Veritas NetBackup™ Upgrade Guide

Release 8.0

VERITAS™

Veritas NetBackup™ Upgrade Guide

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Veritas Services and Operations Readiness Tools (SORT)

Veritas Services and Operations Readiness Tools (SORT) is a website that provides information and tools to automate and simplify certain time-consuming administrative tasks. Depending on the product, SORT helps you prepare for installations and upgrades, identify risks in your datacenters, and improve operational efficiency. To see what services and tools SORT provides for your product, see the data sheet:

https://sort.veritas.com/data/support/SORT_Data_Sheet.pdf

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About the NetBackup 8.0 Upgrade Guide

The NetBackup 8.0 Upgrade Guide is provided to help assist you plan and accomplish your upgrade to NetBackup 8.0. This guide is updated periodically to provide you with the most up-to-date information. You can obtain the latest version of this guide on the NetBackup 8.0 Upgrade portal, at the following link:

http://www.veritas.com/docs/TECH74584

The Veritas Services and Operations Readiness Tools (SORT) is also a valuable resource for upgrade preparation. More information about SORT is available.

See "About Veritas Services and Operations Readiness Tools" on page 16.

About changes in NetBackup 8.0

The following describes some important changes to NetBackup version 8.0. For complete details, see the *NetBackup Release Notes* for version 8.0.

Note: If you currently use a version of NetBackup earlier than 7.6, be aware that NetBackup versions 7.0, 7.1, 7.5, and 7.6 contained many changes and enhancements. Before you upgrade to NetBackup 8.0 from any of these earlier versions, refer to the *NetBackup Release Notes* for versions 7.0, 7.1, 7.5, and 7.6 for complete details.

- User interface changes
  Starting with version 7.7, NetBackup no longer includes a native Windows version of the NetBackup Administration Console. Instead, the Java-based version of the console has been updated and enhanced to provide unified performance and functionality across all supported Windows and UNIX platforms. Unless otherwise noted, all uses of the term NetBackup Administration Console within the product documentation are in reference to the latest Java-based version.

  Note: The native Backup, Archive, and Restore (BAR) interface for Windows is still included with NetBackup 7.7.

- Media Server Deduplication Pool (MSDP) metadata conversion
  As a part of the NetBackup 8.0 upgrade, the MSDP reference management is converted and uses SQLite. The change is to improve performance and reliability.

- Support for Windows 2012 R2 master, media, and client
  NetBackup 8.0 supports the Windows 2012 R2 operating system as master server, media server, and client. Refer to the *NetBackup Release Notes* for limitations and restrictions.

- OpsCenter upgrades failing when Maintenance Packs or language packs present.
  On 64-bit Windows systems, if OpsCenter language packs or maintenance (triple-dot) releases are installed on top of an installation of version 7.1 or version 7.5, an upgrade to OpsCenter 8.0 may fail. For example, if you have upgraded

OpsCenter 7.5 to 7.5.0.6, an upgrade to OpsCenter 8.0 may fail. More information is available about this issue.

http://www.veritas.com/docs/TECH211070

■ NetApp clustered Ontap enhancements for NDMP
Important information about changes to NetApp clusters is included in NetBackup 8.0. Review the supplementary information that is included in this manual to determine if further steps are required.

See "Potential required changes for NetApp clusters" on page 9.

See "About Veritas Services and Operations Readiness Tools" on page 16.

Security updates to the NetBackup database

As a part of security changes in NetBackup, Veritas may make changes to your NetBackup (NBDB) database password. If you changed the password on the NetBackup database from the default value, no changes to the password are made. Any existing NetBackup databases which still have the default password are updated with a new, randomly generated password. All new installations of NetBackup have a randomly generated password assigned to the NetBackup database for improved security. This password is not provided to the user during installation or upgrade. You can use the nbdb_admin command to change this randomly generated password. See the *Veritas NetBackup Commands Reference Guide* for more information about the nbdb_admin command.

About MSDP encryption changes

With NetBackup 8.0, Media Server Deduplication Pool (MSDP) introduces a new encryption algorithm. Advanced Encryption Standard 256 bits, CTR (AES) replaces the older Blowfish encryption algorithm. To ensure data compatibility, MSDP supports and manages both the Blowfish and the AES encrypted data. For existing backup operations, optimized duplication, and replication, the data remains encrypted with the Blowfish algorithm. MSDP recognizes and supports the Blowfish data for restore of previous backup images. More information about the changes in MSDP are available. Refer to the *Veritas NetBackup Deduplication Guide*.

Potential required changes for NetApp clusters

As part of the 8.0 upgrade, review the settings of any NetApp clusters. If the cluster mode is set to Node scope mode, both Veritas and NetApp recommend that you change to Vserver aware mode. If you plan to move to Vserver aware mode as part of the upgrade, create a detailed image report for each of your filers. Use the

`bpimagelist` command to generate this list. Depending on the size of your environment, this activity can take some time. More information is available.

About automatic file changes from an upgrade

When you upgrade from an earlier NetBackup version, certain customizable scripts are overwritten. Before NetBackup overwrites these scripts, it saves copies of them so that any modifications are preserved.

For UNIX and Linux

Table 1-1

Path or paths	Protected files and directories	Action

`/usr/openv/netbackup/`
`bin`
	`backup_notify`
	
	`backup_exit_notify`
	
	`bpend_notify (Optional)`
	
	`bpend_notify_busy (Optional)`
	
	`bpstart_notify (Optional)`
	
	`dbbackup_notify`
	
	`diskfull_notify`
	
	`initbpdbm`
	
	`initbprd`
	
	`restore_notify`
	
	`session_notify`
	
	`session_start_notify`
	
	`userreq_notify`
		The current NetBackup version number is appended to the file name.
		
		Example:
		
		`backup_notify.7.5.0.3`

`/usr/openv/msg/C`
`/usr/openv/netbackup/`
`bin/goodies`
`/usr/openv/netbackup/`
`bin/help`
`/usr/openv/volmgr/help`
	The entire directory.	The entire directory is moved to the directory name plus the current version number.
		
		Example:
		
		`/usr/openv/netbackup/`
		`bin/goodies.7.1.0.4`

Table 1-1 *(continued)*

Path or paths	Protected files and directories	Action
`/usr/openv/volmgr/bin`	`drive_mount_notify` (Optional) `drive_unmount_notify` (Optional) `shared_drive_notify`	The current NetBackup version number is appended to the file name. Example: `shared_drive_notify.7.5`

The following examples describe how this process works for UNIX and Linux:

Table 1-2

Version of NetBackup	Files modified	Actions taken
7.5.*x*	Files in the `/usr/openv/netbackup/goodies` directory	After an upgrade to NetBackup 8.0, the `goodies.old_NetBackup_version` is created automatically. The directory contains the modified files from the earlier version: `/usr/openv/netbackup/goodies.7.5.` If you made changes to these scripts before the upgrade, apply those changes to the new 8.0 scripts.
7.5.*x*	Files in the `/usr/openv/netbackup/bin` directory	After an upgrade to NetBackup 8.0, the modified file is renamed `filename.old_NetBackup_version`: `/usr/openv/netbackup/bin/backup_notify.7.5` If you made changes to these scripts before the upgrade, apply those changes to the new 8.0 scripts.

For Windows

Table 1-3

Path or paths	Protected files and directories	Action

`install_path\`
`NetBackup\bin`
	`nblog.conf`
	`backup_exit_notify.cmd`
	`backup_notify.cmd`
	`dbbackup_notify.cmd`
	`diskfull_notify.cmd`
	`restore_notify.cmd`
	`session_notify.cmd`
	`session_start_notify.cmd`
	`userreq_notify.cmd`
		The files are copied to the `install_path\`
		`NetBackup\bin.`*`release`* directory. The release value is the current version of NetBackup.
		
		Example
		`install_path\`
		`NetBackup\bin.7.0`

`install_path\`
`NetBackup\bin\goodies`
	`netbackup.adm`
	`help_script.cmd`
	`available_media.cmd`
	`check_coverage.cmd`
	`cleanstats.cmd`
	`duplicate_images.cmd`
	`verify_images.cmd`
	`bpstart_notify`
	`bpend_notify`
		The files are copied to the `install_path\`
		`NetBackup\bin\`
		`goodies.`
		`release` directory. The release value is the current version of NetBackup.
		
		Example
		`install_path\`
		`NetBackup\bin.7.5`

Upgrades on AIX, Linux, and Solaris fail when the install_path/openv/db/data directory is a link

If the `install_path`/openv/db/data directory is a link, the installation fails for AIX, Linux and Solaris operating systems.

For Solaris, the issue affects all upgrades to NetBackup through version 7.5.0.4. For AIX and Linux, the issue only affects upgrades from NetBackup 7.5 through 7.5.0.4. The installation problem does not affect Hewlett Packard Enterprise Systems. Additionally, this problem does not occur if the `install_path`/openv/db directory is a link.

The problem is the result of how the native package installers recognize symbolic links from *install_path*/openv/db/data to an alternate location.

Warning: If you attempt an upgrade without making the changes shown, the upgrade fails and it leaves NetBackup in a nonfunctional state. You must then contact Veritas Technical Support to resolve the issue.

The error for Linux and AIX is as shown:

```
ERROR:   Unable to create/upgrade the NB database.  Refer to the log
```

The error for Solaris is as shown:

```
pkgrm: ERROR: unable to remove existing directory at </opt/openv/db/data>
```

Two methods are available to work around this issue.

- Move the database files back to the *install_path*/openv/db/data directory before beginning the installation.

- Move the entire *install_path*/openv/db directory to the alternate location and create a symbolic link of *install_path*/openv/db to the alternate location.

To move all files back to the install_path/openv/db/data directory before the upgrade

1 Stop all NetBackup processes.

2 Remove the *install_path*/openv/db/data link.

```
rm install_path/openv/db/data
```

3 Make a *install_path*/openv/db/data directory.

```
mkdir install_path/openv/db/data
```

4 Copy the contents of the data directory to *install_path*/openv/db/data. Be aware the directory contains dot files (. *filename*). In the example shown, the data directory is in a directory called space.

```
cp /space/data/* install_path/openv/db/data/
```

5 Install NetBackup.

6 If necessary, once the upgrade is finished, move the data back to `/space/data` and recreate the link. Be aware the directory contains dot files (`.`*`filename`*).

```
cp install_path/openv/db/data/* /space/data
mv install_path/openv/db/data install_path/openv/db/data_MMDDYY
ln -s /space/data install_path/openv/db/data
```

7 Start the NetBackup processes.

8 If you performed step 6, you can remove the `install_path`/openv/db/data_MMDDYY directory after a few days, once you verify there are no problems with the link and the database information.

To move the entire install_path/openv/db directory to an alternate location and create a symbolic link to the new location

1 Stop all NetBackup processes.

2 Remove the `install_path`/openv/db/data link.

```
rm install_path/openv/db/data
```

3 Create a `path_name`/db directory in a location with enough space for the `db` directory. In this example, the directory is `/space`.

```
mkdir /space/db
```

4 Copy the contents of `install_path`/openv/db directory to `/space/db`. Be aware the directory contains dot files (`.`*`filename`*).

```
cp -r install_path/openv/db/* /space/db
```

5 Rename the `install_path`/openv/db directory to something different.

```
mv install_path/openv/db install_path/openv/db.MMDDYY
```

6 Move the `/space/data` directory into `/space/db`.

```
mv /space/data /space/db/
```

7 Link the `/space/db` path to the original location.

```
ln -s /space/db install_path/openv/db
```

8 Install NetBackup.

9 Start the NetBackup processes.

10 You can remove the *install_path*/openv/db.MMDDYY directory after a few days once you verify there are no problems with the link and the database information.

Upgrade performance slowed by known True Image Restoration issue

True Image Restoration (TIR) data pruning fails in NetBackup 7.5.0.6. The operation normally fails silently, but on some master servers the failure generates an error message in the NetBackup error report. This problem exists only in NetBackup 7.5.0.6. If your environment is at NetBackup 7.5.0.6 and you use TIR, Veritas recommends that you apply the available emergency engineering binary (EEB) before you upgrade. In addition, Veritas recommends that you perform a manual catalog cleanup after you apply the EEB and before you upgrade to NetBackup 8.0.

More information about this problem and the EEB is available.

http://www.veritas.com/docs/TECH209826

To manually perform the image cleanup

1 Download and apply the EEB as instructed in tech note TECH209826

http://www.veritas.com/docs/TECH209826

2 Use the command shown:

UNIX/Linux: /usr/openv/netbackup/bin/admincmd/bpimage -cleanup -allclients

Windows: *install_path*\netbackup\bin\admincmd\bpimage -cleanup -allclients

More information about the bpimage command is available.

