



NetApp® Plug-in 2.0 for Symantec® NetBackup™

# Installation and Administration Guide

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## Understanding NetApp Plug-in for Symantec NetBackup

In a Symantec NetBackup Replication Director environment, you can use NetApp Plug-in for Symantec NetBackup, an OpenStorage technology, to manage storage systems. The plug-in enables NetBackup to use Snapshot replication technologies to back up and replicate Snapshot copies between storage systems.

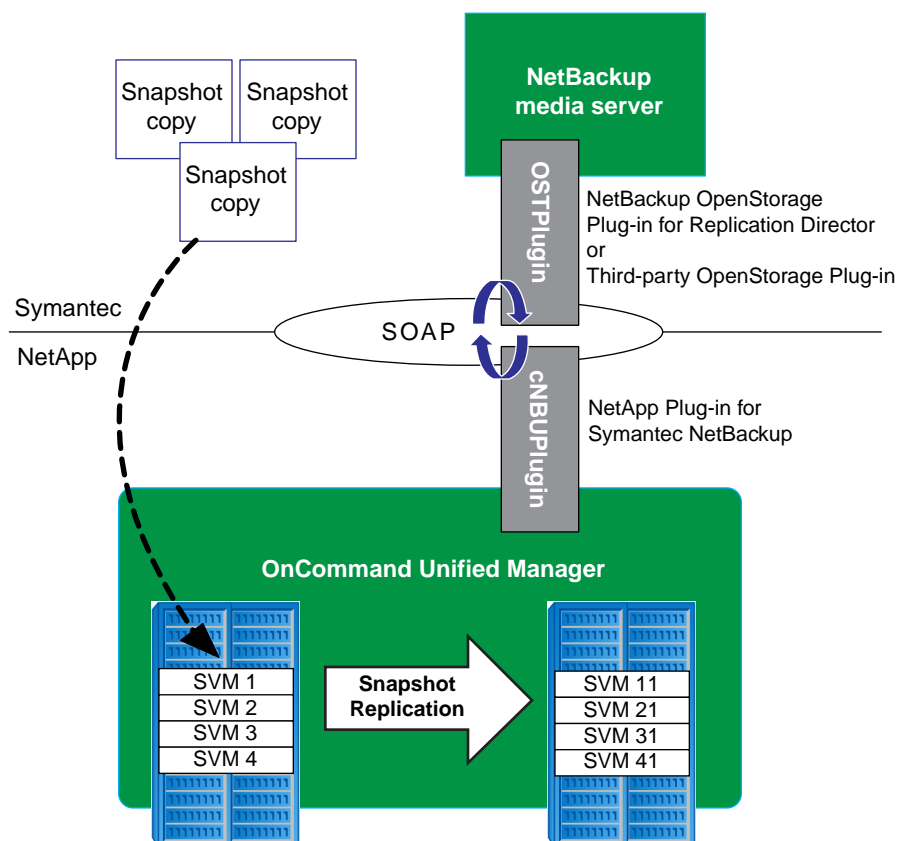
### Overview of Replication Director

In a Replication Director environment, Symantec NetBackup uses NetApp Snapshot and replication technologies to provide incremental and unified data protection. Using NetBackup in Replication Director enables you to create storage lifecycle policies for unified protection of data from primary storage systems to secondary and tertiary storage systems.

Replication Director, a NetBackup OpenStorage backup environment, consists of a media server that accesses storage systems through the OnCommand Unified Manager server. The NetBackup administrator configures the OnCommand Unified Manager server as the storage server in NetBackup. The OnCommand Unified Manager server hosts NetApp Plug-in for Symantec NetBackup.

**Note:** You should use OnCommand Unified Manager server 6.2 or later.

The following illustration shows the components of a Replication Director environment:



The NetBackup media server communicates with the OnCommand Unified Manager server through the NetBackup OpenStorage Plug-in for Replication Director and NetApp Plug-in for Symantec NetBackup.

The OpenStorage plug-in uses XML-based messaging SOAP to communicate with the OnCommand Unified Manager server. The plug-in is installed by default on the system in which NetBackup resides. For more information, see *Introducing NetBackup Replication Director* chapter in the *Symantec NetBackup Replication Director Solutions Guide*.

The OnCommand Unified Manager server creates Snapshot copies on the storage systems and replicates the Snapshot copies to the secondary storage systems, based on the storage lifecycle policies configured in NetBackup. The Snapshot copies can also be replicated to a tertiary storage system or backed up to a tape device.

#### Related information

[NetBackup documentation on the Symantec Site: www.symantec.com/docs/DOC5332](http://www.symantec.com/docs/DOC5332)

## What Symantec NetBackup does

In a Replication Director environment, NetBackup enables you to implement end-to-end protection management by performing unified policy management, and Snapshot copy monitoring and management. The NetBackup media server also manages client backups by replicating Snapshot copies between storage systems.

NetBackup provides the following features:

- Unified policy management  
You can use the centralized backup infrastructure to manage the lifecycle of all the data.
- Snapshot management  
You can create Snapshot copies and Snapshot schedules, and configure the total number of copies to be created and the retention period for each Snapshot copy.
- Snapshot monitoring  
You can monitor the creation of Snapshot copies and view reports of the replication environment.
- Snapshot indexing  
You can index Snapshot copies and store in the NetBackup catalog for file search and granular restore.
- Managing replication relationships  
You can manage SnapMirror and SnapVault relationships and Snapshot copy retention as part of a NetBackup storage lifecycle policy.

During a data restore operation, NetBackup manages the transfer of data from the storage system to the client. You can restore data from a Snapshot copy that is managed by NetBackup from the primary, secondary, or tertiary storage systems. You can perform the following restore operations:

- File-level restore  
Individual file or directories are restored from the Snapshot copy.
- Volume-level restore  
A volume is restored from the Snapshot copy.

For more information see *NetBackup configuration* chapter in the *Symantec NetBackup Replication Director Solutions Guide*.

#### Related information

[NetBackup documentation on the Symantec Site: www.symantec.com/docs/DOC5332](http://www.symantec.com/docs/DOC5332)

## What OnCommand Unified Manager server does

In a Replication Director environment, the OnCommand Unified Manager server enables you to provision and manage storage systems. The server presents the storage systems as resource pools to NetBackup. In NetBackup, these resource pools are represented as volumes in disk pools and are used for creating storage lifecycle policies.

The OnCommand Unified Manager server enables you to perform the following operations from NetBackup:

- Provision and manage secondary and tertiary storage systems.
- Create datasets and use resource pools to group storage systems.
- Create data protection policies to protect data on the primary, secondary, and tertiary storage systems.

