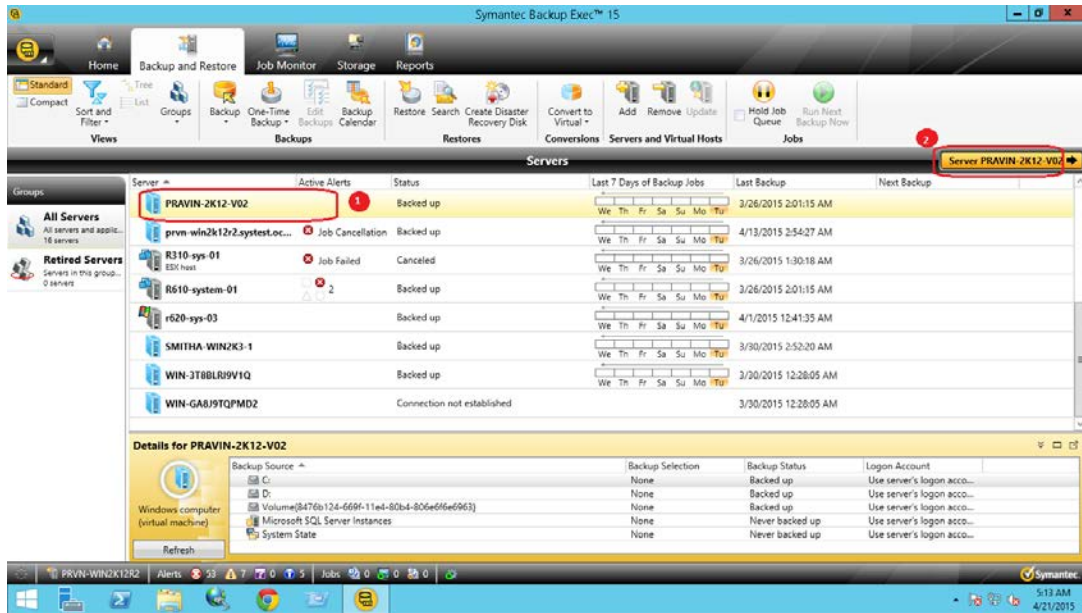


The Backup and Restore tab shows the newly added server and related details.

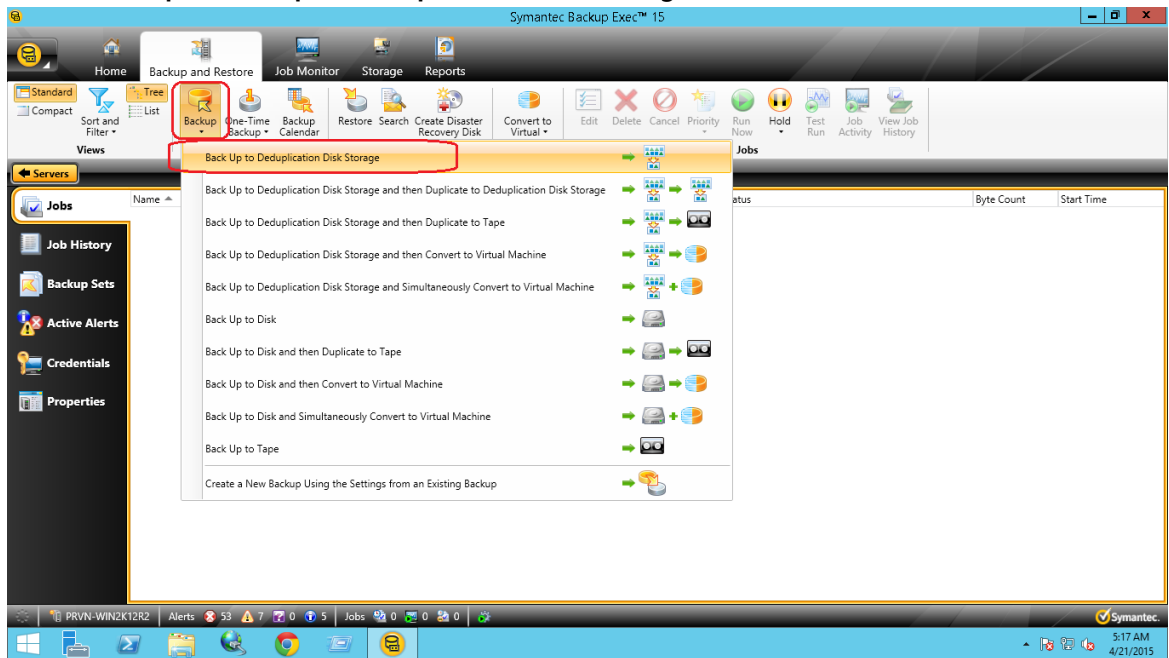




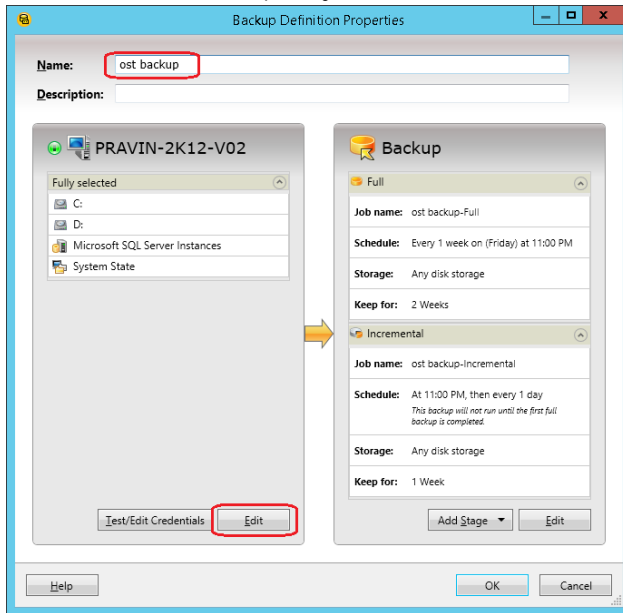
- On the Backup and Restore tab, select the server with the data to back up and go to **Details**.



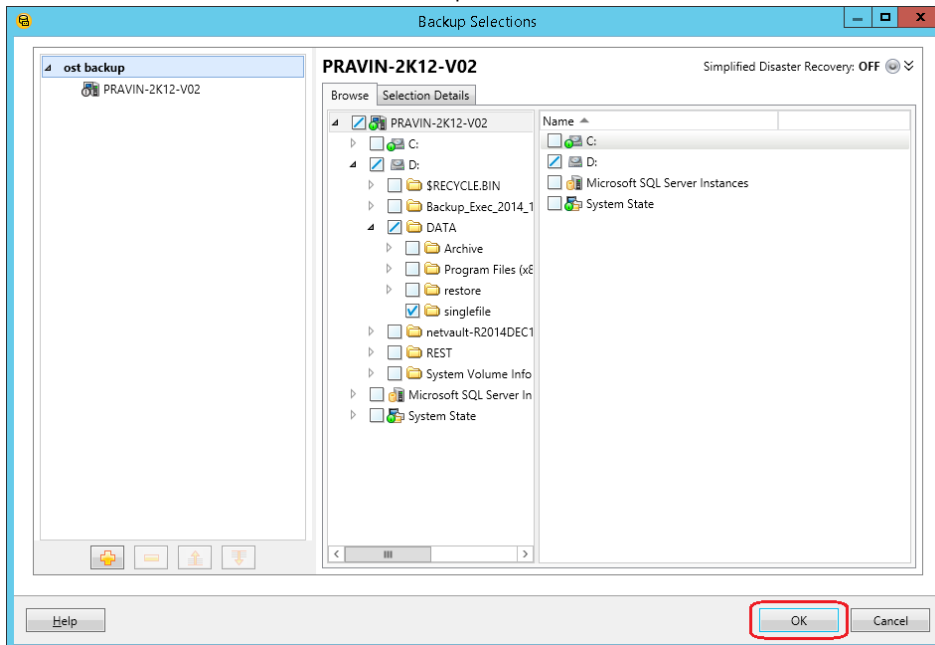
- Select **Backup > Back up to Deduplication Disk Storage**.