Veritas NetBackup Commands Reference Guide

Errors when Bare Metal Restore information is replicated using Auto Image Replication

Successful Auto Image Replication (AIR) of Bare Metal Restore (BMR) information requires two things. First, the master server in the target domain must have BMR enabled. Second, the master server in the target domain must be at the same or higher version of NetBackup than any clients that send BMR information. For

example, if the master server in the target domain is NetBackup 8.0 and the client in the originating domain is 7.5.0.x, AIR works correctly.

If the client in the originating domain is NetBackup 8.0 and the master in the target domain is 7.5.0.x, the BMR information fails to replicate. All other information is successfully sent, only the BMR information is not replicated. You can restore the contents of the client, but you cannot use BMR.

More information about this topic is available.

http://www.veritas.com/docs/TECH211267

Known catalog backup limitation

Veritas supports mixed versions of NetBackup in the backup environment. Limitations exist, however, when you back up the NetBackup catalog.

Starting with NetBackup 7.5, if the master server performs catalog backups to a separate media server, the media server must use the same version of NetBackup as the master server. Failure to use the same version of NetBackup on the media server results in improperly protected catalog data.

Since the NetBackup catalog resides on the master server, the master server is considered to be the client for a catalog backup. If the NetBackup configuration includes a media server, it must use the same NetBackup version as the master server to perform a catalog backup.

More information on mixed version support is available.

See "About compatibility between NetBackup versions" on page 108.

About Veritas Services and Operations Readiness Tools

Veritas Services and Operations Readiness Tools (SORT) is a robust set of standalone and web-based tools that support Veritas enterprise products. For NetBackup, SORT provides the ability to collect, analyze, and report on host configurations across UNIX/Linux or Windows environments. This data is invaluable when you want to assess if your systems are ready for an initial NetBackup installation or for an upgrade.

Access SORT from the following webpage:

https://sort.veritas.com/netbackup

Once you get to the SORT page, more information is available as follows:

■ **Installation and Upgrade Checklist**

Use this tool to create a checklist to see if your system is ready for a NetBackup installation or an upgrade. This report contains all the software and the hardware compatibility information specific to the information provided. The report also includes product installation or upgrade instructions, as well as links to other references.

- **Hot fix and EEB Release Auditor**
  Use this tool to find out whether a release that you plan to install contains the hot fixes that you need.

- **Custom Reports**
  Use this tool to get recommendations for your system and Veritas enterprise products.

- **NetBackup Future Platform and Feature Plans**
  Use this tool to get information about what items Veritas intends to replace with newer and improved functionality. The tool also provides insight about what items Veritas intends to discontinue without replacement. Some of these items include certain NetBackup features, functionality, 3rd-party product integration, Veritas product integration, applications, databases, and the OS platforms.

Help for the SORT tools is available. Click **Help** in the upper right corner of the SORT home page. You have the option to:

- Page through the contents of the help similar to a book

- Look for topics in the index

- Search the help with the search option

Recommended SORT procedures for new installations

Veritas recommends new NetBackup users perform the three procedures that are listed for an initial introduction to SORT. The tool has many other features and functions, but these serve as a good introduction to SORT. In addition, the procedures provide a helpful base of knowledge for other SORT functionality.

Table 1-4

Procedure	Details
Create a Veritas Account on the SORT webpage	See "To create a Veritas Account on the SORT page" on page 18.
Create generic installation reports	See "To create a generic installation checklist" on page 18.

Table 1-4 *(continued)*

Procedure	Details
Create system-specific installation reports	See "To create a system-specific installation report for Windows" on page 19. See "To create a system-specific installation report for UNIX or Linux" on page 20.

To create a Veritas Account on the SORT page

1 In your web browser, navigate to:

https://sort.veritas.com/netbackup

2 In the upper right corner, click **Login**, then click **Register now**.

3 Enter the requested login and contact information:

Email address	Enter and verify your email address
Password	Enter and verify your password
First name	Enter your first name
Last name	Enter your last name
Company name	Enter your company name
Country	Enter your country
Preferred language	Select your preferred language
CAPTCHA text	Enter the displayed CAPTCHA text. If necessary, refresh the image.

4 Click **Submit**.

5 When you receive your login information, you can log into SORT and begin uploading your customized information.

To create a generic installation checklist

1 In your web browser, navigate to:

https://sort.veritas.com/netbackup

2 Find and select the **Installation and Upgrade Checklist** widget.

3 Specify the requested information

Product	Select the appropriate product from the drop-down menu. For NetBackup select **NetBackup Enterprise Server** or **NetBackup Server**.
Product version you are installing or upgraded to	Select the correct version of NetBackup. The most current version is always shown at the top of the list.
Platform	Select the operating system that corresponds to the checklist you want generated.
Processor	Select the correct processor type for your checklist.
Product version you are upgrading from (optional)	For new installations, do not make any selections. For upgrades, you can select the currently installed version of NetBackup.

4 Click **Generate Checklist**.

5 A checklist corresponding to your choices is created. You can modify your selections from this screen, and click **Generate Checklist** to create a new checklist.

You can save the resulting information as a PDF. Numerous options are available for NetBackup and many of them are covered in the generated checklist. Please spend time reviewing each section to determine if it applies to your environment.

To create a system-specific installation report for Windows

1 Go to the SORT website:

https://sort.veritas.com/netbackup

2 In the **Installation and Upgrade** section, select **Installation and Upgrade custom reports by SORT data collectors**.

3 Select the **Data Collectors** tab

4 Select the radio button for **Graphical user interface** and download the correct data collector for your platform.

The data collector is OS-specific. To collect information about Windows computers, you need the Windows data collector. To collect information about UNIX computers, you need the UNIX data collector.

5 Launch the data collector after it finishes downloading.

6 On the **Welcome** screen, select **NetBackup** from the product family section and click **Next**.

7 On the **System Selection** screen, add all computers you want analyzed. Click **Browse** to see a list of computers you can add to the analysis. Veritas recommends starting the tool with an administrator or a root account.

8 When all systems are selected, review the **System names** section and click **Next**.

9 In the **Validation Options** screen, under **Validation options**, select the version to which you plan to upgrade.

10 Click **Next** to continue

11 The utility performs the requested checks and displays the results. You can upload the report to My SORT, print the results, or save them. Veritas recommends that you upload the results to the My SORT website for ease of centralized analysis. Click **Upload** and enter your My SORT login information to upload the data to My SORT.

12 When you are finished, click **Finish** to close the utility.

To create a system-specific installation report for UNIX or Linux

1 Go to the SORT website:

https://sort.veritas.com/netbackup

2 In the **Installation and Upgrade** section, select **Installation and Upgrade custom reports by SORT data collectors**.

3 Select the **Data Collector** tab.

4 Download the appropriate data collector for your platform.

The data collector is OS-specific. To collect information about Windows computers, you need the Windows data collector. To collect information about UNIX computers, you need the UNIX data collector.

5 Change to directory that contains downloaded utility.

6 Run `./sortdc`

The utility performs checks to confirm the latest version of the utility is installed. In addition, the utility checks to see it has the latest data. The utility then lists the location of the log file for this session.

7 If requested, press **Enter** to continue.

8 Select the **NetBackup Family** at the **Main Menu**.

9 Select **Installation/Upgrade report** when prompted **What task do you want to accomplish?**

You can select multiple options by separating your response with commas.

10 Specify the system or systems you want included in the report.

If you previously ran a report on the specified system, you may be prompted to run the report again. Select **Yes** to re-run the report.

The utility again lists the location of the log files for the session.

The progress of the utility is displayed to the screen.

11 Specify **NetBackup** when prompted for the product you want installation or upgrade reports.

12 Enter the number that corresponds to the version of NetBackup you want to install.

The utility again lists the location of the log files for the session.

The progress of the utility is displayed to the screen.

13 The utility prompts you to upload the report to the SORT website if you want to review the report online. The online report provides more detailed information than the text-based on-system report.

14 When your tasks are finished, you can exit the utility. You have the option to provide feedback on the tool, which Veritas uses to make improvements to the tool.

Recommended SORT procedures for upgrades

Veritas recommends current NetBackup users perform the three procedures that are listed for an initial introduction to SORT. The tool has many other features and functions, but these serve as a good introduction to SORT for users who already use NetBackup. In addition, the procedures provide a helpful base of knowledge for other SORT functionality.

Table 1-5

Procedure	Details
Create a Veritas Account on the SORT webpage	See "To create a Veritas Account on the SORT page" on page 18.

Table 1-5   *(continued)*

Procedure	Details
Create a system-specific upgrade report	See "To create a system-specific installation report for Windows" on page 19. See "To create a system-specific installation report for UNIX or Linux" on page 20.
Review the future platform and feature plans. Review the hot fix and emergency engineering binary release auditor information.	See "To review future platform changes and feature plans" on page 22. See "To review hot fix and emergency engineering binary information" on page 22.

To review future platform changes and feature plans

1   In your web browser, navigate to:

https://sort.veritas.com/netbackup

2   Find and select the **NetBackup Future Platform and Feature Plans** widget.

3   Select **Display Information**.

4   Review the information provided

5   Optional - sign in to create notification - Click **Sign in and create notification**.

To review hot fix and emergency engineering binary information

1   In your web browser, navigate to:

https://sort.veritas.com/netbackup

2   Find and select the **NetBackup Hot Fix and EEB Release Auditor** widget.

3   Enter the hot fix or emergency engineering binary (EEB) information.

4   Click **Search**.

5   The new page shows a table with the following columns:

Hot fix of EEB Identifier   Shows the hot fix or EEB number that was entered on the previous screen.

Description   Displays a description of the problem that is associated with the hot fix or EEB.

Resolved in Versions   Provides the version of NetBackup where this issue is resolved.

About the NetBackup preinstall checker

Starting with NetBackup 7.6, the server installer for both the UNIX/Linux and the Windows platforms includes a new preinstall checker. This feature helps to determine if your server is ready for a successful installation or upgrade.

Note: This feature is different than the NetBackup preinstallation Environment Checker that was released with the Windows version of NetBackup 7.1.

The check runs automatically when you start an installation on a master or a media server. The results of the check are shown at the following point:

- UNIX/Linux upgrade script
  After you answer the question "Is this host the master server".

- Windows installation wizard
  On the **Ready to Install the Program** screen, where the **Installation Summary** appears.

One of the tests that is performed is a comparison of the locally installed Emergency Engineering Binary (EEB) updates with the fixes included with the version of NetBackup being installed. If any of the preinstall tests fail, a message appears to indicate what type of action is required.

Some test failures are considered minor and let you continue with the installation or the upgrade. Critical test failures prevent the installation or the upgrade from happening. The output informs you that other action must be taken before you can proceed safely with the installation or the upgrade.

The preinstall check results are stored in the following locations:

- UNIX
  In the installation trace file in the following path:
  `/usr/openv/tmp`

- Windows
  In the following directory:
  `%ALLUSERSPROFILE%\Veritas\NetBackup\InstallSummary\`

See "About Veritas Services and Operations Readiness Tools" on page 16.

Planning for an upgrade

This chapter includes the following topics:

- About planning a NetBackup 8.0 upgrade

- How to plan for an upgrade to NetBackup 8.0

- Additional steps required for upgrade of Solaris SPARC with MSDP

- Additional steps required for AIX

- Special guidelines for AIX master servers

- About the migration phases

- About operational restrictions during the image metadata migration

- How to determine your plan for the image metadata migration

- Modifying the server.conf file to improve image metadata migration and NetBackup performance

- NetBackup 8.0 upgrade includes database rebuild

- Predicting time for the MSDP conversion process

- Considerations for Oracle backup policies when upgrading from NetBackup 7.1 and earlier

- End of life for NetBackup Search

- About security certificates for NetBackup hosts

About planning a NetBackup 8.0 upgrade

The currently installed version of NetBackup affects the upgrade process for the NetBackup 8.0 upgrade. For pre-NetBackup 7.5 environments, you must plan for

the complete catalog migration, as well as the MSDP conversion, if necessary.
NetBackup 7.5 environments need to plan for catalog migration of the Oracle, SQL
Server, and DB2 catalog data. NetBackup 7.5.x and 7.6.x environments must also
plan for the MSDP conversion if the environment uses MSDP. Upgrades from any
version of NetBackup must plan for the NBDB database rebuild. Table 2-1 has
additional information about what tasks you must perform for the upgrade.