## Introduction to NetApp storage

NetApp storage systems are hardware- and software-based data storage and retrieval systems. They respond to network requests from clients and fulfill them by writing data to or retrieving data from disk arrays. They provide a modular hardware architecture running the Data ONTAP operating system and WAFL (Write Anywhere File Layout) software.

Data ONTAP is the operating system for all NetApp storage systems. It provides a complete set of storage management tools through its command-line interface, through System Manager, and through remote management devices such as the Baseboard Management Controller (BMC), the Service Processor (SP), and the Remote LAN Module (RLM).

For information about all of the models of NetApp storage systems, see the NetApp Products page.

### Related information

*[NetApp Support Site: mysupport.netapp.com](http://mysupport.netapp.com)*

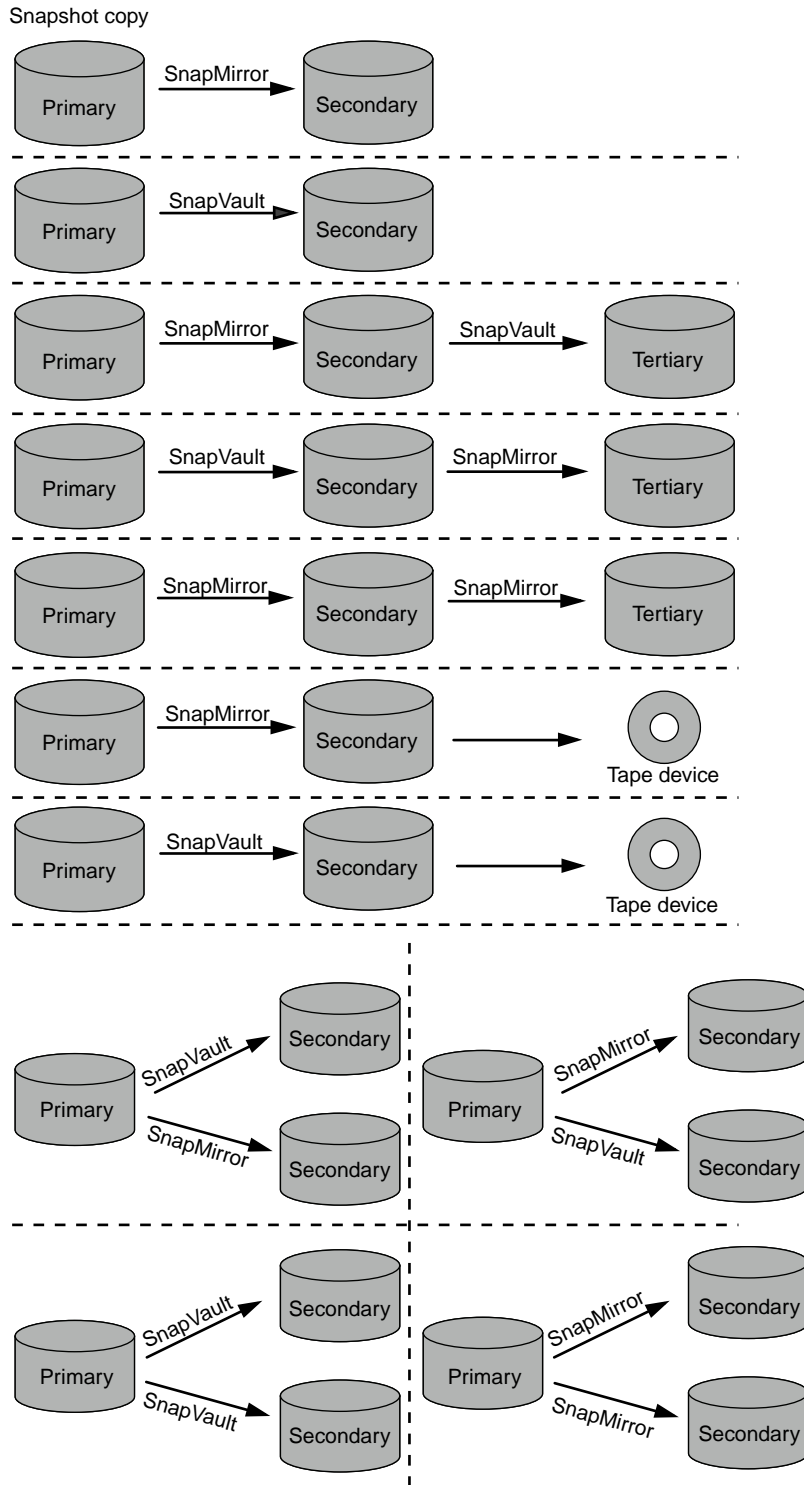
## Supported storage topologies

The Replication Director environment supports different storage topologies that enable you to establish a SnapMirror or SnapVault relationship between the storage systems.

The Snapshot copies of the client data are stored on the primary storage tier. The primary Snapshot copy can be replicated to secondary and tertiary storage systems. You can also back up the Snapshot copies to a tape device from the primary, secondary, or tertiary storage system.

**Note:** SnapLock volumes are **not** supported as targets.

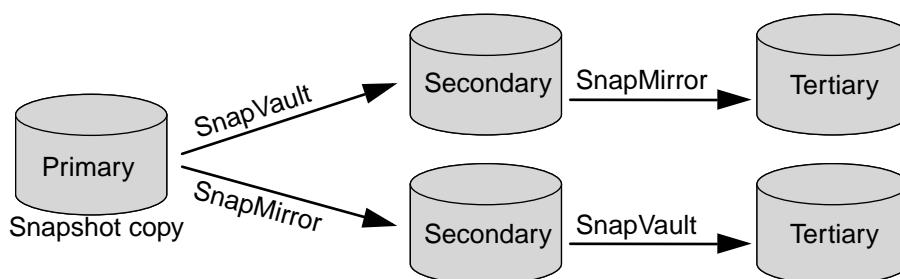
You can provision a backup policy to establish SnapMirror or SnapVault relationships to secondary and tertiary storage tiers by using any of the methods illustrated in the following image:



**Two-way fanout topology**

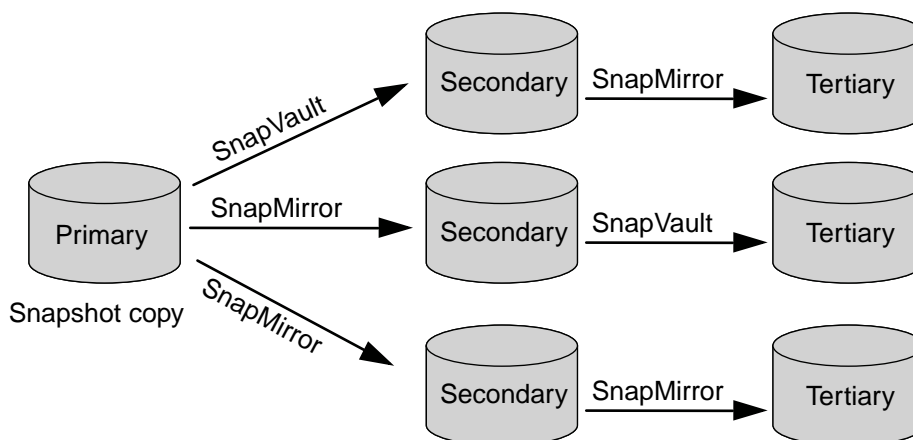
The following illustration displays a two-way fanout topology with cascade:





### Three-way fanout topology

The following illustration displays a three-way fanout topology with cascade:



You can provision a three-way fanout topology with cascade using any combination of SnapVault and SnapMirror relationships in the different fanout paths. However, you cannot have SnapVault relationships from primary to secondary storage tiers and secondary to tertiary storage tiers in any of the fanout paths.

## Data ONTAP features supported by Symantec NetBackup

Symantec NetBackup supports Data ONTAP features such as volume SnapMirror data replication, Snapshot copies, SnapVault backup, NAS backup, and point-in-time restore operations for NAS backup. You can modify or disable scheduled updates to a particular volume or qtree.

For more information about the supported Data ONTAP features, see the Interoperability Matrix.

### Related tasks

[Viewing supported configurations in Interoperability Matrix](#) on page 33

### Related information

[Interoperability Matrix Tool: \*mysupport.netapp.com/matrix\*](https://mysupport.netapp.com/matrix)

## How SnapMirror works with NetBackup

You can use SnapMirror to perform mirror type backups.

When using SnapMirror with NetBackup, you can perform the following operations:

- Create multiple paths for a SnapMirror relationship.
- Verify the status of data transfer to determine the status of all the existing SnapMirror relationships that are defined.

## How SnapVault works with NetBackup

You can back up data from NetBackup by creating a SnapVault Snapshot copy on the secondary storage system.

When using SnapVault with NetBackup, you can perform the following operations:

- View a list of Snapshot copies to confirm which version of the primary qtree data is backed up.
- Restore data from the secondary storage system in the event of data loss on the primary storage system.
- Verify the status of an ongoing SnapVault transfer and abort it if there is a new Snapshot copy or if an immediate system restart or shutdown is required.
- Schedule Snapshot copy creation on the primary and secondary storage systems.

## Setting up the Replication Director environment

---

Before you start working with Replication Director, you must understand the workflow for setting up its environment. The workflow includes installing NetApp Plug-in for Symantec NetBackup and Symantec NetBackup, adding destination systems and resource pools, and configuring NetBackup.

### About this task

During NetApp Plug-in for Symantec NetBackup installation, the default values of the OnCommand Unified Manager server parameters are changed to new values for optimal use of OnCommand Unified Manager server in Replication Director environment.

### Steps

1. Install OnCommand Unified Manager for clustered Data ONTAP as a virtual appliance on a VMware host or on a Linux server.

You should use the OnCommand Unified Manager server only for the Replication Director environment.

For more information about installing OnCommand Unified Manager for clustered Data ONTAP, see the *OnCommand Unified Manager Installation and Setup Guide*.

2. Install *NetApp Plug-in for Symantec NetBackup on a Windows host* on page 20 or *NetApp Plug-in for Symantec NetBackup on a Linux host* on page 20.
3. Install Symantec NetBackup, either on the host on which you have installed the Plug-in or on a different host.  
For more information, see the *Symantec NetBackup Replication Director Installation Guide*.
4. Use the OnCommand Unified Manager web interface to perform the following tasks in the OnCommand Unified Manager server:
  - a. *Add destination storage systems* on page 12.
  - b. *Add resource pools* on page 13.

**Note:** You must ensure that you do not name the resource pool NetBackup.

All resource pools added are available for selection during disk pool configuration on NetBackup.

5. Configure NetBackup by adding the storage server, disk pools, storage unit, storage lifecycle policies, and backup policies.

For more information, see the following information in the *Symantec NetBackup Replication Director Solutions Guide*:

- Adding the storage server credentials to a NetBackup server
- Configuring disk pools for snapshot and replication
- Creating a storage unit example
- Creating a storage lifecycle policy example
- Configuring backup policies to create snapshot copies and snapshot replication

### Related information

*NetBackup documentation on the Symantec Site:* [www.symantec.com/docs/DOC5332](http://www.symantec.com/docs/DOC5332)

*NetApp Support Site: [mysupport.netapp.com](https://mysupport.netapp.com)*

## Important cautions

You need to be aware of the important cautions to identify and resolve issues that might affect the operation of NetApp Plug-in for Symantec NetBackup.

You must ensure that the following conditions are met:

- A resource pool must not be named **NetBackup** or **PrimarySnapshot**.
- The resource pool name should not contain non-ASCII characters.
- In a volume or qtree, file names protected by NetBackup should not contain non-alphanumeric characters such as the “at” sign (@), asterisk (\*), and number sign (#).
- You must use the same language settings for root volume on source and destination storage systems
- You must enable the volume language setting using UTF-8 so that the correct language format is used for the NAS data.
- When a volume is specified as a backup selection in NetBackup, the name of the volume should not end in a slash (/).  
For example, /volA is correct; however, /volA/ or /volA// is incorrect.  
The volume name is listed in the Backup Selections tab of a NetBackup policy window.

## Adding a storage system

You can add storage systems to the hosts list to make them available for inclusion in data management actions. When you add storage systems through the OnCommand Unified Manager web interface, you also add the storage to the OnCommand Unified Manager database.

### Before you begin

You must have the following information available for the storage system that you want to add:

- Host name or IP address
- Host credentials (user name and password)

You must be authorized to perform all the steps of this task; your RBAC administrator can confirm your authorization in advance.

### About this task

This task is performed from the OnCommand Unified Manager web interface.

### Steps

1. Log in to the OnCommand Unified Manager web interface.
2. From the Storage Menu, select **Cluster**.
3. Click **Add** tab.
4. Enter the cluster name and cluster management IP address in **Host Name** and **IP Address**.
5. Enter details in **Username** and **Password**.