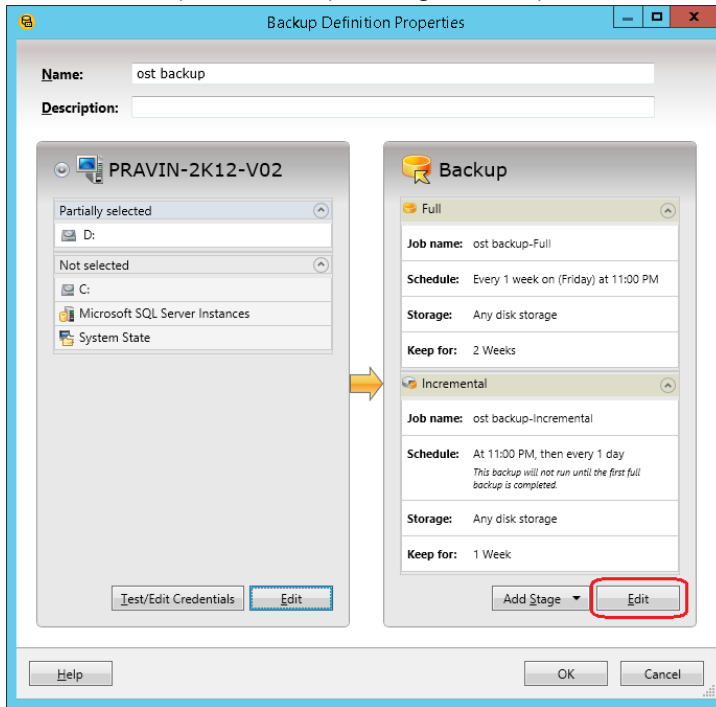
9. Enter a name for the policy and click **Edit** to select the server file systems.



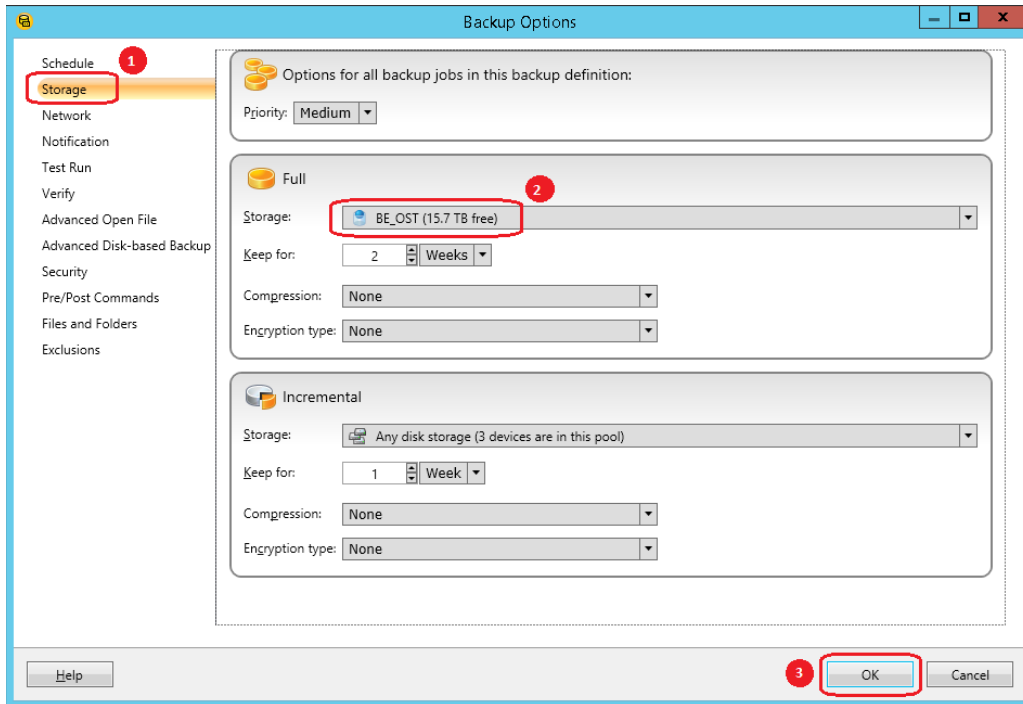
10. Browse and select the data to back up and click **OK** to continue.



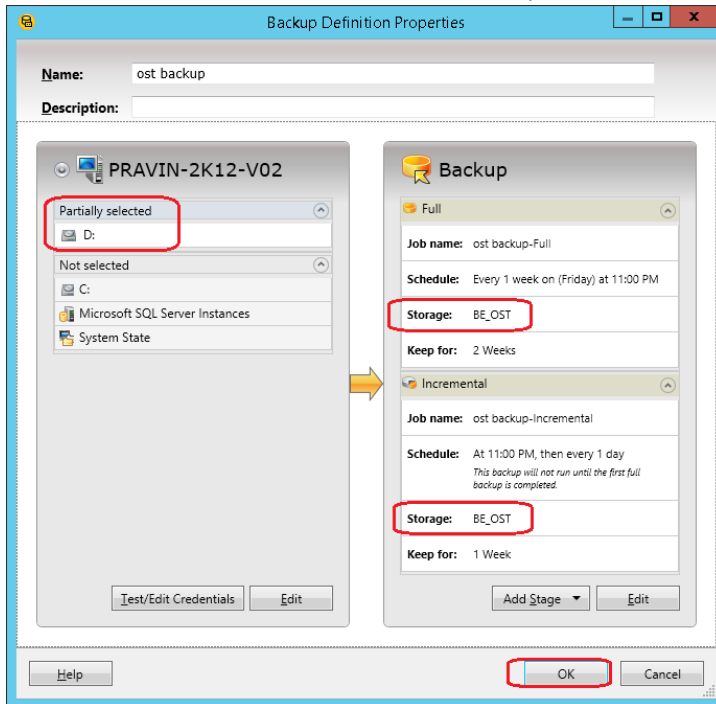
11. Click **Edit** to update backup settings and to provide the storage location.