Table 2-1   Required upgrade tasks based on currently installed version

Upgrade task	Versions that must perform the task
NBDB database rebuild	All versions must perform the NBDB database rebuild.
Catalog phase 1 migration	All pre-NetBackup 7.5.x environments must perform the catalog phase 1 migration.
Catalog phase 2 migration	All pre-NetBackup 7.6.x environments must perform the catalog phase 2 migration.
MSDP conversion	All versions that use MSDP must perform the MSDP conversion.

Before you begin an upgrade, Veritas recommends that you review the *NetBackup
Release Notes* document that is included with your media kit or the electronic
product image files. This document describes important changes in NetBackup 8.0
that you should be familiar with before you upgrade.

Caution: To help ensure a successful upgrade to NetBackup 8.0, you should visit
the SORT page and the NetBackup Upgrade Portal and for complete upgrade
details:

SORT page:

See "About Veritas Services and Operations Readiness Tools" on page 16.

https://sort.veritas.com/netbackup

NetBackup Upgrade Portal:

http://www.veritas.com/docs/TECH74584

See "How to plan for an upgrade to NetBackup 8.0" on page 26.

How to plan for an upgrade to NetBackup 8.0

Several factors must be considered when you prepare for an upgrade to NetBackup 8.0.

Catalog size (pre-NetBackup 7.6.x upgrades only)

The first factor to consider is the size of the NetBackup catalog. The catalog size is a factor because a catalog migration may be a part of the NetBackup 8.0 upgrade.

Depending on the size of the catalog, the catalog migration can take a long time. If you upgrade from NetBackup 7.5.*x.x*, the catalog size is calculated based only on the number of Oracle, SQL Server, and DB2 backups. For pre-7.5 environments, the total number of images present in the catalog determines the catalog size. For smaller catalogs, the Simple migration plan is preferred. If you have a larger catalog, more time for the migration is required, and the Guided migration plan is recommended. More information about calculating the time that is required for catalog migration is available.

See "How to determine your plan for the image metadata migration" on page 31.

Database rebuild

NetBackup 8.0 uses the latest version of Sybase SQL Anywhere database. As a part of the upgrade process, a database rebuild is performed. If you have a large database, the rebuild could take a long time. Upgrade plans should take into account the time that is required for the database rebuild.

More information about this topic is available.

See "NetBackup 8.0 upgrade includes database rebuild" on page 36.

Media Server Deduplication Pool conversion

Another factor is the implementation of Media Server Deduplication Pool (MSDP) in your environment. A conversion of the MSDP data is a part of the NetBackup 8.0 upgrade. More information about the MSDP conversion is available.

See "About upgrading MSDP to NetBackup 8.0" on page 82.

See "MSDP upgrade prerequisites" on page 85.

The MSDP conversion time is based on the number of backup images that are stored with MSDP. If you do not use MSDP, you do not need to calculate the MSDP conversion time, as there is nothing to convert. More information about calculating the time that is required for the MSDP conversion is available.

See "Predicting time for the MSDP conversion process" on page 38.

As the master and all media servers are upgraded to 8.0, the MSDP on the server being upgraded is converted. Each MSDP instance is independent and the

conversion time for each must be independently calculated and added to the appropriate servers upgrade time estimate.

Addition of web service account for NetBackup installation and upgrade

Beginning with NetBackup 8.0, the NetBackup master server includes a configured Tomcat web server to support critical backup operations. This web server operates under user account elements with limited privileges. These user account elements must be available on each master server (or each node of a clustered master server). More information is available:

http://www.veritas.com/docs/000081350

Note: Veritas recommends that you save the details of the user account that you use for the NetBackup Web Services. A master server recovery requires the same NetBackup Web Services user account and credentials that were used when the NetBackup catalog was backed up.

Caution: If the NetBackup PBX is running in secure mode, please add the web service user as authorized user in PBX. More information about determining PBX mode and how to correctly add users is available.

http://www.veritas.com/docs/000115774

Table 2-2 shows the overview of the upgrade procedure.

Table 2-2 Overview of the upgrade process

Step	Details	More information
1	Review operating system requirements and confirm the computer meets all requirements.	See "Installation and upgrade requirements for UNIX and Linux" on page 108. See "Requirements for Windows cluster installations and upgrades" on page 118.
2	If a catalog migration is required, review the time that is required for catalog migration and incorporate this migration into the upgrade plan.	See "How to determine your plan for the image metadata migration" on page 31.
3	Incorporate server.conf file changes into your upgrade plan (if required)	See "Modifying the server.conf file to improve image metadata migration and NetBackup performance" on page 34.

	Table 2-2	Overview of the upgrade process *(continued)*

Step	Details	More information
4	If a catalog migration is required, review operational restrictions during catalog migration and include these in your upgrade plan.	See "About operational restrictions during the image metadata migration" on page 30.
5	Review the database rebuild information and incorporate the database rebuild into your upgrade plan.	See "NetBackup 8.0 upgrade includes database rebuild" on page 36.
6	Review the MSDP conversion prerequisites and plan for the conversion.	See "MSDP upgrade prerequisites" on page 85.
7	Calculate the time that is required for MSDP conversion and incorporate that information into your upgrade plan.	See "Predicting time for the MSDP conversion process" on page 38.
8	Confirm that the web server user account and group account are created and enabled.	More information is available: http://www.veritas.com/docs/000081350
9	Begin the upgrade process	See "About master server upgrades" on page 42.

After you determine the approximate time the migration and the conversion process takes, you can select either the Simple or the Guided upgrade plan. Use the Simple method in NetBackup 7.6.0.x environments to perform the image metadata migration if you can suspend normal NetBackup operations while the image metadata migration is in progress. For all other non-7.6.0.x environments, use the Guided method to perform the image metadata migration if the Simple method requires too much time.

See "Upgrading to NetBackup 8.0 and migrating the image metadata using the Simple or Guided method" on page 43.

Additional steps required for upgrade of Solaris SPARC with MSDP

The upgrade process may not detect that MSDP is configured if the upgrade is of a NetBackup 7.0.*x* Solaris SPARC computer with MSDP. Apply the `pduninstall.sh` script that is found at the location that is shown to remedy this issue:

http://www.veritas.com/docs/TECH146243

If the NetBackup installer still does not detect the MSDP configuration, you must launch the conversion manually.

More information about this topic is available.

See "Converting the MSDP metadata during an upgrade to NetBackup 8.0" on page 88.

Additional steps required for AIX

The installation or upgrade of NetBackup 7.5 or NetBackup 7.6 may stop responding on some versions of AIX. This problem is the result of changes in the AIX operating system to `vswprintf`. The changes break the undefined behavior in the `libACE` component that shipped with the MSDP package. This problem is found on:

- AIX 6.1 TL9

- AIX 7.1 TL3

More information is available.

http://www.veritas.com/docs/TECH214505

Special guidelines for AIX master servers

Because of known memory problems, Veritas recommends you reset memory values for AIX master servers. Veritas recommends that you run the commands shown:

- `ulimit -s unlimited`

- `ulimit -d unlimited`

- `ulimit -m unlimited`

These changes set the physical memory size, the data area size, and the stack size to unlimited. These changes resolve known memory problems for AIX. Be sure to stop and restart the NetBackup daemons after you change the `ulimit` value.

About the migration phases

The image metadata migration begins after NetBackup 8.0 has started. The image migration occurs in two phases as follows:

Phase 1 migration	This phase is initiated automatically after the upgrade steps have been completed, when the first instance of the `nbstserv` process runs.
	Note: Phase 1 migration is only performed if the upgrade is from a pre-NetBackup 7.5 environment.
	The following images are migrated during this phase:
	■ All SLP controlled images ■ All staged DSSU images
Phase 2 migration	This phase is initiated automatically based on the `nbpem` scheduled image clean-up jobs, or you can initiate it manually to speed up the migration process.
	Note: Phase 2 migration is only performed if the upgrade is from a pre-NetBackup 7.6.0.*x* environment.
	For pre-NetBackup 7.5 environments, this phase migrates all of the images that were not migrated in phase 1.
	For NetBackup 7.5.*x* environments, this phase migrates the DB2, Oracle, and SQL Server images again to gather more information specific to the 7.6.*x* release.

Note: The migration phases can run in any order and may also overlap.

About operational restrictions during the image metadata migration

During the image metadata migration, certain NetBackup and OpsCenter operations may prevent a successful image metadata migration. Other NetBackup operations are also affected and may report errors while the image metadata migration is in progress.

The following describes the guidelines that you should follow before the upgrade and during the image metadata migration. The following also describes expected NetBackup operational behavior during the image metadata migration.

Guidelines to follow before upgrades and during image metadata migration	■ Disable OpsCenter data collection. If you use OpsCenter, before you start the upgrade, disable data collection for the master server. Do not activate data collection for the server until after phase 1 and phase 2 of the image metadata migration have completed. More information about how to disable OpsCenter data collection is available. *NetBackup OpsCenter Administrator's Guide*. http://www.veritas.com/docs/DOC5332 ■ Do not perform any catalog backup or catalog recovery operations until after phase 1 and phase 2 of the image metadata migration have completed. ■ Minimize the use of any NetBackup commands that query the NetBackup catalog until after phase 2 of the image metadata migration has completed. Such commands include but are not limited to `bpimage` and `bpimagelist`. During the migration, these types of commands consume resources that cause them to run inefficiently and also slow the migration process.

NetBackup operational behavior during image metadata migration	■ Capacity management and DSSU staging jobs cannot run while phase 1 of the image metadata migration is in progress.
	■ Some user-interface and reporting functions are likely to report errors until phase 2 of the image metadata migration has completed.
	For example, in the NetBackup Administration Console, the following error message appears if you attempt a catalog search on your AdvancedDisk media:
	`INF - unexpected return value from`
	`db_IMAGEreceive: unable to process request 228`
	■ The execution of the `bpexpdate` command with either the `-deassign` or the `-media` option fails while phase 2 of the image metadata migration is in progress.

How to determine your plan for the image metadata migration

The following guidelines are intended to help you determine how to perform the image metadata migration for your backup environment. If your upgrade is from NetBackup 7.6.0.*x*, then use the Simple method. No image metadata migration is necessary. Calculate the estimated total time to complete an upgrade to NetBackup and both migration phases as follows:

- If your current version of NetBackup is 7.5.*x.x*, determine the number of images on your system that need their metadata migrated. Use the following commands:

  - On UNIX systems, run the commands that are shown and sum the results:

    ```
    /usr/openv/netbackup/bin/admincmd/bpimagelist -idonly
    -d "01/01/1970 00:00:00" -pt DB2 | wc -l

    /usr/openv/netbackup/bin/admincmd/bpimagelist -idonly
    -d "01/01/1970 00:00:00" -pt Oracle | wc -l

    /usr/openv/netbackup/bin/admincmd/bpimagelist -idonly
    -d "01/01/1970 00:00:00" -pt MS-SQL-Server | wc -l
    ```

  - On Windows systems, run the commands that are shown and sum the results:

    ```
    install_path\NetBackup\bin\admincmd\bpimagelist -idonly
    -d "01/01/1970 00:00:00" -pt DB2 |
    %SystemDrive%\Windows\System32\find.exe /C " ID: "

    install_path\NetBackup\bin\admincmd\bpimagelist -idonly
    -d "01/01/1970 00:00:00" -pt Oracle |
    %SystemDrive%\Windows\System32\find.exe /C " ID: "

    install_path\NetBackup\bin\admincmd\bpimagelist -idonly
    -d "01/01/1970 00:00:00" -pt MS-SQL-Server |
    %SystemDrive%\Windows\System32\find.exe /C " ID: "
    ```

- If your current version of NetBackup is 7.1.x or earlier, determine the number of images on your system that need their metadata migrated. Use the following command:

  - On UNIX systems:
    ```
    /usr/openv/netbackup/bin/admincmd/bpimagelist -idonly -d
    "01/01/1970 00:00:00" | wc -l
    ```

  - On Windows systems:
    ```
    install_path\NetBackup\bin\admincmd\bpimagelist -idonly -d
    "01/01/1970 00:00:00" | %SystemDrive%\Windows\System32\find.exe
    /C " ID: "
    ```

- Use Figure 2-1 to find the image count for your system, along the x axis. Then, determine which line in the figure for your image count most accurately represents the performance of your master server. Refer to Table 2-3 for a description of each line.