6. Select **HTTPS** or **HTTP Protocol**.
7. Click **Add**.

### Result

You can now discover all components of clusters, such as nodes, Storage Virtual Machine, aggregates, volumes, and so on.

## Adding a resource pool

You can create resource pools from collections of unused physical storage resources. Resource pools are associated with one or more datasets, providing the physical resources for provisioning primary storage by using a provisioning policy and for backup or mirror protection on nonprimary nodes.

### Before you begin

- The hosts you are adding to the resource pool must have the proper configuration and licensing for their intended use.
- You must have gathered the following information to complete this task:
  - Resource pool name (required)
  - Description (optional)
  - Owner (optional)
  - Contact email address for alerts (optional)
  - Time zone (optional)
  - Physical resources (required)
  - Resource pool label (optional)
  - Space thresholds (optional to modify the default)
- You must be authorized to perform all the steps of this task; your RBAC administrator can confirm your authorization in advance.

### Steps

1. Log in to the OnCommand Unified Manager web interface.
2. From the Storage Menu, select **Resource Pools**.
3. Click the **Create** tab.
4. Enter **Resource Pool Name** and **Description**, if any.
5. Under Members, select **Add**.
6. Select the aggregates that you want to add.
7. Click **Create** to complete the process.

### Result

All the Resource Pools are now available, by default, for selection during disk pool creation on NetBackup.

## Associating Storage Virtual Machines

Associating Storage Virtual Machines (SVMs) is similar to the Storage Virtual Machine (SVM) peering done in clustered Data ONTAP. Irrespective of the peering set on the cluster, OnCommand Unified Manager requires you to associate SVM through its web interface.

### About this task

SVM peering is different from association. OnCommand Unified Manager based SVM association is mandatory and this needs to be done through OnCommand Unified Manager web interface only. Associated SVM are peered automatically by OnCommand Unified Manager.

### Steps

1. Log in to the OnCommand Unified Manager web interface.
2. Select **Storage Virtual Machine Associations** from the **Storage** menu.
3. Click the **Create** tab.
4. Select the SVM destination and the appropriate source SVM.
5. Select either the **SnapMirror** check box or the **SnapVault** check box, based on the type of replication you want to achieve.
6. Click **Next**.
7. Select the appropriate destination SVM.
8. Click **Finish**.

### What intercluster peering is

When Storage Virtual Machines (SVMs) from two different clusters are associated, you must manually establish intercluster peering on Data ONTAP between the involved clusters to ensure that the association is successful.

SVM associations established on OnCommand Unified Manager also establish SVM peering on Data ONTAP for intracluster configurations (SVMs within the same cluster). However, when SVMs from two different clusters are associated, you must establish this peering manually.

## Requirements for setting up Replication Director

You must ensure that you meet all the requirements for setting up Replication Director using NetApp storage systems, OnCommand Unified Manager server, and Symantec NetBackup.

### NetBackup setup requirements

You must install and configure NetApp Plug-in for Symantec NetBackup and the storage systems before you configure NetBackup Replication Director to manage NetApp Snapshot copies and replication.

You must enable OpenStorage from the base NetBackup system. The NetBackup OpenStorage Disk Option license activates OpenStorage. For information about entering NetBackup licenses, see the *Symantec NetBackup Administrator's Guide, Volume I*.

Optionally, you can enable NDMP to configure NDMP policies or perform NDMP backup to tape.

For more information about setting up NetBackup Replication Director, see *NetBackup configuration* in the *Symantec NetBackup Replication Director Solutions Guide*.

#### Related information

*NetBackup documentation on the Symantec Site: [www.symantec.com/docs/DOC5332](http://www.symantec.com/docs/DOC5332)*

### License requirements

Before you use NetApp Plug-in for Symantec NetBackup, you must install licenses for each of the NetApp components. Your sales or support representative can provide you with license keys that you can use to enable certain features on your storage system. License keys are provided on a per-system basis and have to be added on each system for features to work correctly.

**Note:** You can display the features that are currently licensed on the storage system by using the `license` command.

You must install the following storage system licenses:

- SnapMirror license  
You must install the license key on both the source and destination storage systems in a SnapMirror relationship.
- SnapVault license  
You must install the SnapVault primary license key on the SnapVault primary storage systems and install the SnapVault secondary license key on the SnapVault secondary storage system.
- SnapRestore license  
You must install the SnapRestore license key on all the source primary storage systems where you want to enable fast, pointer-based FlexVol-level restore operations from primary Snapshot copies.
- CIFS license  
You must install the CIFS license key on the storage system that is in a SnapMirror and SnapVault relationship and contains the CIFS files.
- NFS license  
You must install the NFS license key on the storage system that is in a SnapMirror and SnapVault relationship and contains the NFS files.

You should enable licenses for specific features by using the Data ONTAP CLI:

```
license add -license-code <feature-license-code>
```

For more information about NetBackup licenses, see the *Symantec NetBackup Replication Director Solutions Guide*.

**Related information**

*NetBackup documentation on the Symantec Site: [www.symantec.com/docs/DOC5332](http://www.symantec.com/docs/DOC5332)*



# Installing NetApp Plug-in for Symantec NetBackup

In a Replication Director environment, NetApp Plug-in for Symantec NetBackup enables NetBackup to access NetApp storage systems and use NetApp Snapshot technology through the OnCommand Unified Manager server. You can install the plug-in on Microsoft Windows or Linux operating systems that host the OnCommand Unified Manager server.

## System requirements for installing NetApp Plug-in for Symantec NetBackup

You must ensure that your system meets the requirements for installing NetApp Plug-in for Symantec NetBackup on a Windows or Linux server and for setting up NetApp storage systems. NetBackup Plug-in 2.0 for Symantec NetBackup supports NetBackup 7.7.

### NetApp hardware and software requirements

You must ensure that you meet the NetApp hardware and software requirements before installing NetApp Plug-in for Symantec NetBackup.

#### Software requirements

For a detailed list about the supported software version, see the Interoperability Matrix.

#### Hardware requirements

For a detailed list about the supported storage systems, see the *Hardware Universe* (formerly the *System Configuration Guide*) at [mysupport.netapp.com/knowledge/docs/hardware/NetApp/syscfg/index.shtml](http://mysupport.netapp.com/knowledge/docs/hardware/NetApp/syscfg/index.shtml).

#### Related tasks

[Viewing supported configurations in Interoperability Matrix](#) on page 33

#### Related information

[NetApp Support Site: mysupport.netapp.com](http://mysupport.netapp.com)

[Interoperability Matrix Tool: mysupport.netapp.com/matrix](http://mysupport.netapp.com/matrix)

### Windows server requirements

You must ensure that you meet the requirements for systems running Windows 32-bit and Windows 64-bit operating systems.