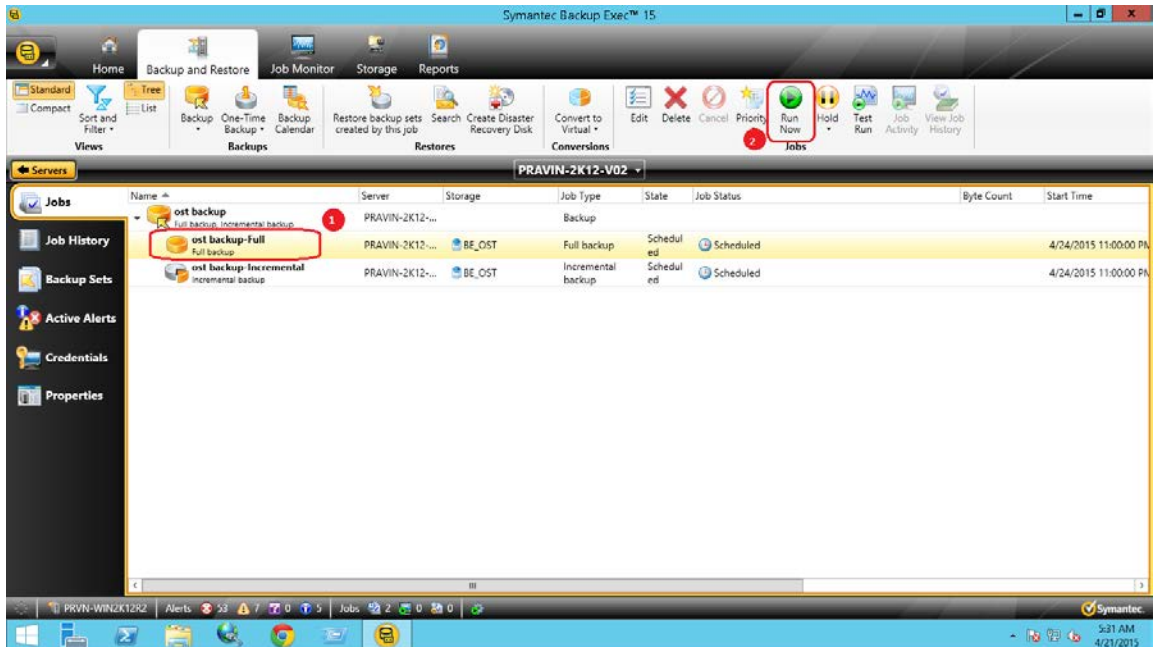
12. Click **Storage** in the left pane and select the required tape library for the storage unit.



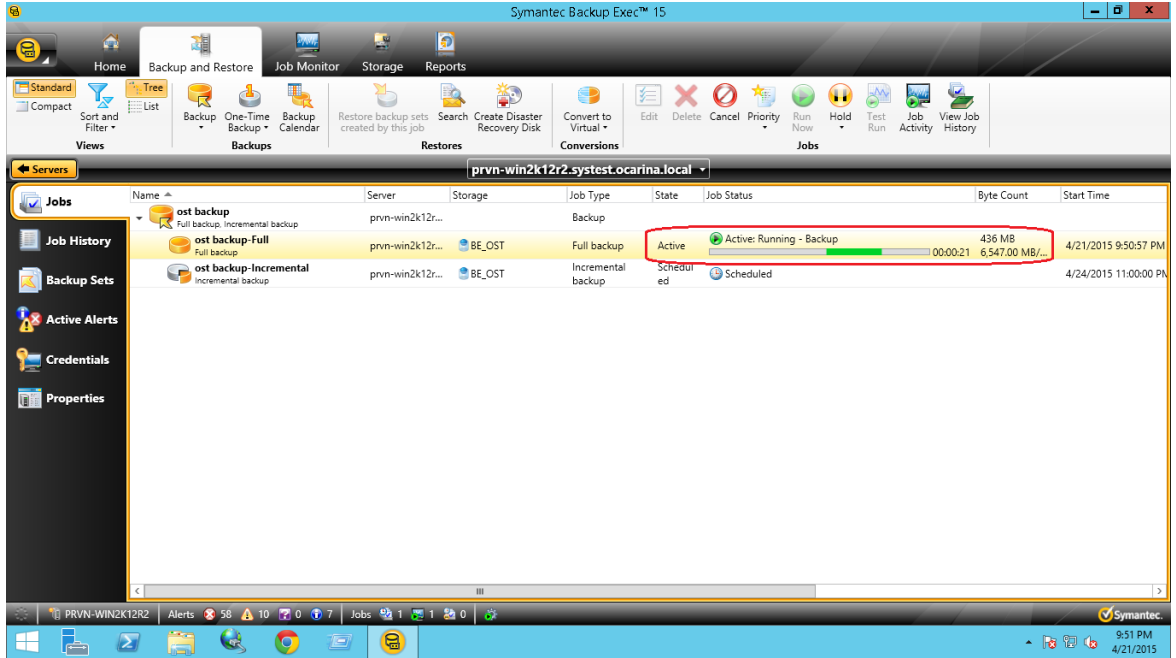
13. Review the final selections and click **OK** to proceed.



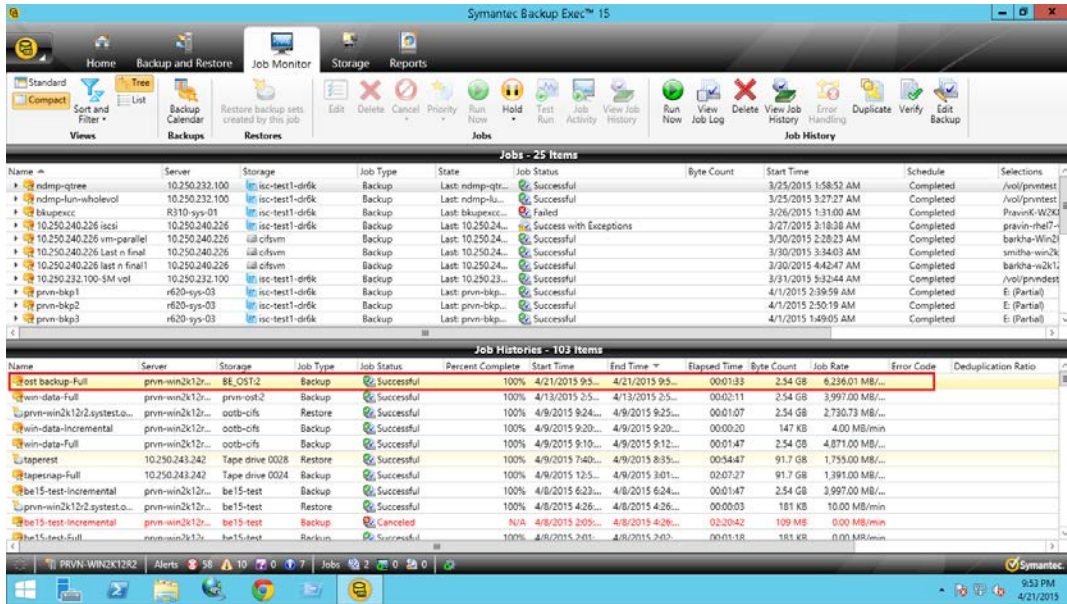
14. To run a backup job, select the backup policy (FULL schedule) and click **Run Now**.



You can view the backup progress in the Backup and Restore tab.