Figure 2-1   Estimated image metadata migration times
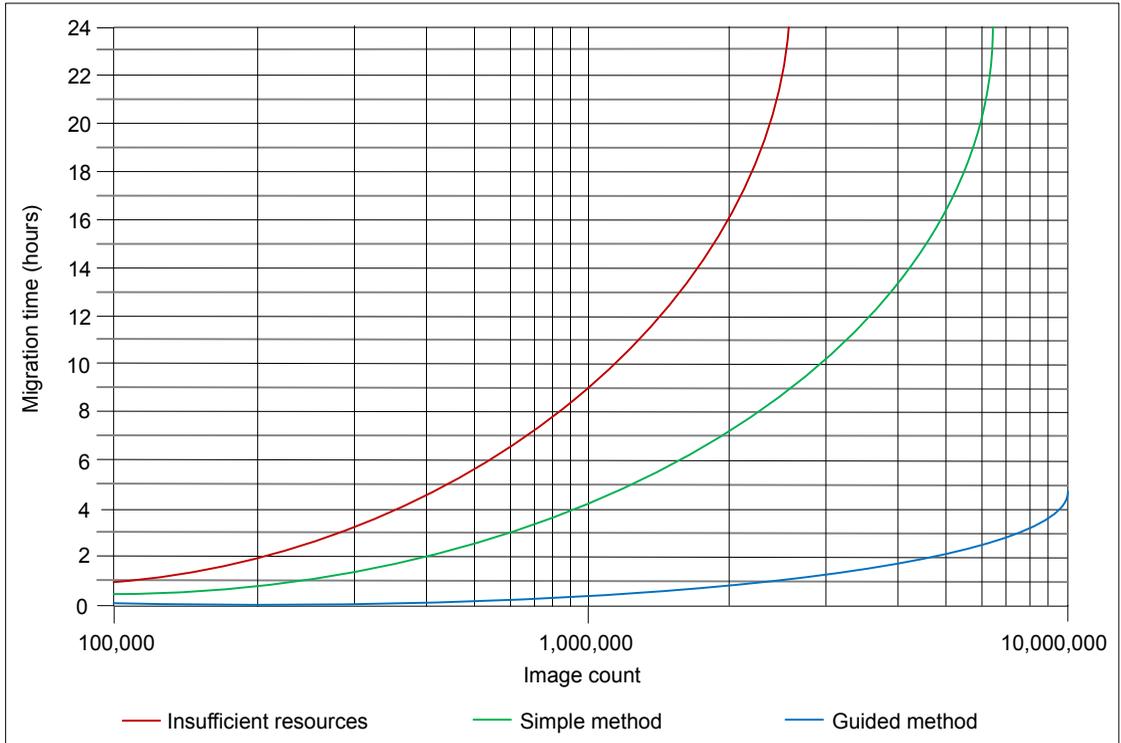
Table 2-3   Diagram line definitions for estimated image metadata migration
times

Line	Description
Insufficient Resources line (using the Simple method)	This line assumes a migration rate of 30 images per second.
	This performance level can be expected if your system disks are slow and/or you cannot tune the NetBackup relational database (NBDB) with enough cache memory.
	Refer to the following topic for more information:
	See "Modifying the server.conf file to improve image metadata migration and NetBackup performance" on page 34.

Table 2-3   Diagram line definitions for estimated image metadata migration
                     times *(continued)*

Line	Description
Simple Method line (adequate system resources using the Simple method)	This line assumes a migration rate of 75 images per second. This performance level can be achieved if your system runs on low latency disks and you can tune the NBDB with enough cache memory. Refer to the following topic for more information: See "Modifying the server.conf file to improve image metadata migration and NetBackup performance" on page 34.
Guided Method line (robust system resources using the Guided method)	This line assumes a migration rate of 600 images per second. This performance level can be achieved only by using the Guided method, high performance RAID disk, and ample cache memory for the NBDB. Refer to the following topic for more information: See "Modifying the server.conf file to improve image metadata migration and NetBackup performance" on page 34.

- Plot your current total image count on the x axis and determine if your master
  server qualifies for the Simple method, the Guided method, or if it has insufficient
  system resources.

- Referencing the appropriate line, determine the migration time on the y axis.

- If you can schedule enough time to perform the upgrade and the migration
  without the need to run backups, use the Simple method.
  Otherwise, use the Guided method.

Modifying the server.conf file to improve image metadata migration and NetBackup performance

If the total image count to be migrated is more than 1 million, certain parameters
in the `server.conf` file should be changed before a NetBackup upgrade.

These changes help improve the following:

- Performance of the image metadata migration.

- Performance of NetBackup processes after all of the image metadata has been
  migrated into the NetBackup relational database (NBDB).

If there are more than 1 million images in your database, it is recommended that
you make some modification to this file.

The following procedure describes how to modify the `server.conf` file to help improve the image metadata migration performance.

To modify the server.conf file before a NetBackup upgrade

1   On the server that you want to upgrade, save a copy of the current `server.conf` file in a remote and a secure location.

    The file resides in the following location:

    ■ On UNIX systems:
        `/usr/openv/var/global/server.conf`

    ■ On Windows systems:
        install_path`\NetBackupDB\CONF\Server.conf`

2   On the server that you want to upgrade, open the `server.conf` file in a text editor.

3   Change the following parameters as appropriate for your backup environment:

-ch (maximum cache size) — This parameter indicates the maximum cache size that `dbsrv11` can use, which is the SQLAnywhere service that manages the NBDB. The default size in NetBackup versions earlier than 7.5 is 512M. Beginning with NetBackup 7.5, the default value has been increased to 1024M.

As a guideline, this parameter should be set to a minimum of 1G of cache for every 1 million images to be migrated.

For example:

■ `-ch 1G` (for systems with up to 1M images)
■ `-ch 4G` (for systems with up to 3M images)
■ `-ch 6G` (for systems with up to 5M images)
■ `-ch 12G` (for systems with up to 10M images)

Note: If the cache size is set too low, it can cause a slow rate of migration and NetBackup operational response. If the cache size is set too high, it can consume too much of the available system memory (RAM). As with any tuning parameter, to achieve the desired value and results may take multiple attempts of adjusting, starting, migrating, and stopping.

Note: If the master server has ample available memory, performance of some operations can be improved. In such systems, you may want to increase `-ch` by a factor of two or three above this guideline.

| -m | Provides a way to automatically limit the growth of the transaction log. |
| | Create a new line and add this entry to the `server.conf` file. |

4   Save the changes to the file and close it.

NetBackup 8.0 upgrade includes database rebuild

NetBackup 8.0 uses version 16.0.0 of Sybase SQL Anywhere database. As a part of the upgrade process, a database rebuild is performed. If you have a large database, the rebuild could take a long time. Upgrade plans should take into account the time that is required for the database rebuild.

Note: The computer must have sufficient disk space available in the `data` directory to create an additional copy of all `.db` files. By default, the `data` directory is located in *install_path*`\NetBackupDB\` for Windows and `/usr/openv/db/` for UNIX/Linux.

Note:

(Conditional) Determine the size of the `BMR_DATA.db` file if it is present. By default, the `BMR_DATA.db` file is located in *install_path*`\NetBackupDB\data` for Windows and `/usr/openv/db/data/` for UNIX/Linux. The location may be different in customer installations and cluster installations. If the `BMR_DATA.db` file is larger than 1 GB and your version of NetBackup is 7.5.x.x or newer, follow the steps in TECH211811. The steps in TECH211811 purge unnecessary information from the `BMR_DATA.db` file and reduce the total rebuild time. Once you complete the procedure in tech note TECH211811, calculate the rebuild time for the `BMR_DATA.db` file as outlined in the tech note.

http://www.veritas.com/docs/TECH211811

The default location of the `.db` files depends on the operating system of your master server.

■ UNIX/Linux:

  `/usr/openv/db/data`

■ Windows:

  install_path`\NetBackupDB\data`

If you changed the actual location of these files, they may be in a site-specific location.

These files are located on the clustered shared partition if the master server is clustered.

The time that is required for a database rebuild is dependent on the computer's disk I/O speed and the size of the database files. Veritas tested an upgrade on a system that has a top I/O speed of 65MB per second.

The total time that is required for the database rebuild is based on the sum of two different values. The first is the rebuild time for the `BMR_DATA.db` file (if present) and the second is the rebuild time for the remaining database files.

To calculate the database rebuild time

1   Take the size of the `BMR_DATA.db` file, in gigabytes, and multiple by 12. This value is the time estimated to complete the `BMR_DATA.db` rebuild.

2   Take the total size of all other `.db` files in the data directory and multiply that value, in gigabytes, by 7.5. This value is the time estimated to complete the rebuild of the remainder of the databases.

3   Add the time value for the `BMR_DATA.db` rebuild to the time value for the rebuild of remainder of the databases. This value is the total time estimated for the rebuild of all databases.

Example:

The following shows the directory listing of the `data` directory.

```
-r-------- root/root 19131969536 2013-10-03 09:34 ./BMR_DATA.db
-r--r--r-- root/root     7454720 2013-10-03 09:34 ./BMRDB.db
-r-------- root/root        4096 2013-10-03 09:34 ./BMRDB.log
-r-------- root/root    26218496 2013-10-03 09:34 ./BMR_INDEX.db
-r-------- root/root    26218496 2013-10-03 09:34 ./DARS_DATA.db
-r-------- root/root    26218496 2013-10-03 09:34 ./DARS_INDEX.db
-r-------- root/root   683601920 2013-10-03 09:34 ./DBM_DATA.db
-r-------- root/root    75505664 2013-10-03 09:34 ./DBM_INDEX.db
-r-------- root/root  1373560832 2013-10-03 09:34 ./EMM_DATA.db
-r-------- root/root    26218496 2013-10-03 09:34 ./EMM_INDEX.db
-r-------- root/root    26218496 2013-10-03 09:34 ./JOBD_DATA.db
-r-------- root/root     2838528 2013-10-03 09:34 ./NBAZDB.db
-rw------- root/root     2433024 2013-10-03 09:34 ./NBAZDB.db.template
-r-------- root/root        4096 2013-10-03 09:34 ./NBAZDB.log
-r--r--r-- root/root    10121216 2013-10-03 09:34 ./NBDB.db
-r-------- root/root        4096 2013-10-03 09:34 ./NBDB.log
-r-------- root/root    26218496 2013-10-03 09:34 ./SEARCH_DATA.db
-r-------- root/root    26218496 2013-10-03 09:34 ./SEARCH_INDEX.db
-rw------- root/root         610 2013-10-03 09:34 ./vxdbms.conf
-rw------- root/root           0 2013-10-03 09:34 ./vxdbms_conf.lock
```

Disregard any non-database (`.db`) files. You only need to focus on the `.db` files to calculate the rebuild time.

The `BMR_DATA.db` file is approximately 19 GB in size. Since this size exceeds the 1-GB threshold, refer to tech note 211811 (http://www.veritas.com/docs/TECH211811), as specified in the earlier note. Using the equation from the procedure:

```
19 * 12 = 228 minutes
```

The remaining database files consume a total of approximately 2.4 GB of space. Using the equation from the procedure:

```
2.4 * 7.5 = 18 minutes
```

For the total rebuild time, add 228 and 18 for a total of 246 minutes, or approximately 4.1 hours.

Predicting time for the MSDP conversion process

The `pddeobjectcount` tool can estimate the time that it takes for the conversion process to run. This tool calculates the amount of data that NetBackup has backed up to your MSDP storage server. The location of the tool is platform-dependent. The tool is present only on the platforms that provide MSDP support.

- UNIX/Linux:

  ```
  /NetBackup_package/platform/catalog/anb/pddeobjectcount -e
  ```

- Windows:

  ```
  DVDROM\Addons\x64\Dedupe\pddeobjectcount.exe -e
  ```

Download the latest version of the `pddeobjectcount` tool from the location shown:

http://www.veritas.com/docs/TECH213728

Use the `-e` or `--estimate` command line parameter to generate the conversion estimate.

- UNIX/Linux:

  ```
  pddeobjectcount -e
  ```

- Windows:

  ```
  pddeobjectcount.exe -e
  ```

Sample output:

```
# ./pddeobjectcount.pl
Conversion of this storage pool should take approximately:
    5 minutes, 0 seconds
```

```
NOTE: Actual conversion time may vary depending on several factors
      including disk fragmentation, data locality and segment
      duplication. The effect of segment duplication cannot be
      quickly predicted before the conversion is run.
NOTE: Multiple runs of this tool will result in lower and lower
      estimates, due to file system caching. The first run will
      be the most accurate.
```

Considerations for Oracle backup policies when upgrading from NetBackup 7.1 and earlier

For upgrades from NetBackup 7.1 (or earlier) to 7.5 (or later), special care may be required for the Oracle backup policies before the upgrade is performed. Consideration is required if an Oracle policy uses snapshots and directs the backup to a storage lifecycle policy: The SLP processing for all of the images that are associated with that policy must be brought to a complete state before the upgrade.