You should be using one of the following operating systems:

- Windows Server 2003 and 2003 R2, Enterprise or Standard edition
- Windows Server 2008 and 2008 R2, Enterprise or Standard edition
- Windows Server 2003 running on VMware ESX
- Windows Server 2008 or 2008 R2 running on VMware ESX
- Windows Server 2003 running on Hyper-V
- Windows Server 2008 or 2008 R2 running on Hyper-V

#### Related tasks

[Viewing supported configurations in Interoperability Matrix](#) on page 33

#### Related information

[Interoperability Matrix Tool: \*mysupport.netapp.com/matrix\*](#)

## Linux server requirements

You must ensure that you meet the operating system and hardware requirements for systems running Linux servers in 32-bit and 64-bit environments.

### Operating system requirements

You should be using one of the following operating systems:

- Red Hat Enterprise Linux Advanced Platform 5.x
- Red Hat Enterprise Linux Advanced Platform 6.x
- SUSE Linux Enterprise Server 10
- SUSE Linux Enterprise Server 11
- Red Hat Enterprise Linux Advanced Platform 5.x running on VMware ESX
- SUSE Linux Enterprise Server 10 running on VMware ESX
- SUSE Linux Enterprise Server 11 running on VMware ESX
- Red Hat Enterprise Linux 5.x running on Hyper-V
- SUSE Linux Enterprise Server 10 running on Hyper-V
- SUSE Linux Enterprise Server 11 running on Hyper-V

**Note:** Hardware requirements for the Linux server are similar to OnCommand Unified Manager Core Package 5.0.2 and OnCommand Unified Manager Core Package 5.2. For more details, see the Interoperability Matrix.

#### Related tasks

[Viewing supported configurations in Interoperability Matrix](#) on page 33

#### Related information

[Interoperability Matrix Tool: \*mysupport.netapp.com/matrix\*](#)

## Prerequisites for installing NetApp Plug-in for Symantec NetBackup

You must ensure that you meet all the requirements before installing NetApp Plug-in for Symantec NetBackup.

You must complete the following tasks before you install NetApp Plug-in for Symantec NetBackup:

- Uninstall Open Systems SnapVault (if it is installed) from the host system on which you want to install the plug-in.
- Disable automatic storage system schedules for the volumes that are managed by NetBackup.

You can disable schedules from the Data ONTAP command-line interface or from the OnCommand Unified Manager server.

- Ensure that port 8085 or 8086 is free.  
The plug-in uses port 8085 in HTTP mode or port 8086 in HTTPS mode to communicate with NetBackup.
- Enable SnapMirror and SnapVault licenses on the storage systems.
- Install OnCommand Unified Manager for Clustered Data ONTAP.
- Ensure that resource pools are created in OnCommand Unified Manager for clustered Data ONTAP.
- Ensure that NDMP is enabled.

**Note:** NetApp Plug-in supports only SVM-scope NDMP and does not support node-scope NDMP. The two cannot coexist; if SVM-scope NDMP is enabled, then node-scoped NDMP must be disabled.

You can enable SVM-scope NDMP by using the command `vserver services ndmp on -vserver <vserver_name>`.

You can then generate a password for SVM-scope NDMP by using the command `vserver services ndmp generate-password -vserver <vserver_name> -user vsadmin`.

- Download the NetApp Plug-in for Symantec NetBackup installation package from the NetApp Support Site.

**Note:**

To install NetApp Plug-in for Symantec NetBackup on 64-bit RHEL 6.x systems, you must install `libstdc++` library. The NetApp Plug-in\_32 process should be seen running as soon after installation. This is the sign of a successful installation. In 64-bit RHEL 6.x systems, there are some NetApp Plug-in prerequisites that are not found. This causes executables, namely `commanager`, `processmanager`, and `NBUPlugin_32` not to start.

After installing the three libraries, NetApp Plug-in processes can be found to start successfully.

- `yum install libxml2.so.2`
- `yum install libz.so.1`
- `yum install libstdc++.so.6`

To install NetApp Plug-in for Symantec NetBackup on 64-bit SUSE 11u3 systems, you must install the `zypper install libxml2.so.2`. The other two packages are installed by default in SUSE systems.

**Related information**

*NetApp Support Site: [mysupport.netapp.com](http://mysupport.netapp.com)*

## Installing NetApp Plug-in for Symantec NetBackup on a Windows host

You can install NetApp Plug-in for Symantec NetBackup on a Windows platform to enable NetBackup to manage the storage systems.

### Before you begin

- You must have the login credentials for a Windows administrator account.
- The OnCommand Unified Manager server must be online.
- You must have reviewed the [Prerequisites for installing the NetApp Plug-in for Symantec NetBackup](#) on page 18.

### About this task

- You must ensure that you select either 8085 or 8086 as the communication port, because the plug-in uses port 8085 in HTTP mode or port 8086 in HTTPS to communicate with NetBackup.
- By default, the plug-in is installed in the `Program Files (x86)\NetApp\NBUPugin` directory for a 64-bit Windows system and in `Program Files\NetApp\NBUPugin` for a 32-bit Windows system.

### Steps

1. Navigate to the directory to which you saved the plug-in installation files.
2. Run the executable file.
3. Browse to the path where you want to install the plug-in.
4. Follow the on-screen prompts in the setup wizard.
5. Click **Finish** to complete the installation.
6. Verify that the communication between the plug-in and NetBackup is established from NetBackup GUI.

## Installing NetApp Plug-in for Symantec NetBackup on a Linux host

You can install NetApp Plug-in for Symantec NetBackup on a Linux platform to enable NetBackup to manage the storage systems.

### Before you begin

- You must have the login credentials for a Linux root account.
- The OnCommand Unified Manager server must be online.
- You must have reviewed the [Prerequisites for installing the NetApp Plug-in for Symantec NetBackup](#) on page 18.

**About this task**

- You must select either 8085 or 8086 as the communication port, because the plug-in uses port 8085 in HTTP mode and port 8086 in HTTPS to communicate with NetBackup.
- By default, the plug-in is installed in the `/usr/NetApp/NBUPlugin` directory.

**Steps**

1. Log in as root.
2. Navigate to the directory that contains the plug-in installation package:  
`cd: path_name`
3. Enter the following command:  
`sh CNBUPlugin_x86_2.0.sh`
4. Follow the on-screen prompts to complete the installation.
5. Verify that the communication between the plug-in and NetBackup is established by looking for it in the NetBackup GUI, while configuring storage server configuration.