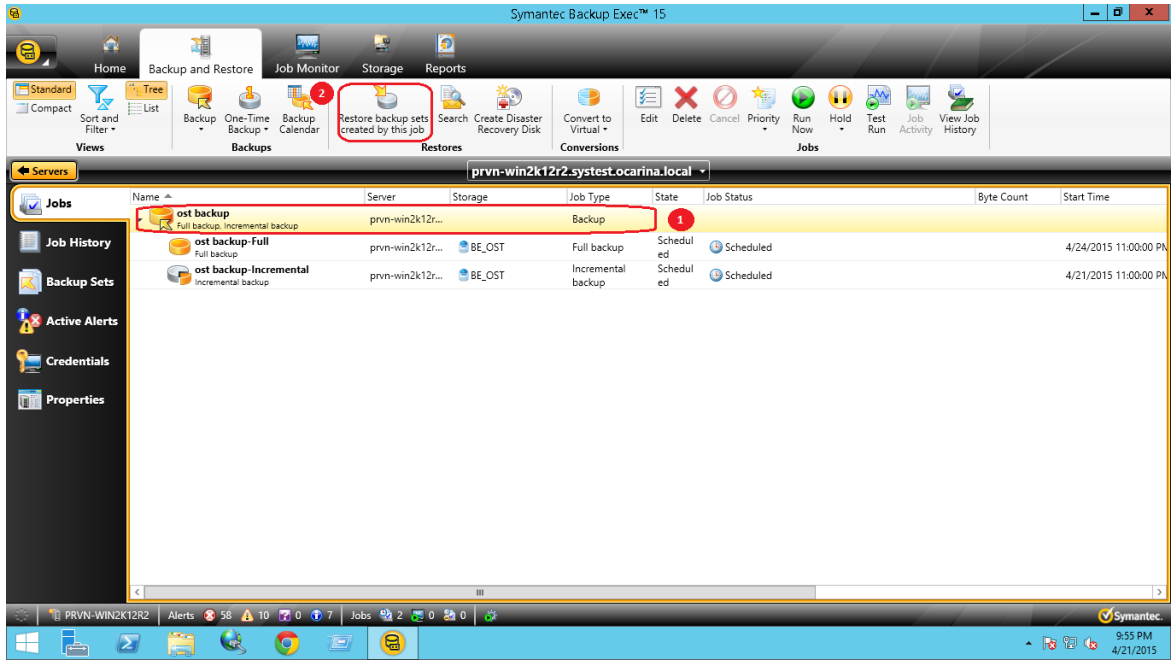


You can see the job status on the Job Monitor tab.

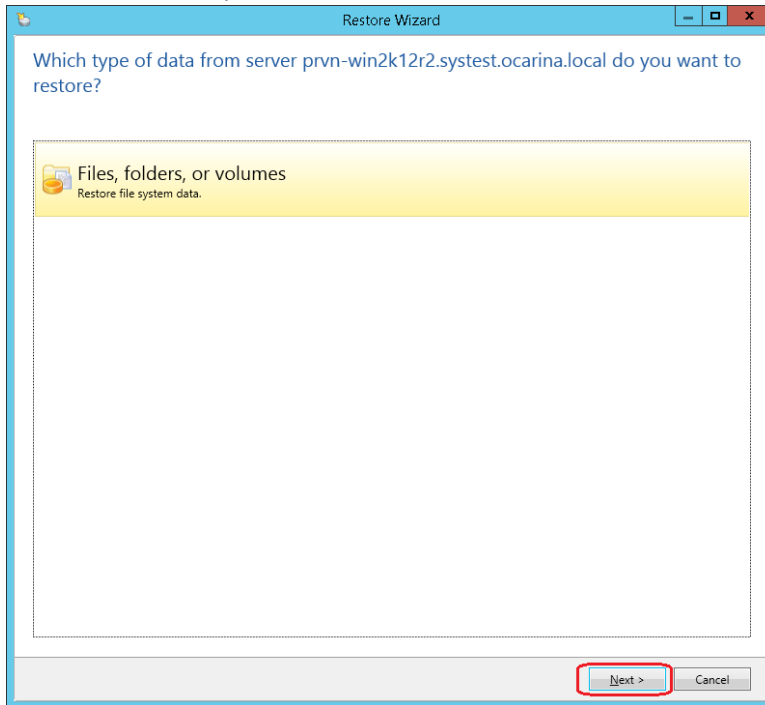


## 4.6 Restoring data

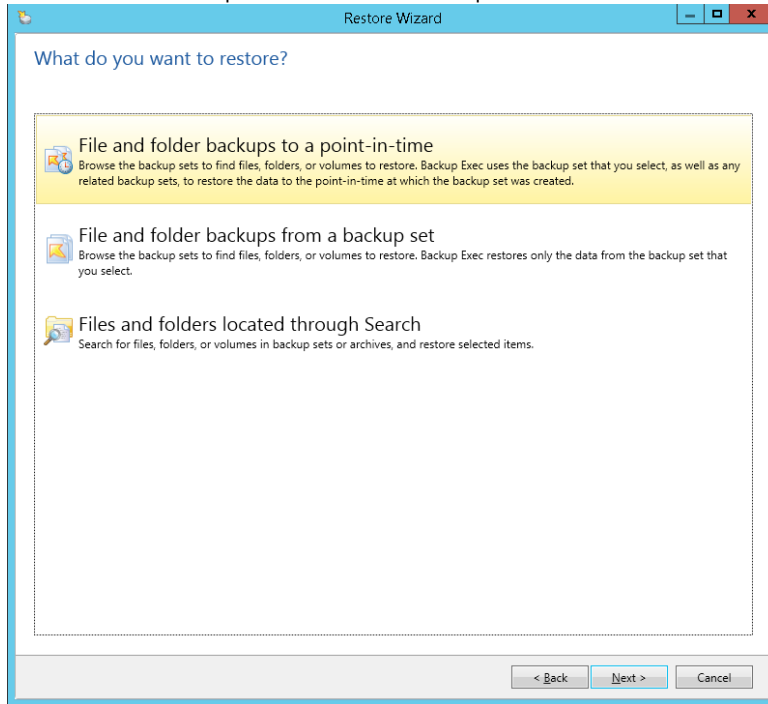
1. On the Backup and Restore tab, click **Restore backup sets created by this job**.



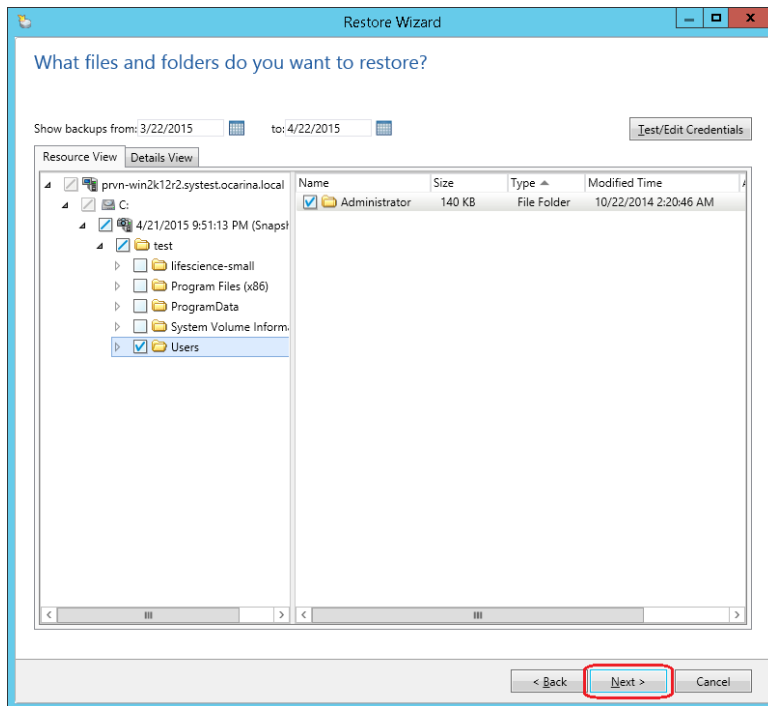
2. With the default options, click **Next**.