To bring the SLP images to a complete state before an upgrade

1 Identify all of the SLPs that are used in the policy. Note that an SLP can be specified in the policy attributes (**Policy storage**) or in any of the policy schedules (**Override policy storage selection**).

2 Make the backup policy inactive by checking the **Go into effect at** policy attribute.

3 Perform one of the following actions:

- Wait for all duplication jobs that are associated with those SLPs to complete. Wait an additional 15 minutes to ensure that all of the record-keeping is done.

- Use the following command to cancel all pending work that is associated with the SLP.

  ```
  nbstlutil cancel –lifecycle SLP_name
  ```

  Warning: The `nbstlutil cancel` command means that copies of any pending images are not created. Use this option only if those copies are not required.

  ---

4 Proceed with the upgrade.

End of life for NetBackup Search

Starting with NetBackup 7.7, NetBackup no longer supports the NetBackup Search feature. When you upgrade to NetBackup 7.7, the information that is related to NetBackup Search, including indexing of backup images is deleted.

You may continue to see old indexing jobs in the Activity Monitor. The **Hold** functionality along with existing holds are retained.

If your NetBackup environment used OpsCenter, the legal holds are converted to user holds after you upgrade both the NetBackup master server and OpsCenter server to 7.7. You can manage the user holds with the NetBackup `nbholdutil` command. More information about the `nbholdutil` command is available in the *NetBackup Commands Reference Guide*.

During the conversion of holds, if the hold name of a legal hold is the same as the hold name of a user hold, all the hold names are renamed as follows:

- The legal hold names are suffixed with _1. For example, *hold_1*. The number 1 in the hold name denotes that it was a legal hold before conversion.

- The user hold names are suffixed with _3. For example, *hold_3*. The number 3 in the hold name denotes that it is a user hold.

Run the `nbholdutil -list` command once before upgrade and once after upgrade to verify that all the holds are intact.

Note: Veritas recommends that after you upgrade the master server to version 7.7, uninstall the NetBackup Search software from the indexing servers for that master server.

About security certificates for NetBackup hosts

NetBackup uses security certificates for authentication of NetBackup hosts. The NetBackup security certificates conform to the X.509 Public Key Infrastructure (PKI) standard. A master server acts as the Certificate Authority (CA) and issues security certificates to hosts.

NetBackup provides two types of NetBackup host security certificates: Host ID-based certificates and host name-based certificates. Host ID-based certificates are based on Universally Unique Identifiers (UUID) that are assigned to each NetBackup host. The NetBackup master server assigns these identifiers to the hosts.

Any security certificates that were generated before NetBackup 8.0 are now referred to as host name-based certificates. NetBackup is in the process of replacing these older certificates with newer host ID-based certificates. The transition will be

completed in future releases and the use of host name-based certificates will be eliminated. However, the transition is ongoing and NetBackup 8.0 continues to require the older host name-based certificates for certain operations.

Depending on the NetBackup host type and the certificate type, deployment of certificates varies. Consider the following scenarios:

NetBackup master server	Host ID-based certificates and host name-based certificates are automatically deployed during NetBackup installation and upgrade.
Clustered NetBackup master server	Host ID-based certificates and host name-based certificates may not be automatically deployed on all nodes.
NetBackup media servers and clients	Depending on the settings on the master server, host ID-based certificates may be automatically deployed on media servers and clients. Host name-based certificates are manually deployed using the command-line interface.

The following table lists the various scenarios that require NetBackup security certificates to be deployed:

NetBackup master server	NetBackup master server requires the host name-based and the host ID-based certificates.
NetBackup Administration Console	The host that you access using the **NetBackup Administration Console** must have the host name-based and the host ID-based certificates.
Java Backup, Archive, and Restore user interface	The client that you access using the Java Backup, Archive, and Restore user interface must have the host ID-based certificate.
NetBackup Access Control (NBAC)	If NBAC is enabled on a NetBackup host, the host must have the host name-based certificate. The certificate is automatically deployed when you enable NBAC.
Cloud media server	The NetBackup CloudStore Service Container requires that the host name-based certificate be deployed on the media server, else the Service Container cannot start.

Master server upgrade

This chapter includes the following topics:

- About master server upgrades

- Upgrading to NetBackup 8.0 and migrating the image metadata using the Simple or Guided method

- Performing local, remote, or clustered server upgrades on Windows systems

- Performing silent upgrades on Windows systems

- Upgrading UNIX/Linux server software to NetBackup 8.0

- About mounting the NetBackup software media

- About NetBackup startup and shutdown scripts

- Completing your system update after an upgrade

About master server upgrades

Upgrade NetBackup on the master server before you upgrade NetBackup on any other computers in your environment. Once the master server upgrade is finished, you can upgrade media servers, and then clients. NetBackup supports a mixed version environment. More information about this topic is available.

When you install or upgrade NetBackup server software, multiple versions of the NetBackup Java Administration Console are installed by default. For example, when you install or upgrade to NetBackup master server 7.7, versions 7.0 through 7.7 of the console are all installed.

Note: Veritas recommends that after you install or upgrade NetBackup server software, you should uninstall older versions of the Remote Administration Console (Windows and Java) present on the host. If the native NetBackup Administration Console for Windows is present, it is automatically uninstalled when you install or upgrade the NetBackup server software.

See "About compatibility between NetBackup versions" on page 108.

Proceed with the upgrade.

See "Upgrading to NetBackup 8.0 and migrating the image metadata using the Simple or Guided method" on page 43.

Upgrading to NetBackup 8.0 and migrating the image metadata using the Simple or Guided method

Use the following table to upgrade your environment to NetBackup 8.0.

Veritas has developed tools to help you perform the extra step that is required for the guided method. For more details, contact your Business Critical Services (BCS) representative.

Note: Remember to update NetBackup OpsCenter to version 8.0 before you update your NetBackup master servers to version 8.0. You must also disable OpsCenter data collection. See the *NetBackup OpsCenter Administrator's Guide* for complete information.

http://www.veritas.com/docs/DOC5332

Be aware there is a known issue for OpsCenter upgrades on 64-bit Windows platforms. If language packs or Maintenance Packs are installed, the upgrade can fail. More information about this issue is available.

http://www.veritas.com/docs/TECH211070

Note: For NetBackup installations that include globally clustered master servers using the Global Cluster Option (GCO), follow the upgrade planning guidelines in this guide. Then, refer to the following document for the specific steps to upgrade these servers: http://www.veritas.com/docs/HOWTO73064

Note: The upgrade process may not detect that MSDP is configured if the upgrade is of a NetBackup 7.0.*x* Solaris SPARC computer with MSDP. Apply the `pduninstall.sh` script that is found at the location that is shown to remedy this issue:

http://www.veritas.com/docs/TECH146243

More information about this topic is available.

See "Additional steps required for upgrade of Solaris SPARC with MSDP" on page 28.

Table 3-1 describes the steps to upgrade NetBackup and complete the image metadata migration. To help you keep track of your progress, the table includes a **Completed** column for you to mark as you complete each task.

Table 3-1   Steps to upgrade to NetBackup 8.0 and complete the image metadata migration

Step	Task	Completed
1	Perform any pre-MSDP conversion checks and tasks. For example: ■ Estimate the MSDP conversion time for each server that uses MSDP. See "Predicting time for the MSDP conversion process" on page 38. ■ For each server you want to upgrade, confirm a minimum of 12% free space is available for each pre-NetBackup 7.6 server that uses MSDP. To check the available free space, open the **NetBackup Administration Console**, and the **Media and Device Management** > **Devices** > **Disk Pools** window shows the percentage of used space in disk pools. If free space is less than 12%, free up enough so that free space is equal to or greater than 12%.	
2	Perform environment checks and catalog upgrade estimate: ■ Run the NetBackup environment checker on Windows. See "Running the preinstallation Environment Checker" on page 101. ■ Confirm available disk space and estimate the time that is required for the catalog rebuild. See "NetBackup 8.0 upgrade includes database rebuild" on page 36.	

| | Table 3-1 | Steps to upgrade to NetBackup 8.0 and complete the image metadata migration *(continued)* |

Step	Task	Completed
3	Perform any pre-upgrade tasks that you would normally do in regard to your NetBackup environment. For example: ■ Stop all customized or third-party scripts. ■ Perform any cluster-specific tasks. ■ Run a hot catalog backup. ■ Disable OpsCenter data collection for this master server. ■ Disable all storage lifecycle policies (SLPs). ■ Deactivate all NetBackup policies. ■ Deactivate all disk staging storage units for all pre-NetBackup 7.5.*x* environments. ■ For clustered systems only, take the following NetBackup resources offline: ■ Windows Server Failover Clusters (WSFC): Take all of the NetBackup group resources offline except for the disk, the virtual name, and the virtual IP address. Refer to the Microsoft Cluster Administration documentation to determine how to take the NetBackup group resources offline through the cluster administrator interface. ■ Cluster Server (VCS) clusters: Take the NetBackup resource offline. Refer to the *Veritas NetBackup Clustered Master Server Administrator's Guide* for the commands to take these resources offline.	
4	(Conditional) If you plan to change your NetApp cluster to Vserver mode from node scope mode, create a detailed image report for each filer. You can generate this report with the `bpimagelist` command. The example that is shown is one possible option. Use whatever options are necessary for your environment. `bpimagelist -client ndmp_host_name`	

Table 3-1   Steps to upgrade to NetBackup 8.0 and complete the image
metadata migration *(continued)*

Step	Task	Completed
5	Beginning with NetBackup 8.0, the NetBackup master server includes a configured Tomcat web server to support critical backup operations. This web server operates under user account elements with limited privileges. These user account elements must be available on each master server (or each node of a clustered master server). More information is available: http://www.veritas.com/docs/000081350 **Note:** Veritas recommends that you save the details of the user account that you use for the NetBackup Web Services. A master server recovery requires the same NetBackup Web Services user account and credentials that were used when the NetBackup catalog was backed up. **Note:** If the NetBackup PBX is running in secure mode, please add the web service user as authorized user in PBX. More information about determining PBX mode and how to correctly add users is available. http://www.veritas.com/docs/000115774	
6	(Conditional) If you are upgrading from pre-NetBackup 7.6 and use SLPs and if you modified the contents of the `LIFECYCLE_PARAMETERS` configuration file be aware of the changes to the SLP parameters. For more information on these changes, refer to the *SLP Parameters properties* and the *SLP deprecated parameters* sections in the *Veritas NetBackup Administrator's Guide, Volume I*.	
7	(Conditional) If your master server is at NetBackup 7.5.0.6 and you use TIR, apply the available EEB and perform a catalog cleanup. More information is available. See "Upgrade performance slowed by known True Image Restoration issue" on page 15.	
8	(Conditional) Starting with version 7.7, NetBackup no longer supports NetBackup Search. Upon upgrade to version 8.0, all information that is related to NetBackup Search, including indexing of backup images is deleted. Before upgrading the master server, run the `nbholdutil -list` command and record the output of the command. This command generates a list of all holds. More information about this topic is available. See "End of life for NetBackup Search" on page 40.	

Table 3-1   Steps to upgrade to NetBackup 8.0 and complete the image metadata migration *(continued)*

Step	Task	Completed
9	Stop any applications on the system that interact with NetBackup. This step includes any databases or system components being backed up. Failure to stop these applications may result in unexpected behavior. Observed behavior includes aborted upgrades and application failures. For Oracle users, you must take down your database and your listener processes before you upgrade. If you cannot stop your Oracle database, a procedure is available that may let you install NetBackup with the Oracle database active. More information on this topic is available. http://www.veritas.com/docs/TECH158276	
10	Stop all NetBackup services. ■ On UNIX systems: `/usr/openv/netbackup/bin/bp.kill_all` ■ On Windows systems: `install_path\NetBackup\bin\bpdown -f`	
11	(Conditional) If you are upgrading from NetBackup 7.5 or earlier, modify the `server.conf` file as recommended. **Note:** If the image count is less than 1 million, it is not necessary to modify the `server.conf` file. See "Modifying the server.conf file to improve image metadata migration and NetBackup performance" on page 34.	