# Configuring NetApp Plug-in for Symantec NetBackup

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After installing the plug-in, you must generate your own self-signed certificate. You can optionally configure to enable IPv6 or configure to generate event notifications.

## Generating self-signed certificates

You can generate SSL certificates for the storage system and servers to use SSL connections for secure communication.

### About this task

Certificates must use the Privacy Enhanced Mail (PEM) format and follow a certain naming convention.

Generating self-signed certificates is optional.

### Steps

1. Stop the NetApp Plug-in for Veritas NetBackup services.
  - Windows: Click **Start > Control Panel > Administrative Tools > Services > NBUPugin** to stop the services.
  - Linux:
    - a. Navigate to `/usr/NetApp/NBUPlugin`.
    - b. Run the following command to stop the services:
 

```
sh startup.sh stop
```

2. Generate an RSA key by using the `openssl genrsa` command.

### Example

```
openssl genrsa -out privkey.pem 2048
```

2048 is the size of the key (in bits).

3. Generate a self-signed certificate by using the `openssl req` command.

### Example

```
openssl req -new -x509 -key privkey.pem -out server.pem -days 1095
```

4. Navigate to the installation directory and replace the old certificate with the new certificate.
5. Restart the NetApp Plug-in for Veritas NetBackup services.
  - Windows: Click **Start > Control Panel > Administrative Tools > Services > NBUPugin** to start the services.
  - Linux:
    - a. Navigate to `/usr/NetApp/NBUPlugin`.
    - b. Run the following command to start the services:

```
sh startup.sh start
```

### Related information

*Keys:* [www.openssl.org/docs/HOWTO/keys.txt](http://www.openssl.org/docs/HOWTO/keys.txt)

*Certificates:* [www.openssl.org/docs/HOWTO/certificates.txt](http://www.openssl.org/docs/HOWTO/certificates.txt)

## Configuring IPv6

You can configure IPv6 on the system on which NetApp Plug-in for Symantec NetBackup is installed by editing the `NBUPlugin.cfg` file. By default, the plug-in is configured for IPv4.

### Steps

1. Locate the `NBUPlugin.cfg` file in the `install_path\config` directory.  
*install\_path\config* is the directory in which NetApp Plug-in for Symantec NetBackup is installed.
2. Open the `NBUPlugin.cfg` file in a text editor.
3. Depending on whether you want to configure only IPv6 or both IPv6 and IPv4, perform the appropriate action:

<b>If you want to configure...</b>	<b>Edit the following...</b>
Only IPv6 for Windows 2003	<code>[NBUPlugin:host]</code> <b>Value=::0</b>
Only IPv4 for all versions of Linux and Windows	<code>[NBUPlugin:host]</code> <b>Value=0.0.0.0</b>
IPv6 and IPv4 (dual stack) for Linux and Windows 2008 and later	<code>[NBUPlugin:host]</code> <b>Value=::0</b>

4. Save the file.
5. Restart NetApp Plug-in for Symantec NetBackup.

## Configuring events

NetApp Plug-in for Symantec NetBackup periodically generates events to notify you about volumes that are not protected by NetBackup.

### About this task

You can configure parameters in the `NBUPlugin.cfg` file to control the number of events that are generated and passed to NetBackup based on the event severity.

You can configure the following event-related parameters in the `NBUPlugin.cfg` file:

- `DisableEventGeneration`
- `DisableEventGenerationTypes`
- `DisableEventTypes`
- `DisableEventSeverity`

## Steps

1. Locate the `NBUPlugin.cfg` file in the `InstallPath\config` directory.  
*InstallPath* is the directory in which NetApp Plug-in for Symantec NetBackup is installed.
2. Open the `NBUPlugin.cfg` file in a text editor.
3. Depending on the parameter you want to modify, perform the appropriate action:

If you want to...	Do this...
Disable event generation	<p><b>a.</b> Edit the default value of <code>DisableEventGeneration</code> parameter from FALSE to TRUE, as shown below:</p> <pre>[NBUPlugin:DisableEventGeneration] Value=TRUE</pre> <p>The default value of the parameter is FALSE.</p> <p><b>b.</b> Restart the plug-in.</p> <p><b>Note:</b> NetBackup continues to receive events generated by the OnCommand Unified Manager server.</p>
Disable generation of a specific event	<p>Edit the value of <code>DisableEventGenerationTypes</code> parameter from the options given below:</p> <pre>[NBUPlugin:DisableEventGenerationTypes] Value=<i>eventType</i></pre> <p>The possible values for <i>eventType</i> are as follows:</p> <ul style="list-style-type: none"> <li>• <b>ntap:n-adap-Unprotected-Dataset:DMA protected</b> This value disables generation of <i>Volume protected by OnCommand Unified Manager server</i> events.</li> <li>• <b>ntap:n-adap-Unprotected-Dataset:DMA protection broken</b> This value disables generation of <i>Volume not protected by OnCommand Unified Manager server</i> events.</li> </ul>
Filter a specific event	<p>Edit the value of <code>DisableEventTypes</code> parameter from the options given below:</p> <pre>[NBUPlugin:DisableEventTypes] Value=<i>eventType</i></pre> <p>The possible values for <i>eventType</i> are as follows:</p> <ul style="list-style-type: none"> <li>• <b>ntap:n-adap-Unprotected-Dataset:DMA protected</b> This value disables generation of <i>Volume protected by OnCommand Unified Manager server</i> events.</li> <li>• <b>ntap:n-adap-Unprotected-Dataset:DMA protection broken</b> This value disables generation of <i>Volume not protected by OnCommand Unified Manager server</i> events.</li> <li>• <b>Volume Almost Full</b> This value disables generation of <i>Volume almost full</i> events.</li> </ul>



If you want to...	Do this...
Filter events based on severity	<p>Edit the value of <code>DisableEventSeverity</code> parameter from the options given below:</p> <pre data-bbox="667 323 1052 390">[NBUPugin:DisableEventSeverity] Value=<i>severity</i></pre> <p>The possible values for <i>severity</i> are as follows:</p> <ul style="list-style-type: none"> <li>• <b>information</b></li> <li>• <b>warning</b></li> <li>• <b>critical</b></li> </ul>

**Note:** All event types and severities are case-sensitive.

For disabling generation of a specific event or filtering a specific event, you can specify two or more event types or severity by using the exclamation point and comma (!,) as separators:

#### Example

```
[NBUPugin:DisableEventTypes]
Value=ntap:n-adap-Unprotected-Dataset:DMA protected!,ntap:n-adap-Unprotected-Dataset:DMA
protection broken
```

4. Save the file.

## NetBackup configuration

---

You must configure Symantec NetBackup after the NetApp storage systems and NetApp Plug-in for Symantec NetBackup are installed and configured. After the NetApp storage systems are configured, the OnCommand Unified Manager server presents the storage system as volumes to NetBackup.