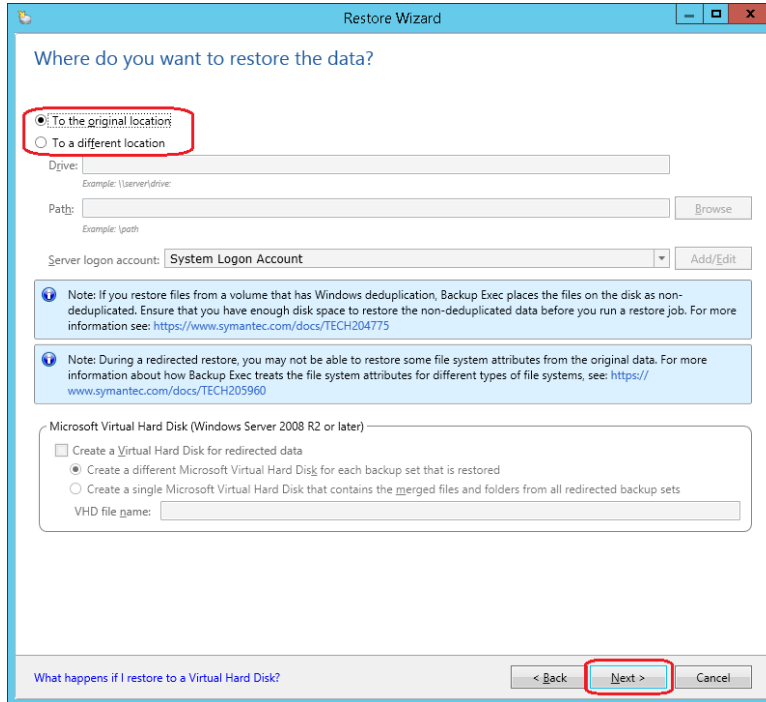
3. With the default options, click **Next** to proceed.



4. Select the data to restore from the appropriate snapshot and click **Next** to proceed.



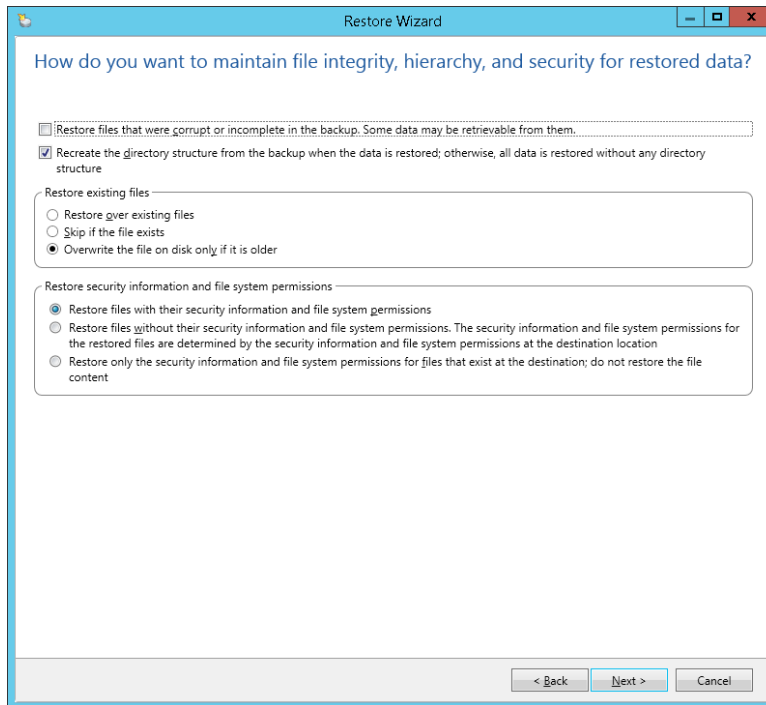
5. Select the default setting if restoring to the original location or specify a different location as needed, and click **Next**.



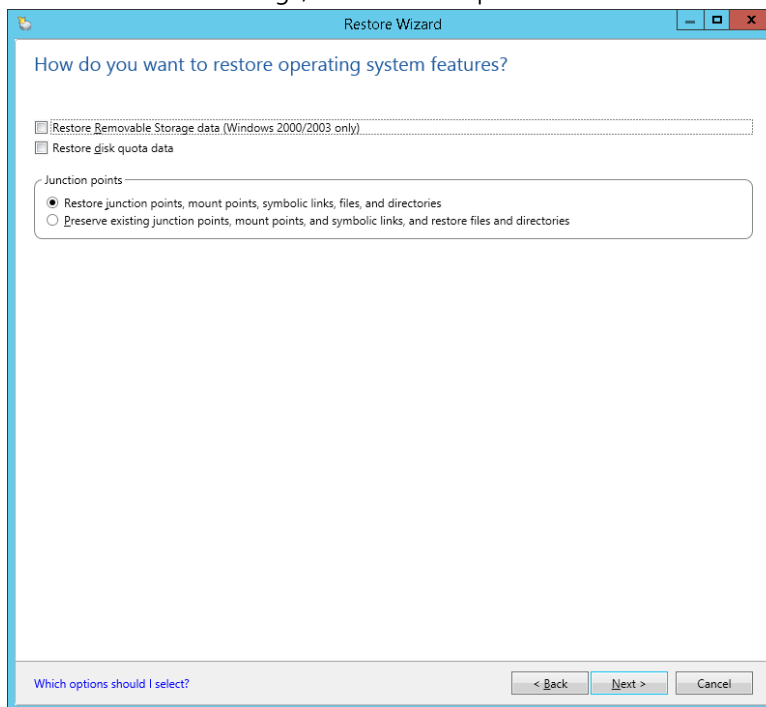
6. With the default settings, click **Next** to proceed.