Table 3-1   Steps to upgrade to NetBackup 8.0 and complete the image metadata migration *(continued)*

Step	Task	Completed
12	Upgrade the NetBackup binaries. More information is available about this topic. ■ See "Performing local, remote, or clustered server upgrades on Windows systems" on page 56. ■ See "Performing silent upgrades on Windows systems" on page 65. ■ See "Upgrading UNIX/Linux server software to NetBackup 8.0" on page 67. As a part of the installation, NetBackup checks to see if MSDP is configured. If it is, you have the option to start the conversion at the end of the installation. If you select **No** or if the installer does not detect your MSDP installation, you must start the conversion manually. You are prompted to start the conversion later in this procedure. More information about this topic is available. See "Converting the MSDP metadata during an upgrade to NetBackup 8.0" on page 88. **Note:** If this upgrade is of NetBackup 7.0.*x* on Solaris SPARC server with MSDP and you did not apply the `pduninstall.sh` script, the installer may not detect the MSDP installation. More information about this topic is available. See "Additional steps required for upgrade of Solaris SPARC with MSDP" on page 28. See "Converting the MSDP metadata during an upgrade to NetBackup 8.0" on page 88. If you select **Yes**: ■ UNIX/Linux: The conversion takes place as a background process. ■ Windows: A new window opens that shows the conversion progress. **Note:** The database rebuild occurs during this step. More information about this topic is available. See "NetBackup 8.0 upgrade includes database rebuild" on page 36.	
13	Once the upgrade is complete, phase 1 of the image metadata migration begins, if your upgrade is from a pre- 7.5 version of NetBackup. Phase 1 is not required if the upgrade is from NetBackup 7.5*x.x* or NetBackup 7.6.*x.x*.	

Table 3-1   Steps to upgrade to NetBackup 8.0 and complete the image metadata migration *(continued)*

Step	Task	Completed

14	(Conditional) If your environment is pre-NetBackup 7.6, and you want to use the guided method of migration because the environment has a large image catalog, perform the actions shown.
	
	Run the following command on the master server to prevent client initiated activities (like backup, restore, database cross-checks):
	
	■ On UNIX/Linux systems:
	  `/usr/openv/netbackup/bin/admincmd/bprdreq -terminate`
	■ On Windows systems:
	  `install_path\NetBackup\bin\admincmd\bprdreq -terminate`
	
	To perform phase 2 migration, run the command that is shown for each client in your environment. You must run the command on the master server. Veritas has observed that running the `cat_import` command on ten clients simultaneously works well on many master servers. The number of simultaneous `cat_import` commands you can run on your master server depends on the available CPU and I/O performance of the underlying disk subsystem.
	
	As previously mentioned in this procedure, Veritas has developed tools to to issue the commands that are required in this step. For more details, contact your Business Critical Services (BCS) representative.
	
	■ On UNIX/Linux systems:
	  `/usr/openv/netbackup/bin/cat_import -client client_name`
	  `-delete_source -base /usr/openv/netbackup/db`
	■ On Windows systems:
	  `install_path\NetBackup\bin\cat_import -client client_name`
	  `-delete_source -base install_path\NetBackup\db`	

15	Start the NetBackup Administration Console and open the **Activity Monitor**.	

Table 3-1   Steps to upgrade to NetBackup 8.0 and complete the image
metadata migration *(continued)*

Step	Task	Completed

16	If your upgrade is from pre-NetBackup 7.6, to start phase 2 of the image metadata migration or to finish the process started in step 12, run the following clean-up command and wait for the image clean-up job to complete:
	
	■ On UNIX/Linux systems:
	`/usr/openv/netbackup/bin/admincmd/bpimage -cleanup -allclients`
	■ On Windows systems:
	`install_path\NetBackup\bin\admincmd\bpimage -cleanup -allclients`
	
	Veritas expects the clean-up job to exit with a non-zero status because the catalog policy is disabled. Use the **Activity Monitor** to view the progress of the clean-up job. See "About monitoring the phase 2 migration process" on page 107.
	
	Once the clean-up job finishes, run the command shown:
	
	■ On UNIX/Linux systems:
	`/usr/openv/netbackup/bin/admincmd/nbemmcmd -listsettings -brief -machinename masterservername`
	■ On Windows systems:
	`install_path\NetBackup\bin\admincmd\nbemmcmd -listsettings -brief -machinename masterservername`
	
	If the result shows `LIST_FS_IMAGE_HEADERS = "0"`, phase 2 has completed. You can proceed to the next step.
	
	If the result shows `LIST_FS_IMAGE_HEADERS = "1"` or if no result appears, phase 2 has not completed.
	
	You must re-run `bpimage -cleanup -allclients` and wait for it to complete. Veritas expects the clean-up job to exit with a status 1 because the catalog policy is disabled. If this second clean-up job fails with any other non-zero status, stop the upgrade and contact Veritas Technical Support.
	
	When the image clean-up completes, re-run `nbemmcmd -listsettings -brief -machinename masterservername`.
	
	If the result still shows `LIST_FS_IMAGE_HEADERS = "1"` or if no result appears, contact Veritas Technical Support.	

Table 3-1   Steps to upgrade to NetBackup 8.0 and complete the image metadata migration *(continued)*

Step	Task	Completed
17	If your upgrade is from a pre-NetBackup 7.5 version, wait for both phase 1 and phase 2 migrations to complete.	
	For upgrades from NetBackup 7.5.*x.x*, wait for phase 2 to complete. For upgrades from NetBackup 7.6.0.*x*, both phases were completed previously. You can verify the migration with the procedure shown in this step.	
	Note: If the image metadata migration appears to take much longer than your estimated total migration time, please contact Veritas Technical Support.	
	To determine if migration has completed, run the command shown:	

	■ On UNIX/Linux systems:
	`/usr/openv/netbackup/bin/admincmd/nbemmcmd -listsettings -brief -machinename masterservername`
	■ On Windows systems:
	`install_path\NetBackup\bin\admincmd\nbemmcmd -listsettings -brief -machinename masterservername`	

	If the result shows `SLP_DSSU_MIGRATION_STATE="1"`, phase 1 has completed.	
	(Pre-NetBackup 7.5 only) If the result shows `SLP_DSSU_MIGRATION_STATE="0"`, phase 1 has not completed.	
	If the result shows `LIST_FS_IMAGE_HEADERS = "0"`, phase 2 has completed.	
	If the result shows `LIST_FS_IMAGE_HEADERS = "1"` or if no result appears, phase 2 has not completed.	
18	Check the following directory for corrupt images:	

	■ On UNIX/Linux systems:
	`/usr/openv/netbackup/db.corrupt`
	■ On Windows systems:
	`install_path\NetBackup\db.corrupt`	

	Examine all files in the directory and if necessary, contact Veritas Technical Support for assistance.	

Table 3-1 Steps to upgrade to NetBackup 8.0 and complete the image metadata migration *(continued)*

Step	Task	Completed

19	(Conditional) If your master server has an MSDP disk pool and the NetBackup installer does not detect the MSDP configuration or if you choose not to start the conversion automatically, the MSDP conversion must be started manually. One known cause for the installer not detecting the MSDP configuration is an upgrade of a NetBackup 7.0.*x* Solaris SPARC computer without the `pduninstall.sh` script applied. Start the MSDP conversion manually by running the following command:
	
	`/usr/openv/pdde/pdconfigure/scripts/installers/PDDE_convert.sh`
	`--storagepath PathToMSDPStorage`
	
	Wait for the `PDDE_convert` command to complete before you proceed.
	
	Please note this command performs the MSDP conversion. Be aware of the disk space and the time requirements.
	
	See "About upgrading MSDP to NetBackup 8.0" on page 82.
	
	See "Predicting time for the MSDP conversion process" on page 38.
	
	See "Additional steps required for upgrade of Solaris SPARC with MSDP" on page 28.	

Table 3-1 Steps to upgrade to NetBackup 8.0 and complete the image metadata migration *(continued)*

Step	Task	Completed

20	(Conditional) If your master server has an MSDP Disk Pool, monitor the progress of the MSDP conversion. Do not proceed until the conversion is complete.
	
	The following command indicates if the conversion is still active:
	
	■ UNIX/Linux:
	`/usr/openv/pdde/pdcr/bin/stconv --status`
	■ Windows:
	install_path`\pdde\stconv.exe --status`
	
	The output of the `stconv.exe --status` displays one of the following messages:
	
	■ The conversion has not started:
	
	`Your Media Server Deduplication Pool requires conversion`
	
	■ The conversion is in progress:
	
	`Conversion of Media Server Deduplication Pool is running`
	`Please Check logs under <MSDP_log_path>/convert to see`
	`details`
	
	■ The conversion is complete:
	
	`Your Media Server Deduplication Pool is up to date!`
	
	■ The conversion failed:
	
	`Conversion of Media Server Deduplication Pool has failed.`
	`Please Check logs under <MSDP_log_path>/convert to see`
	`details`
	
	You can also check the status of the conversion by looking at the log file at *MSDPStorage*`\log\convert`.	

Table 3-1   Steps to upgrade to NetBackup 8.0 and complete the image metadata migration *(continued)*

Step	Task	Completed
21	Check for an available NetBackup 8.0 maintenance release. Maintenance releases include very important fixes that are released after NetBackup 8.0. Veritas encourages you to install the latest available maintenance release during upgrade activities.	
	To access the latest NetBackup 8.0 maintenance release:	
	1 Go to the NetBackup SORT website. https://sort.veritas.com/netbackup	
	2 In the **Installation and Upgrade Checklist** section: 　■ Under **Product**, select the correct product (NetBackup Enterprise Server or NetBackup Server) 　■ Under **Product version you are installing or upgrading to** specify the latest version of NetBackup 　■ Under **Platform** select the platform of the server you want to upgrade. 　■ Under **Processor** specify the processor of your server. 　■ Under **Product version you are upgrading from (Optional)** select the current version of NetBackup on the server you want to upgrade. 　■ Click **Generate Checklist**.	
	3 Under **Upgrade Information**, there is a *version_number* **Download Links** hyperlink. Click that hyperlink for the latest maintenance release.	
	4 If no maintenance release is available, restart `bprd` if you terminated it as part of step 12. Once `bprd` is restarted, proceed to step 21. UNIX/Linux: `/usr/openv/netbackup/bin/bprd` Windows: `install_path\NetBackup\bin\bprd`	
	5 If you find a maintenance release is available, download it now.	
	6 Prepare for the install by stopping all NetBackup processes and services. Use the command shown: UNIX/Linux: `/usr/openv/netbackup/bin/bp.kill_all` Windows: `install_path\NetBackup\bin\bpdown -f`	
	7 Install the maintenance release.	
	8 Restart NetBackup with the commands shown: UNIX/Linux systems: `/usr/openv/netbackup/bin/bp.start_all` Windows systems: `install_path\NetBackup\bin\bpup -f`	
22	Start any applications on the system that interact with NetBackup. This step includes any databases or system components being backed up.	

Table 3-1   Steps to upgrade to NetBackup 8.0 and complete the image metadata migration *(continued)*

Step	Task	Completed
23	(Conditional) This step applies only to cluster installations. If this computer is not a clustered master server upgrade, proceed to the next step. After all image metadata migration processes have completed on this master server, update the other nodes in the cluster. You can update the other master servers nodes in the cluster to NetBackup 8.0 by following standard cluster upgrade process. For complete details, see the *Veritas NetBackup Clustered Master Server Administrator's Guide*. http://www.veritas.com/docs/DOC5332	
24	If you have any media servers that you intend to upgrade to NetBackup 8.0, you may upgrade them now. If you start any media server upgrades, do not continue with this procedure until the media server upgrades are complete. **Note:** NetBackup requires that media servers have a security certificate to function correctly in certain use cases. More information about this topic is available. See "About security certificates for NetBackup hosts" on page 40. **Note:** Media servers with MSDP may take a long time to upgrade. If your calculations indicate a long upgrade, wait to upgrade the media servers until the end of this procedure. More information about this topic is available. See "Upgrading NetBackup media servers to NetBackup 8.0" on page 75.	
25	Once the catalog migration and the MSDP conversion finish, reactivate the following in the order as shown: ■ All disk staging storage units. ■ All NetBackup policies. ■ All storage lifecycle policies (SLPs). ■ OpsCenter data collection for this master server.	
26	(Conditional) If you have a NetApp cluster, additional steps may be required. More information is available. See "Additional post-upgrade steps for NetApp clusters " on page 97.	
27	Monitor your backup environment to verify that normal NetBackup operation has resumed.	

Table 3-1	Steps to upgrade to NetBackup 8.0 and complete the image metadata migration *(continued)*	
Step	**Task**	**Completed**
28	(Conditional) If your NetBackup environment previously used NetBackup Search, run the `nbholdutil -list` command and compare the output with the output recorded in step 7. Contact your Veritas Support representative if you notice a difference in the number of holds. **Note:** Veritas recommends that after you upgrade the master server to version 8.0, you uninstall the NetBackup Search software from the indexing servers for that master server. More information is available. See "End of life for NetBackup Search" on page 40.	
29	Upgrade any media servers and clients not already upgraded as time and backup windows permit. See "Upgrading NetBackup media servers to NetBackup 8.0" on page 75. A client upgrade is the same as a client installation. See the *NetBackup Installation Guide - UNIX and Windows* manual for help with the installation. http://www.veritas.com/docs/DOC5332	
30	Perform any additional upgrade steps. More information about this topic is available. See "Completing your system update after an upgrade" on page 73.	