### Configuration of OnCommand Unified Manager server as NetBackup storage server

You must configure the OnCommand Unified Manager server as a storage server by using the NetBackup Storage Server Configuration wizard. This wizard enables you to configure the disk pools and storage units that are required for the Replication Director configuration.

**Note:** You must ensure that objects such as resource pools are created with unique names in the OnCommand Unified Manager server.

**Note:** The SLP (Storage Lifecycle Policy) names used across different NetBackup Servers cannot be the same. This might lead to a collision with the storage service names in OnCommand Unified Manager server and thus cause the job to fail. The SLP name should always start with an alphabet for the plug-in to work properly.

For more information about configuring the OnCommand Unified Manager server as a storage server, see *Configuring a NetBackup storage server* in the *Symantec NetBackup Replication Director Solutions Guide*.

For more information about disaster recovery and high-availability support for OnCommand Unified Manager server, see the technical reports *TR 3655: Disaster Recovery Support for OnCommand Unified Manager Data Using SnapDrive* and *TR 3767: High-Availability Support for OnCommand Unified Manager Server*.

#### Related information

[NetBackup documentation on the Symantec Site: www.symantec.com/docs/DOC5332](http://www.symantec.com/docs/DOC5332)

### Managing disk pools and resource pools

Changes that are made in resource pools affect the NetBackup disk pools. The NetBackup administrator must refresh the disk pools in the Change Disk Pool window from the NetBackup Administration Console to view the changes.

Refreshing the disk pool enables NetBackup to locate any new volumes or changes in the storage server. You can add new volumes to the existing disk pools. The storage lifecycle policies succeed only if the disk pools associated with that storage lifecycle policy are refreshed.

If a resource pool is deleted or renamed from the OnCommand Unified Manager server, then all the storage lifecycle policies that refer to a specific resource pool must be updated.

For more information about managing disk pools and resource pools from NetBackup, see *Configuring a NetBackup storage server* chapter in the *Symantec NetBackup Replication Director Solutions Guide*.

#### Related information

[NetBackup documentation on the Symantec Site: www.symantec.com/docs/DOC5332](http://www.symantec.com/docs/DOC5332)

## Troubleshooting NetApp Plug-in for Symantec NetBackup

---

If you encounter unexpected behavior during the installation of or when using NetApp Plug-in for Symantec NetBackup, you can use the logs and trace files to identify and resolve the cause of such issues.

You can contact technical support, if you cannot troubleshoot or resolve the issue.

### Where to find plug-in logs and trace files

You can access log files to check the status of the plug-in and track communication between the plug-in and NetBackup. Log files are refreshed daily. You can use the trace files for debugging.

You can access the plug-in logs and trace files for different platforms as listed in the table below:

Host platform	Trace files location	Logs location
32-bit Windows host	Program Files (x86)\NetApp\NBUPugin \trace	Program Files (x86)\NetApp\NBUPugin \log
Windows host	Program Files (x86)\NetApp\NBUPugin \trace	Program Files (x86)\NetApp\NBUPugin \log
Linux host	/usr/NetApp/NBUPugin/ trace	/usr/NetApp/ NBUPugin/log

To enable additional tracing, you should set the TRACE:TRACE\_TO\_FILE parameter to TRUE in the `configure.cfg` file in the `InstallPath\config` directory:

```
[TRACE:TRACE_TO_FILE]
Value=TRUE
```

### Error messages in NetApp Plug-in for Symantec NetBackup

You might encounter some error messages while using NetApp Plug-in for Symantec NetBackup. You can view the error messages from the Symantec NetBackup user interface and attempt to troubleshoot the issues using provided possible workarounds.

#### Filer read issue when creating a Snapshot copy

##### Message

```
Error 13: Filer read failed
```

##### Possible cause

The error is triggered from NetBackup.

##### Next action

Contact Symantec support to troubleshoot this issue.

## Filer write issue when creating a Snapshot copy

### Message

Error 14: Filer write failed

### Possible cause

The error is triggered from NetBackup.

### Next action

Contact Symantec support to troubleshoot this issue.

## Snapshot copy creation fails

### Message

Error 20: Snapshot creation failed

### Possible cause

- The error is triggered from NetBackup or NetApp Plug-in for Symantec NetBackup.
- Storage system is not accessible.
- Another Snapshot copy with a similar name exists in the resource pool.

### Next action

- Ensure that the storage system is accessible.
- Search the NetApp Plug-in for Symantec NetBackup log files with the volume name to identify the reason for the Snapshot copy failure.
- Contact Symantec support to troubleshoot this issue.

## Snapshot copy issue when creating a Snapshot copy

### Message

Error 156: Snapshot error encountered

### Possible cause

- The error is triggered from NetApp Plug-in for Symantec NetBackup.
- Storage system is not accessible.
- Another Snapshot copy with a similar name exists in the resource pool.

### Next action

- Ensure that the storage system is accessible.
- Search the NetApp Plug-in for Symantec NetBackup log files with the volume name to identify the reason for the Snapshot copy failure.

## Media write issue when creating datasets or exporting Snapshot copies

### Message

Error 84: Media write error

### Possible cause

- Resource pools are invalid.
- A dataset cannot be created or found.

- Snapshot copy export failed.
- SnapRestore license is not found.

#### Next actions

- Ensure that the storage units used in NetBackup are mapped to the appropriate resource pools in the OnCommand Unified Manager server.
- Ensure that the target storage unit in NetBackup is online and accessible.
- Ensure that the SnapRestore license is installed on the secondary storage system.
- Check the NetApp Plug-in for Symantec NetBackup logs to locate the cause of the failure.
- Contact NetApp technical support if you are unable to resolve the issue.

## Media manager system issue when OnCommand Unified Manager server job fails

#### Message

Error 174: Media manager system error occurred

#### Possible cause

The OnCommand Unified Manager server job failed.

#### Next action

Search the NetApp Plug-in for Symantec NetBackup log file for the NetBackup job error code `NBUjob`. In the search results, verify if the OnCommand Unified Manager server job was successfully completed and take the appropriate action:

- If the OnCommand Unified Manager server job failed, then check the OnCommand Unified Manager **jobs** page to understand the issue.  
The job identifier is printed in the `NBUPlugin.log` file.
- If the OnCommand Unified Manager server job was successful, but NetBackup reports that the job failed, then contact NetApp technical support.