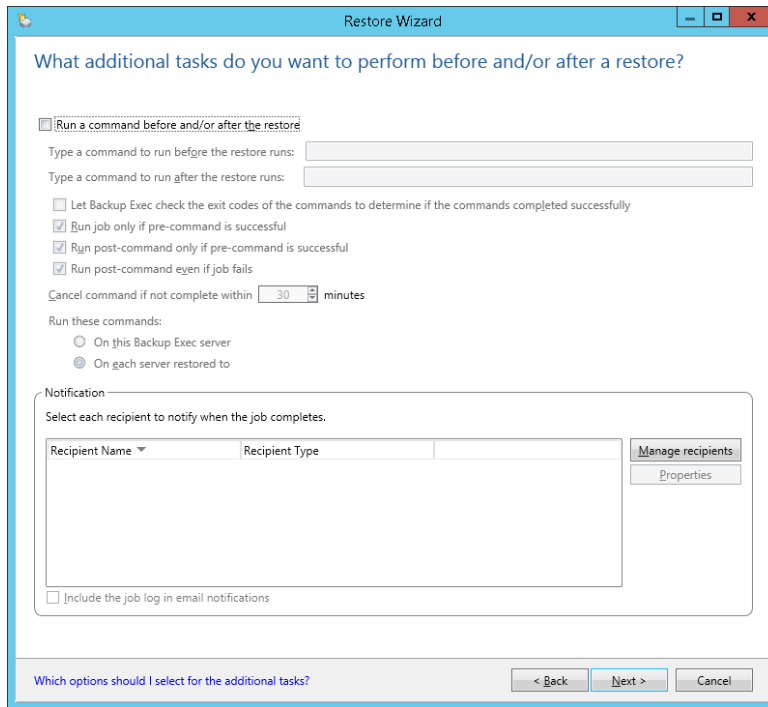


7. With the default settings, click **Next** to proceed.

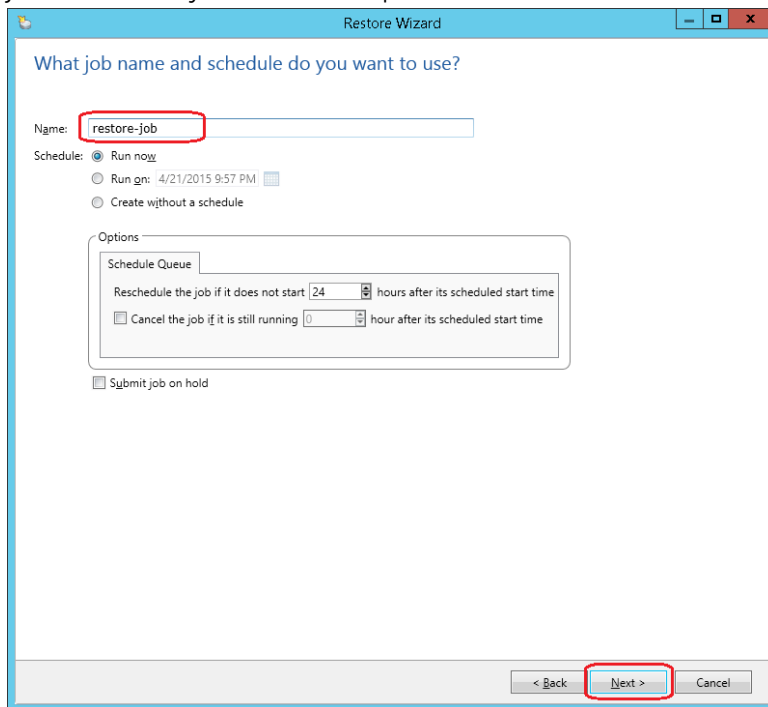


8. With the default settings, click **Next** to proceed.

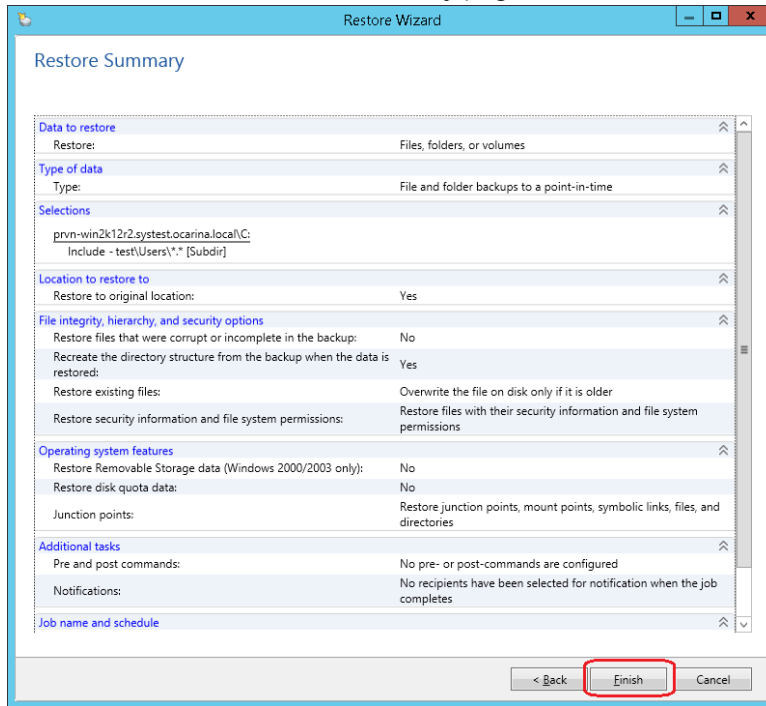




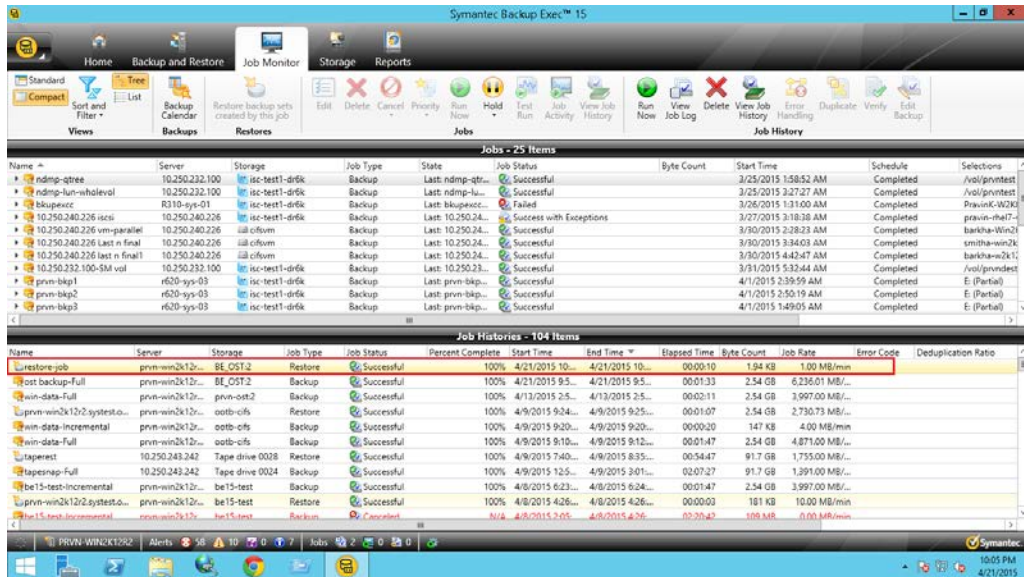
9. Enter a name for the restore job and schedule it if required; or select **Run now** to start the restore job immediately. Click **Next** to proceed.



10. Click **Finish** on the Restore Summary page.



On the Job Monitor tab, you can view the restore status.





## 5 Setting up the DR Series system cleaner

Performing scheduled disk space reclamation operations are recommended as a method for recovering disk space from system containers in which files were deleted as a result of deduplication.

The system cleaner runs during idle time. If your workflow does not have a sufficient amount of idle time on a daily basis, then you should consider scheduling the cleaner to force it to run during a scheduled time.

If necessary, you can perform the procedure shown in the following example screenshot to force the cleaner to run. After all of the backup jobs are set up, the DR Series system cleaner can be scheduled. The DR Series system cleaner should run at least 40 hours per week when backups are not taking place, and generally after a backup job has completed.