Performing local, remote, or clustered server upgrades on Windows systems

Use the following procedure to upgrade to NetBackup 8.0 on a local, a remote, or a clustered computer.

To upgrade the NetBackup binaries for a local, remote, or clustered server on Windows

1   Log on to the system where you want to initiate the NetBackup upgrade. Be sure to log on with administrator privileges.

   ■   To upgrade local Windows systems, log on to the computer directly at the console.

   ■   To upgrade remote Windows systems, log on to a system with network access to all of the hosts where you want to install NetBackup.

- To upgrade clustered Windows systems, log on to the active node (the node with the shared disk).

2   Start the NetBackup Installation Wizard with one of the following methods:

- DVD media
  Insert the NetBackup for Windows DVD in the drive. If Autorun is disabled, navigate to the DVD drive and run `Browser.exe`.

- ESD images (downloaded files)
  Navigate to the directory where the images reside and run `Browser.exe`.

3   On the initial browser screen (**Home**), click **Installation**.

4   On the **Installation** screen, click **Server Software Installation**.

5   On the **Welcome** screen, review the content and click **Next**.

6   (Conditional) If you previously installed NetBackup 8.0 on this host, you see the **Program Maintenance** dialog.

- Select **Modify** to change installation settings for the local host, or to use the local host as a platform to perform push installation to remote hosts.

- Select **Repair** to restore NetBackup 8.0 to its original state on the local host.

- Select **Remove** to remove NetBackup 8.0 from the local host.

7   On the **License Agreement** screen, do the following:

- **I agree to and accept the terms of the license agreement**.
  You must select this item to upgrade the software.

- **Participate in the NetBackup Product Improvement Program**.
  By default, this option is enabled. To disable this option, click the check box to remove the check mark.

- Click **Next**.

8 On the **Veritas NetBackup Installation Type** screen, provide the following information:

Where to install	For a local upgrade, select **Install to this computer only**.
	For a remote upgrade, select **Install to multiple computers on your network**.
	For a clustered upgrade, the only option is **Install a clustered master server**.
Typical	Select this option to upgrade NetBackup with the default settings.
Custom	Select this option to override the default NetBackup settings.

Click **Next**.

9 On the **NetBackup Deduplication** screen, indicate how the installer should handle the MSDP conversion. The conversion runs automatically after the upgrade by default. Veritas recommends that you accept the default. Click **OK** to continue.

10 On the **NetBackup License Key and Server Type** screen, provide the following information:

License

Enter the base product license that you received with your product.

For upgrades, the license for the existing installation type determines which components you can select.

Note: For remote upgrades, the license that you enter here gets pushed to the other nodes. Your license may enable add-on products. If you push NetBackup to nodes that have an add-on product already installed, your license works for the add-on product(s).

For remote or for clustered upgrades, the following occurs during the upgrade process to verify that you have the proper credentials to perform the upgrade:

- When you select a clustered system for upgrade, NetBackup determines if you have proper administrator credentials on all nodes in the cluster. If you do not have the proper credentials, the system is not added to the list.
- If you have the proper credentials, NetBackup performs a second check to determine if a license is needed. If a license is needed and one was not entered, the system cannot be added to the list. You must enter a valid license to upgrade on that node. If you enter an invalid license, this screen remains visible until a valid license is entered.

NetBackup Master Server	Click this icon to upgrade master server software.
NetBackup Media Server	Click this icon to upgrade media server software.

11 On the **NetBackup Web Services** screen, specify the account type and the account details.

What types of acccounts should we use?	Select either **Local** or **Domain (Active Directory)**.
	Select **Local** if you want to associate the web server with a user and a group account that exist on the local host.
	Select **Domain (Active Directory)** if you want to associate the web server with a user and a group account that exist on a trusted Windows domain.
What are the existing account details	Specify the information as shown:
	■ **Domain** - If you chose the **Domain (Active Directory)** account type, specify the name of the domain to which the user and the group accounts belong.
	■ **Group** - Specify the name of the group account to associate with the web server.
	■ **User** - Specify the name of the user account to associate with the web server. For security reasons, do not specify a user account that has administrative privileges on the host.
	■ **Password** - Specify the password of the user account in the **User** field.

More information is available.

See "Installation and upgrade requirements for Windows and Windows clusters" on page 112.

12 This step applies only to **Custom** upgrades. For **Typical** installations, skip to the next step.

This step describes how to select and configure the **NetBackup Features**, **NetBackup Port Numbers**, and the **NetBackup Services**.

■ **NetBackup Port Numbers**
On this screen, you can change port numbers, if it is necessary in your configuration.
You may need to change a port number if you encounter conflicts when NetBackup and another industry product try to share the same port. Another

example is if a port conflict occurs with a firewall, which may cause security issues.

To change a port number, select the port number that you want to replace and type the new number.

Click **Next**.

- **NetBackup Services**

  On this screen, provide the following startup account and startup type information for NetBackup services:

Log On	Specify either **Local System account** or **This account**.
	By default, the **Local System account** is selected, so that NetBackup uses the built-in system account. When this option is selected, the fields below it are disabled.
	To specify a different system account:
	- Select **This account**.
	- Enter the account information in the following fields: **Domain** **Username** **Password**
Startup Type	This option determines whether NetBackup services start automatically if you need to restart the NetBackup host. The default is **Automatic**.
	To start NetBackup services manually after a restart, select **Manual**.
Start job-related NetBackup services following installation	By default, job-related services are set to start automatically after the upgrade has completed.
	To prevent job-related services from starting automatically, click on the box to clear the check mark.
Safe Abort Option	This option determines how the upgrade proceeds if a restart is required as part of the upgrade.
	If you select this option and the upgrade process determines that a restart is required, the upgrade stops. The system is then rolled back to its original state.
	If you do not select this option, the upgrade proceeds even if the upgrade process determines that a restart is required.

Click **Next**.

13 On the **NetBackup System Names** screen, provide the following information:

Master Server Name	For master server installations, enter the name of the local computer.
	For media server installations, you must change the name to the master server name to which the media server is configured.
	Note: For clustered servers, this field is **NetBackup Virtual Host Name**. Veritas strongly recommends that you not change this value.
	Note: For the systems that use a Media Server Deduplication Pool (MSDP), make sure that you read the **NetBackup Deduplication** notice that appears.
Additional Servers	Enter the names of any additional NetBackup master servers and media servers that you want to communicate with this server. Include the names of computers where you plan to install NetBackup later.
	To enter more than one name, separate each name with a comma or press **Enter** after each name.
Media Server Name	This field appears only for NetBackup Enterprise media server installations.
	When you install media server software, this field defaults to the local server name.
	Note: For the systems that use a Media Server Deduplication Pool (MSDP), make sure that you read the **NetBackup Deduplication** notice that appears.
OpsCenter Server Name (Optional)	OpsCenter is a web-based administration and management tool for NetBackup.
	If you have an OpsCenter server or plan to install one, enter the server name or the IP address for that server here.
	For a clustered server, do not use the virtual name. Instead, use the actual host name of the cluster node.

Click **Next**.

14 For remote upgrades only, on the **Veritas NetBackup Remote Hosts** screen, specify the hosts where you want NetBackup installed.

- **Windows Destination Systems**
  Right-click **Windows Destination Computers** and select from the drop-down menu, or use the following methods:

Browse	Click here to search the network for the hosts where you want to upgrade NetBackup.

- On the **Available Systems** dialog box, select the computer to add and click **Next**.
- On the **Remote Computer Login Credentials** dialog box, enter the user name, the password, and the domain of the account for NetBackup to use on the remote computers.
- If you plan to upgrade multiple remote computers, click the box next to **Remember User Name and Password**. Selecting this option prevents the need to enter this information for each remote computer.

When you provide credentials, you select host nodes and add them to the **Windows Destination Systems** list. These are the nodes on which you remotely upgrade NetBackup. Make sure that you select your local host when you select systems to install.

Each time you choose a system, NetBackup performs system and license checks. For example, it verifies the system for a server upgrade that matches the type that you selected, as follows:

- NetBackup not installed: Considers the remote to be verified.
- NetBackup already installed: Compares the upgrade type on that system to the upgrade type that you request.
- Invalid combination: Notifies you of the problem and disallows the choice. One example of an invalid combination is to try to install a Remote Administration Console on a remote system that is already a master server.
- Remote system not a supported platform or level: Notifies you of the problem and disallows the choice.

The upgrade procedure also verifies that you have proper administrator credentials on the remote system. If you do not have administrator credentials, the **Enter Network Password** screen appears, and prompts you to enter the administrator's user name and password.

Click **OK** and continue selecting destination systems.

This process repeats for each node that you select. You can elect to retain the user name and password. In that case, you are prompted only when the user name or password is not valid.

Note the following about the push-install process in a clustered environment:

- You can upgrade NetBackup on any number of nodes. However, the clustering service sets the limit for the number of nodes in a cluster, not NetBackup.
- Language packages and other NetBackup add-on products cannot be upgraded with the push method. Add-on products must be upgraded on each individual node in the cluster group. For instructions on how to upgrade these products, refer to the NetBackup documentation that supports each product.

Browse (cont.)	*(continued)*

- NetBackup pushes to the other nodes only the license you enter at the beginning of the upgrade. Your license may enable add-on products. If you push NetBackup to nodes that have an add-on product already installed, your license works for that product.
- Click **OK**.

Import
Click here to import a text file that contains a list of host names. When you create the text file, the host names must be defined in the following format:

`Domain\ComputerName`

Add
Click here to add a host manually.

- On the **Manual Remote Computer Selection** dialog box appears, enter the **Domain** and the **Computer Name**, then click **OK**.
- On the **Remote Computer Login Credentials** dialog box, enter the **User Name** and the **Password** of the account to be used to perform the upgrade on the remote computers.

  If you plan to add and upgrade multiple remote computers, click the box next to **Remember User Name and Password**. Selecting this option prevents the need to enter this information for each remote computer.

- Click **OK**.

Remove
To remove a host from the **Destination Systems** list, select the host and click here.

Change
Click here to change the destination for NetBackup file installation on the selected remote host.

- Click **Next**.

15 For cluster upgrades only, on the **Cluster Settings** screen, review the information displayed. All information except the **Public Network** is displayed for informational purposes and cannot be changed. If you need to change the public network, select the correct public network from the drop-down.

Warning: You must not select a private network that is assigned to this cluster.

Click **Cluster Configuration**. When the successful cluster configuration message appears, click **Next**.

16 On the **Ready to Install the Program** screen, review the **Installation Summary** that shows your selections from the previous steps.

Then select one of the following options:

- Click **Install** to start the installation.

- Click **Back** to view the previous screens and make any changes, then return to this screen and click **Install**.

- Click **Cancel** to cancel the upgrade.

After you click **Install**, the upgrade process begins and a screen appears that shows you the upgrade progress. This process may take several minutes.

For remote or for cluster upgrades only, right-click on a system in the dialog box to see the upgrade status. Up to five upgrades occur simultaneously. When an upgrade is completed, another one begins so that a maximum of five upgrades are in progress.

17 For remote upgrades only, when all remote upgrades have completed, click **Finish**.

18 On the **Installation Complete** screen, select from the following options:

View installation log file	An upgrade log file provides detailed installation information and shows whether any errors occurred.

Examine the upgrade log at the following location:

`%ALLUSERSPROFILE%\Veritas\NetBackup\InstallLogs\`

Note: When you perform a remote upgrade to multiple computers, this option only lets you view the log for the local computer. Each computer that you selected for upgrade contains its own upgrade log file. To view the log file of a remote computer, open a Windows Explorer window and enter `\\<COMPUTERNAME>`.

Search the upgrade log for the following error indications:

- Strings that include `Return Value 3`.
- Important log messages that are color coded as follows:
  Yellow = warning.
  Red = error.

Finish	Select one of the following to complete the upgrade:

- If you are done upgrading software on all servers, click the box next to **Launch NetBackup Administration Console now** and click **Finish**.
  The NetBackup Administration Console starts a Configuration Wizard so that you can configure your NetBackup environment.
- If you have more server software to upgrade, click **Finish**.
  You can move on to the next computer and upgrade the necessary server software.