## Media open issue when specifying a Snapshot copy

#### Message

Error 83: Media open error

#### Possible cause

Invalid Snapshot copy specified.

#### Next action

- Ensure that the Snapshot copy is valid by checking the NetApp Plug-in for Symantec NetBackup log file.
- Enable tracing and ensure that NetApp Plug-in for Symantec NetBackup has sent the correct error code to the Snapshot copy API request.  
Perform the following steps to enable tracing:
  1. Change the `Trace` option value to **TRUE** in the `configure.cfg` file.
  2. Restart NetApp Plug-in for Symantec NetBackup.
- If tracing is enabled, check if NetApp Plug-in for Symantec NetBackup takes a long time to respond to the API request.

## OnCommand Unified Manager server job request fails

### Message

```
Error 34: Failed waiting for child process
```

### Possible cause

- The request is invalid.
- Cannot find or create a storage server, which prevents the OnCommand Unified Manager server from triggering a OnCommand Unified Manager server job.
- Cannot obtain the status of a triggered OnCommand Unified Manager server job.
- NetApp Plug-in for Symantec NetBackup was restarted.

### Next action

Search the NetApp Plug-in for Symantec NetBackup log file for the NetBackup job error code `NBUjob`. In the search results, verify if the OnCommand Unified Manager server job was successfully completed. If the OnCommand Unified Manager server job number is not available in the search results, then contact technical support.

## NetBackup job cancelled manually

### Message

```
Error 150: Termination requested by Administrator
```

### Possible cause

NetBackup job was cancelled by the administrator.

### Next action

Check whether the NetBackup job was cancelled manually. If the job was not cancelled manually, then check for the first occurrence of the error in the job details window, and follow the troubleshooting tips provided for that error number.

## Restore operation issue after a backup

### Message

```
Error: Restore - requested operation was partially successful.
```

### Possible cause

This message occurs when an export policy rule is created with default settings of `anon=65534` (User ID To Which Anonymous Users Are Mapped).

### Next action

Ensure that the rule is created with the `anon` value set to 0.

## RD policy validation fails

### Message

```
Error code 4224 : STS Internal Error(Status 252).
```

### Possible cause

This message occurs when policy validation is performed immediately after creating a new volume.

**Next action**

Before validating the policy, ensure that the volume is listed in the OnCommand Unified Manager. Alternatively, you can refresh the cluster information in the OnCommand Unified Manager server and validate the NetBackup policy, after.

**Disk is offline****Message**

```
Error 2074: Disk down error
```

**Possible cause**

- Unable to communicate with the OnCommand Unified Manager server.
- Unable to get details of a storage unit.

**Next action**

- Ensure that the OnCommand Unified Manager server is accessible.
- Ensure that the storage server points to a valid resource pool in the OnCommand Unified Manager server.
- Enable tracing and check if NetApp Plug-in for Symantec NetBackup takes more than 60 seconds to respond to the API request.  
Perform the following steps to enable tracing:
  1. Change the `Trace` option value to **TRUE** in the `configure.cfg` file.
  2. Restart NetApp Plug-in for Symantec NetBackup.

**Storage server is offline****Message**

```
Error 2106: Storage server down error
```

**Possible cause**

- Unable to communicate with the OnCommand Unified Manager server.
- Unable to get details of a storage unit.

**Next action**

- Ensure that the OnCommand Unified Manager server is accessible.
- Ensure that the storage server points to a valid resource pool in the OnCommand Unified Manager server.
- Enable tracing and check if NetApp Plug-in for Symantec NetBackup takes more than 60 seconds to respond to the API request.  
Perform the following steps to enable tracing:
  1. Change the `Trace` option value to **TRUE** in the `configure.cfg` file.
  2. Restart NetApp Plug-in for Symantec NetBackup.

**Plug-in installation fails****Message**

```
[root@vmrhe15u4x64-187-43 /]# ./CNBUPlugin_x86_2.0.sh

Extracting the installer...

NBUPugin Version 2.0 for Clustered Data ONTAP

Have you read and agreed to the terms of the license?
(y = yes, n = no, d = display license) [d]:y
License accepted.
Specify the install location [/usr/NetApp/NBUPugin]:
Specify the http port on which NBUPugin will listen [8085]:
Port 8085 is free
Specify the https port on which NBUPugin will listen [8086]:
Port 8086 is free
Preparing...
##### [100%]
  1:NBUPugin
##### [100%]
NBUPugin version 2.0 installed on Wed Jan  9 06:15:55 EST 2013
/usr/NetApp/NBUPugin/processmanager: error while loading shared
libraries: /usr/lib/libsv.so: cannot restore segment prot after
reloc: Permission denied
/usr/NetApp/NBUPugin/processmanager: error while loading shared
libraries: /usr/lib/libsv.so: cannot restore segment prot after
reloc: Permission denied
/usr/NetApp/NBUPugin/processmanager: error while loading shared
libraries: /usr/lib/libsv.so: cannot restore segment prot after
reloc: Permission denied
```

**Possible cause**

The error is triggered from NetApp Plug-in for Symantec NetBackup while loading shared libraries.

**Next action**

Run the following command and then install the plug-in:

```
[root@vmrhe15u4x64-187-43 NBUPugin]# setenforce 0
```



## Where to get help and find more information

---

The NetApp Support Site provides access to troubleshooting tools, product documentation, and technical assistance. You can use NetApp Community forums to connect with peers, and the NetApp Library to access technical reports and white papers.

Resource	Description
<a href="#">NetApp Support Site</a>	Access troubleshooting tools, product documentation, and technical support assistance.
<a href="#">NetApp Community public forum</a>	Connect with peers, ask questions, exchange ideas, find resources, and share best practices.
<a href="#">NetApp Library</a>	Access technical reports, white papers, and other documents.

## Viewing supported configurations in Interoperability Matrix

You can view the supported configurations for any storage solution in the Interoperability Matrix.

### Steps

1. Access the Interoperability Matrix at [mysupport.netapp.com/matrix](https://mysupport.netapp.com/matrix).
2. Enter your user name and password and click **Login**.
3. Click **Change** to select the storage solution.  
A window listing all the storage solutions is displayed.
4. Select the required storage solution.

### Example

In the Backup and Recovery section, you can click **NetApp Plug-in for Symantec NetBackup** as the storage solution.

5. Click **Show Results** to view the configurations that match the selected storage solution.

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