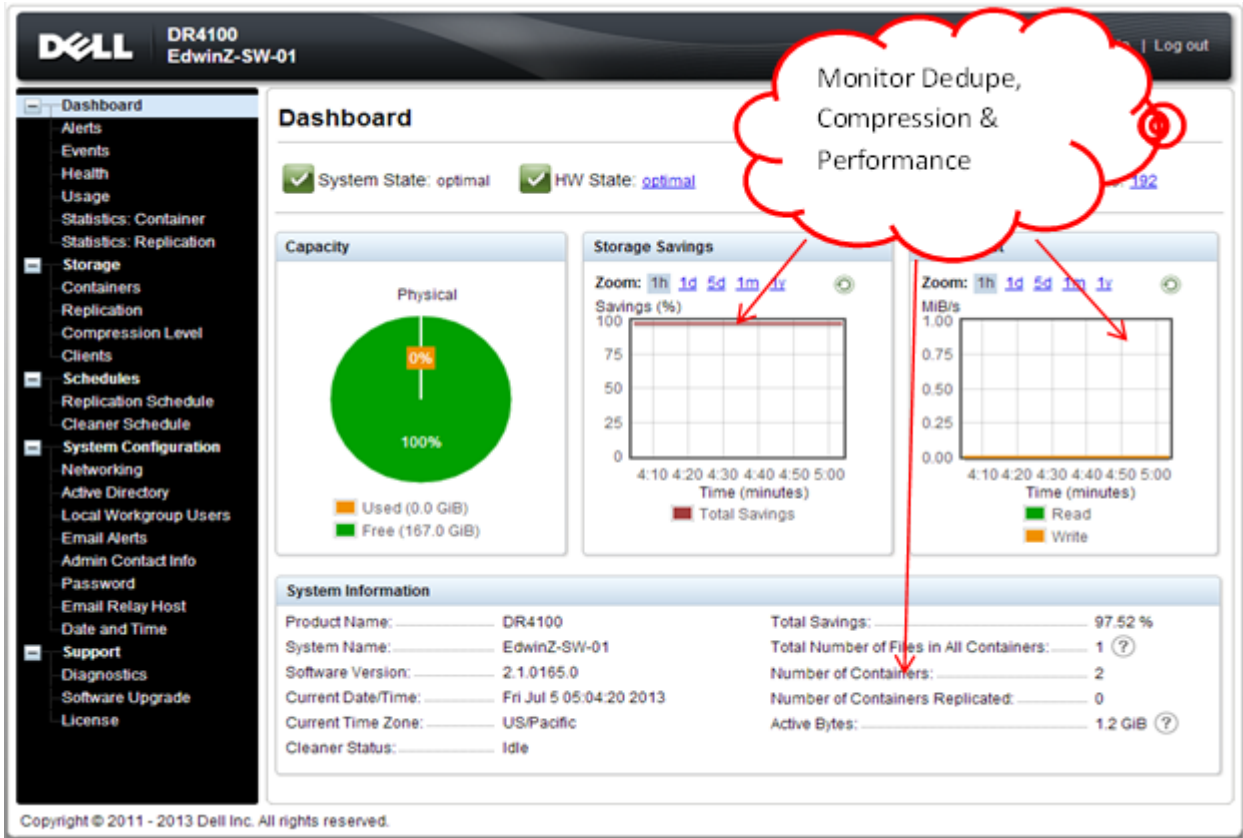
The screenshot shows the Dell DR Series system cleaner configuration interface. The sidebar menu on the left includes sections for Dashboard, Storage, Schedules, System Configuration, and Support. The 'Cleaner Schedule' option is highlighted in the Schedules section. The main content area displays the 'Cleaner Schedule' configuration page. The page includes a header with the Dell logo, user information (DR4100 EdwinZ-SW-01), and links for Help and Log out. The page title is 'Cleaner Schedule'. Below the title, there is a note: 'System time zone: US/Pacific, Fri Jul 5 05:00:41 2013' and 'Note: When no schedule is set, the cleaner will run as needed.' A table with columns 'Day', 'Start Time', and 'Stop Time' is displayed. The table rows are: Sun, Mon, Tue, Wed, Thu, Fri, Sat. All Start and Stop times are currently set to '--'. A red arrow points to the 'Schedule Cleaner' button, and a red box highlights the 'Edit Schedule' button.

Day	Start Time	Stop Time
Sun	--	--
Mon	--	--
Tue	--	--
Wed	--	--
Thu	--	--
Fri	--	--
Sat	--	--

## 6 Monitoring deduplication, compression, and performance

After backup jobs have run, the DR Series system tracks capacity, storage savings, and throughput on the DR Series system dashboard. This information is valuable in understanding the benefits of the DR Series system.

**Note:** Deduplication ratios increase over time. It is not uncommon to see a 2-4x reduction (25-50% total savings) on the initial backup. As additional full backup jobs are completed, the ratios will increase. Backup jobs with a 12-week retention will average a 15x ratio, in most cases.

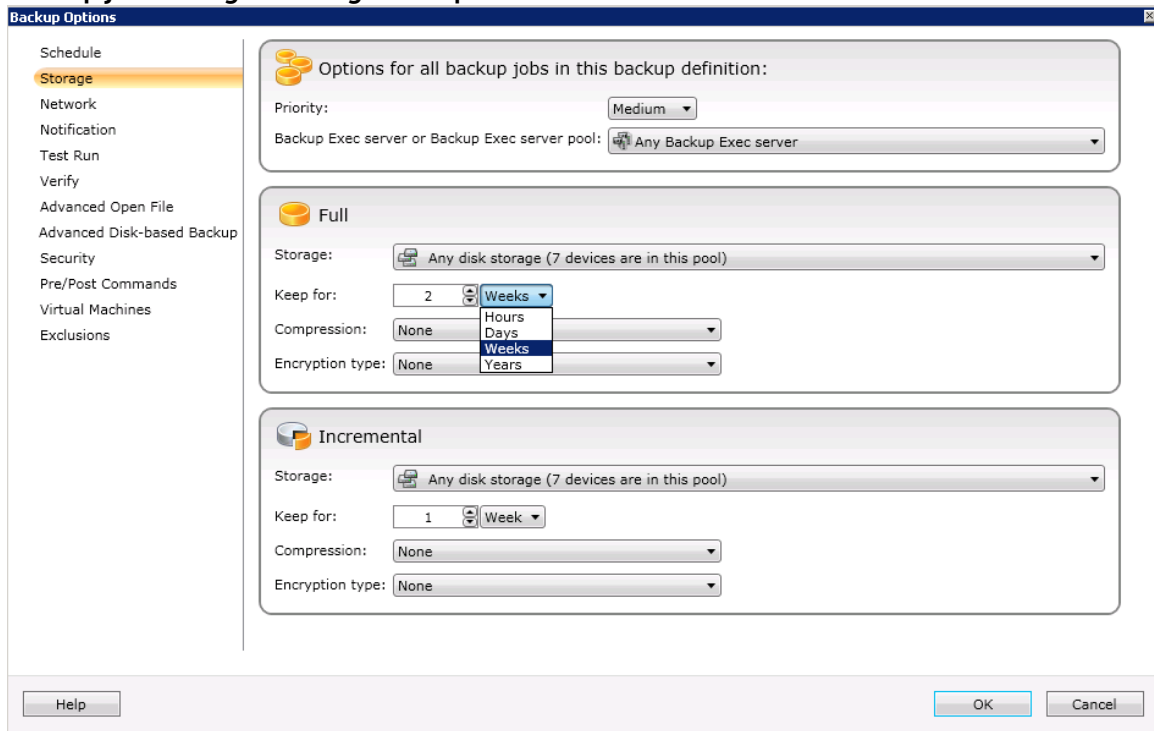


# A Setting data expiration for Backup Exec 2012/2014/2015

Backup images are deleted by Backup Exec after image expiration if more backups have run (At least two full backups of the same data set). Refer to the following article for more information:  
<http://www.symantec.com/business/support/index?page=content&id=TECH187957>

For more information about image expiration, refer to the Backup Exec 2012 Administration Guide chapter, "About Backup Job Settings." If you want to keep the backup set, refer to the topic, "About Keeping Backup Sets."

You can change data expiration settings by editing the specific backup job, under **Backups > About backup job settings > Storage > Keep for**.



## B Installing Backup Exec Agent on Linux client (RALUS)

Detailed information is available at following Symantec's link –  
<http://www.symantec.com/business/support/index?page=content&id=tech46461>





## C VTL configuration guidelines

### C.1 Installing latest Backup Exec service packs for the DR Series system iSCSI VTL capability

The following Service Pack 2 from Symantec is required on the Backup Exec 2014 Server for smooth integration between Dell DR's iSCSI-VTL and the BE server: Backup Exec 2014 revision 1786 Service Pack 2

Backup Exec 2015 server by default supports the Dell DR Series system iSCSI-VTL capability.

### C.2 Managing VTL media and space use

#### C.2.1 General performance guidelines for DMA configuration

- The DR Series system (version 3.2 and later) provides inline VTL deduplication, compression, and encryption at rest functionality. Backup applications (such as Dell NetVault, Symantec BackupExec, Symantec NetBackup, and so on) should be configured so that any multiplexing, pre-compression, software-side deduplication, or encryption is disabled. Enabling any of these features may adversely affect the space savings and ingest performance of the DR Series system VTL feature.
- Slots and media should be configured so as to accommodate the environment backup requirements. Initially, the logical capacity of a VTL should be no more than twice the physical size of the DR Series system. If the initial VTL setup is over-subscribed at higher than a 2-1 ratio without proper planning the DR Series system could fill up prematurely and cause unexpected system outage. It is highly advisable to configure the DR Series system VTL feature such that the media count be made to accommodate your initial data protection requirements. and then media be added as the deduplication statistics become available to ascertain growth, media, and space requirements.
- Media Type selection will depend on a number of factors including the DMA used, the backup cycles, data sources, and more. As a general rule, using smaller tapes is better than using larger tapes so as to allow for a higher level of control over space usage by backup operations. This also allows for easier handling in the event of a system running out of physical space as well as the normal data cleanup procedures.
- Adding media to an existing DR Series system VTL is painless and should be leveraged to incrementally add media as needed. Although this may require a higher level of involvement in managing the media usage, it will result in better performance and avoid unplanned outages.

#### C.2.2 Physical DR space sizing and planning



Various factors such as total data footprint, change rate, backup frequency and data lifecycle policies will dictate how much physical space will be needed to accommodate the Virtual Tape Libraries within a DR Series environment. In addition, if other container types are hosted these two must be factored into space requirement calculations. As a general rule the following can be used as a reference architecture to determine the basic capacity needed for a given virtual tape library container:

1. Determine Existing Data Set
2. Determine the change rate (Differential)
3. Determine the retention period
4. Calculate the data footprint during the retention period for existing data sets based on a 10-1 deduplication ratio
5. Calculate the data footprint during the retention period for change rate data sets based on a 10-1 deduplication ratio
6. Calculate the ratios within the retention period for each of the data sets
7. Determine the lowest ratio data set to be retired within the retention period and create media of size that closest matches this data footprint so that when a retention period is met the most amount of media is recycled to invoke data reclamation alignment and optimizing media consumption.

**IMPORTANT:** If other containers are being configured to host CIFS/ NFS / RDA or OST, these must also be factored into the planning and management of space.

### C.2.3 Logical VTL geometry and media sizing

The logical size of the VTL including media size and media count should be made such so as to accommodate the existing data footprint targeted for protection. The calculation for such should include the initial footprint, change rate and retention period. It should also take in account the size of both full and incremental data sets. Using the smallest iteration of the data sets to dictate the logical size of the VTL media affords users the ability to retire media in smaller increments which results in high levels of use and also provides the users the ability to conduct operations across smaller objects which results in higher levels of flexibility such as when a restore is needed during backup operations.

We can review a typical full weekly plus incremental daily example to demonstrate one method of conducting this calculation. In our example the total logical foot print for the customer environment is 20TB and with a 10% change within a weekly recovery point objective period for a complete weeks' worth of protection we calculate that we will require 22TB of total logical media to retain the data footprint for the given environment for one week. In order to allow for disparities we also include a 10% increase to allow for flexibility in the deployment and use of the VTL which results in a 24.2TB total virtual media requirement for a single weekly retention period.

**Important Note:** Media can always be added as needed. Media cannot however be deleted so care must be taken in order to avoid creating too many media items.



In the previous example at the end of the 5-week cycle the 1<sup>st</sup> week retires and frees up media to be reused or recycled which once processed will allow the DR to reclaim the physical space associated with the virtual media. Since the smallest data set footprint resulting from the change rate is 2TB in each incremental iteration we create our media at 800GB increments and add as we grow. For this example the initial Virtual Tape Library would be created with 152 (121TB divided by 800GB) pieces of media at 800GB for each piece media.

**20TB Total initial footprint with a 10% change rate**

Week	Pre-Deduplication		
	Logical Size	Logical Full Metrics	10% Change Rate Logical Incremental Metrics
1	24.2TB	20TB	2TB
2	24.2TB	20TB	2TB
3	24.2TB	20TB	2TB
4	24.2TB	20TB	2TB
5	24.2TB	20TB	2TB
Total	121TB		

### C.2.4 Media retention and grouping

Due to the nature of Virtual Tape Libraries media must be managed in order to insure that physical capacity is reclaimed in an orderly fashion to avoid running out of space and disrupting operations. Media must be grouped within the data management application, such as NetVault Backup, in a way that full data sets are targeted to separate media as incremental data and they in turn are grouped by data sets that expire within the same period or that share the same recovery point objective. This ensures that media can be reused effectively so that when full all incremental data expire the logical space can be reconciled thus enabling the physical space to be reclaimed.

### C.2.5 VTL media count guidelines

Type	Capacity	Max number of Tapes supported
LTO-4	800GiB	2000
LTO-3	400GiB	4000



Type	Capacity	Max number of Tapes supported
LTO-2	200GiB	8000
LTO-1	100Gib	10000
LTO-1	50Gib	10000
LTO-1	10GiB	10000

**Note:** With a VTL container, it is very easy to add additional tapes as and when required. It is recommended to add tapes in the increments of 50 and 100 to facilitate easy inventory from Backup Exec. Check the Backup Exec recommendations for the maximum number of tapes supported.

## C.2.6 Space reclamation guidelines

The DR Series system v3.2 Virtual Tape Library feature is presented to operating systems and data management applications alike as devices either through iSCSI or NDMP protocol connectivity. The DMA interfaces with the virtual tape library and all its underlying components including the drives and media through these specific protocols.

The DMA must interact with the virtual tape media during a recycle, reuse or media initialization process in order for the DR to be able to reclaim space during its own cleaning cycle.

This two-step process is required so that the backup software can reconcile the space by marking the media as expired then reusing it, consolidating space across volumes/tapes or by simply recycling the media into a scratch pool. Once these operations have been completed the DRs own cleaning cycle should be used to reclaim that virtual tape media space which in turn will free up physical space on the DR unit.

Implementing proper media pool, groups and recycling practices will allow the virtual tape media to be used at optimal levels and that the underlying physical space be reclaimed accordingly by the scheduled DR reclamation.

**Note:** In general the guidelines provided above should be sufficient for normal operations to insure proper reclamation of space is conducted preemptively. Refer your individual DMA applications for best practices and guidelines regarding tape reuse.