19 If any NetBackup cluster configuration is modified manually or by any external script, make sure that the change is reflected correctly in NetBackup cluster registry. Contact Veritas Enterprise technical support if you have questions.

20 Resume the upgrade process.

See "Upgrading to NetBackup 8.0 and migrating the image metadata using the Simple or Guided method" on page 43.

Performing silent upgrades on Windows systems

A silent upgrade avoids the need for interactive input in the same manner as performing a remote upgrade. Silent NetBackup installations are not supported if you want to run the NetBackup services as a specific user rather than the local system.

To perform a silent upgrade, you must first modify the appropriate NetBackup script. After script modification, you can run the script to initiate the silent upgrade.

The script shuts down all NetBackup services so that the upgrade can be initiated. If the script detects that other system processes still maintain a handle on any NetBackup files, the upgrade fails. To identify which NetBackup processes are still running, check the `NetBackup Install` log file at the following location:

`%ALLUSERSPROFILE%\Veritas\NetBackup\InstallLogs`

After you have manually stopped each of the identified processes, you can run the upgrade script again.

Note:

For Windows 2008/2012/2012 R2 Server Core systems, you can only upgrade NetBackup with this procedure.

To upgrade NetBackup server software silently

1   Log on as administrator to the system where you want to upgrade NetBackup.

2   Insert the NetBackup installation DVD or navigate to the location where the ESD images (downloaded files) reside.

3   Open Windows Explorer and copy the contents of the X86 or the X64 directory to a temporary directory on your hard drive. Choose the directory that is associated with the platform type that you want to install.

4   Since the source files are read-only, you must change the permissions for the copied files to allow the installation or the update.

5   In the temporary directory where the copied files reside, select the appropriate script to modify:

   ■   To upgrade a master server, edit `silentmaster.cmd`

   ■   To upgrade a media server, edit `silentmedia.cmd`

   ■   To upgrade a NetBackup Remote Administration Console, edit `silentadmin.cmd`

6   Edit the following lines as needed for your installation:

■ `SET ADDITIONALSERVERS=media1,media2,media3`

Enter the names of any additional NetBackup master servers and media servers that you want to communicate with this host. Include the names of servers where you plan to install NetBackup later.

If no other servers are to communicate with this host, remove this line from the script.

■ `SET ABORT_REBOOT_INSTALL=0`

This line lets you determine how you want the upgrade to continue if a restart is required. Select from the following settings:

0 (default)	By default, a silent upgrade does not abort if it is determined that a restart is required. If you leave this setting at 0, select one of the following tasks:
	■ After the upgrade is complete, check the installation log to see if a restart is required. If the string **in use** appears anywhere in the log, you must restart the system manually.
	■ Force an automatic restart after the upgrade is complete. To force an automatic restart, before you run the script, remove the following option from the silent installation command script (`silent*.cmd`): `REBOOT="ReallySuppress"` **Warning:** A forced restart occurs with no warning to the user. It does not cancel the upgrade or roll back the system to its original state.
1	Select this setting to abort the upgrade if it is determined that a restart is required. If a restart is needed, this setting cancels the upgrade and the system is rolled back to its original state.

7 Save the script and run it.

8 Examine the installation log at the following location:

`%ALLUSERSPROFILE%\Veritas\NetBackup\InstallLogs\`

Search the installation log for the following error indications:

■ Strings that include `Return Value 3`.

- Important log messages are color coded as follows:

  Yellow = warning.

  Red = error.

9 Resume the upgrade process. Please select the option which applies to your upgrade process:

See "Upgrading to NetBackup 8.0 and migrating the image metadata using the Simple or Guided method" on page 43.

Upgrading UNIX/Linux server software to NetBackup 8.0

You should schedule your upgrade and reconfiguration for a time when backups do not run. However, the upgrade procedure instructs you to deactivate all policies to ensure that backups do not interfere with the upgrade. You can also temporarily modify policies so that backups do not run while you upgrade and reconfigure NetBackup.

To upgrade UNIX/Linux server software to 8.0

1 Log on as the root user on the server.

2 If the NetBackup Administration Console is open, you must close it now.

3 (Conditional) For clustered environments, perform the following tasks:

- If necessary, edit the `bp.conf` and the `vm.conf` files as follows:

  If a `REQUIRED_INTERFACE` entry exists, replace it with a `CLUSTER_NAME` entry. Otherwise, add a new `CLUSTER_NAME` entry. This entry should be defined as the virtual server name.

  For a master server, make sure that the first `SERVER` entry matches the `CLUSTER_NAME` entry for the `bp.conf` file.

- Freeze the NetBackup Group so that migrations do not occur while the inactive nodes are upgraded.

- If you have a VCS cluster configured, you can freeze the NetBackup Group by using the Cluster Manager interface or the command line.

- Before you proceed with a cluster upgrade, refer to the *NetBackup Clustered Master Server Administrator's Guide* for other cluster upgrade requirements. http://www.veritas.com/docs/DOC5332

4   (Conditional) For Solaris servers at pre-NetBackup 7.5 only, remove the 6.x or 7.x versions of all add-on products and database agents.

Note: The installation script displays a list of the add-on products and the agents that are currently installed. The script also offers to remove these earlier versions for you and Veritas recommends this method.

Warning: You also have the option to remove these items manually before the upgrade occurs. These items must be removed before you upgrade to version 7.x. If you remove these items after an upgrade to version 7.x, part of the NetBackup installation is destroyed and the product cannot function. If you decide to remove these products manually, you must stop the upgrade here. Refer to the appropriate NetBackup 6.x or 7.x documentation for instructions on how to remove each add-on product or agent.

---

5   For Solaris systems, all of the NetBackup scripts that you may have modified are removed when you run the upgrade script.

For non-Solaris systems, NetBackup scripts that are not covered in Chapter 1 that you modified are removed when you run the upgrade script. More information about this topic is available.

See "About automatic file changes from an upgrade" on page 10.

Save any files that you have modified and want to keep.

6   (Conditional) For AIX systems, this step deletes any robotic control paths. In an AIX clustered environment, you must perform this step on all nodes in the cluster.

For more information about the robotic control paths, see the *NetBackup Device Configuration Guide*.

http://www.veritas.com/docs/DOC5332

- Remove the `ovpass` driver, as follows:

  ```
  /usr/openv/volmgr/bin/driver/remove_ovpass
  ```

7   Use one of the following methods to start the upgrade script:

DVD	■ Insert the NetBackup Server DVD for the appropriate platform in the drive. Check the DVD label to identify its contents. See "About the NetBackup media kit" on page 96. ■ If necessary, mount the DVD. See "About mounting the NetBackup software media" on page 69. ■ Enter the following command: `dvd_directory/install` The *dvd_directory* is the path to the directory where you can access the DVD.
ESD images (downloaded files)	■ Navigate to the location where the installation images reside. ■ Enter the following command: `./install`

8 Follow the prompts in the installation script to install the NetBackup server binaries. More information on how to reply to the prompts is available.

See "Upgrading to NetBackup 8.0 and migrating the image metadata using the Simple or Guided method" on page 43.

9 When the script finishes, resume the upgrade process.

See "Upgrading to NetBackup 8.0 and migrating the image metadata using the Simple or Guided method" on page 43.

About mounting the NetBackup software media

Use the examples in the following table as guidelines when you mount NetBackup DVDs. Check with your hardware vendor to see if you may need to use other flags or options.

Table 3-2 Flags and options for mounting NetBackup DVDs

Flags or options	Defined
`-v, -t, -F`	Specifies the type of file system to mount.
`-o`	Translates the file names properly if required.
`-r`	Specifies that you want to mount the DVD for reading.

Table 3-2   Flags and options for mounting NetBackup DVDs *(continued)*

Flags or options	Defined
device_path	Specifies the name of the DVD drive.
mount_point	Specifies the directory where you want to mount the DVD.

Mounting NetBackup software media on UNIX or Linux systems

The following procedure describes how to mount the NetBackup DVD on UNIX or Linux systems.

To mount the NetBackup DVD on UNIX or Linux systems

1   Log in as root.

2   Create a mount point (all except Solaris).

    mkdir /dvd

3 (Conditional) on HP-UX systems earlier than 11.23, start PFS daemons.

```
nohup pfs_mountd &
nohup pfsd &
```

4 Issue the appropriate mount command for your operating system.

AIX	`mount -v cdrfs -r device_path mount_point`

AIX	`smitty cdrfs`
	
	or
	
	`smitty mountfs`

HP-UX earlier than 11.23	`pfs_mount -o xlat=unix device_path mount_point` To find the device path, you can run `ioscan -fn`.
HP-UX later than 11.23	`mount -F cdfs device_path mount_point`
Linux	`mount device_path mount_point`
Solaris	If Volume Manager (`vold`) is running, the DVD mounts automatically. If `vold` is not running, start it as follows: `/usr/sbin/vold &`

About NetBackup startup and shutdown scripts

When you install NetBackup, the installation script also performs configuration of startup and shutdown scripts. Startup scripts allow the NetBackup daemons to start automatically when the system boots. Shutdown scripts automatically terminate the startup scripts at system shutdown.

The installation process copies the NetBackup startup and shutdown scripts to the appropriate operating system location.

For non-cluster upgrades, any existing NetBackup related startup and shutdown scripts are saved, and the newly released versions of those scripts are installed.

Table 3-3 lists the links for the startup and the shutdown scripts for the various platforms that are installed during NetBackup installation.

Table 3-3   NetBackup startup and shutdown script links by platform

Platform	Links

AIX	`/etc/rc.netbackup.aix`
	
	■ The NetBackup installation script edited the `/etc/inittab` file and added the following entry to ensure that the script is called during a level-two boot:
	`netbackup:2:wait:/etc/rc.netbackup.aix`
	■ To shut down, add the following line to the `/etc/rc.shutdown` file:
	`/etc/rc.netbackup.aix stop`

HP-UX	`/sbin/rc1.d/K001netbackup ->/sbin/init.d/netbackup`
	
	`/sbin/rc2.d/S777netbackup ->/sbin/init.d/netbackup`

Linux Debian	`/etc/rc0.d/K01netbackup ->/etc/init.d/netbackup`
	
	`/etc/rc1.d/K01netbackup ->/etc/init.d/netbackup`
	
	`/etc/rc2.d/S95netbackup ->/etc/init.d/netbackup`

Linux Red Hat	`/etc/rc.d/rc0.d/K01netbackup ->/etc/rc.d/init.d/netbackup`
	
	`/etc/rc.d/rc1.d/K01netbackup ->/etc/rc.d/init.d/netbackup`
	
	`/etc/rc.d/rc2.d/S77netbackup ->/etc/rc.d/init.d/netbackup`
	
	`/etc/rc.d/rc3.d/S77netbackup ->/etc/rc.d/init.d/netbackup`
	
	`/etc/rc.d/rc5.d/S77netbackup ->/etc/rc.d/init.d/netbackup`
	
	`/etc/rc.d/rc6.d/K01netbackup ->/etc/rc.d/init.d/netbackup`

| Table 3-3 | NetBackup startup and shutdown script links by platform *(continued)* |

Platform	Links

Linux SUSE	`/etc/init.d/rc0.d/K01netbackup`
	`->/etc/init.d/netbackup`
	
	`/etc/init.d/rc2.d/S77netbackup`
	`->/etc/init.d/netbackup`
	
	`/etc/init.d/rc3.d/S77netbackup`
	`->/etc/init.d/netbackup`
	
	`/etc/init.d/rc5.d/S77netbackup`
	`->/etc/init.d/netbackup`
	
	`/etc/init.d/rc6.d/K01netbackup`
	`->/etc/init.d/netbackup`

Solaris	`/etc/rc0.d/K01netbackup ->/etc/init.d/netbackup`
	
	`/etc/rc1.d/K01netbackup ->/etc/init.d/netbackup`
	
	`/etc/rc2.d/S77netbackup ->/etc/init.d/netbackup`

Completing your system update after an upgrade

After you have upgraded servers and clients, you may need to perform additional tasks to complete the update of your NetBackup environment.

Perform any of the following that apply to your NetBackup environment:

Master server privileges	If you upgraded a master server that allowed nonroot users to administer NetBackup, you must reconfigure the permissions and the group. The default permissions and group on the newly installed files allow only a root user to perform NetBackup administration.
Media server security certificate	NetBackup requires that media servers have a security certificate to function correctly in certain use cases. More information is available. See "About security certificates for NetBackup hosts" on page 40.
Add-on products	Upgrade any add-on products (such as NetBackup language packages) on all upgraded clients. All add-on products should be at the same version as the NetBackup client.

| NetBackup scripts | If you made changes to NetBackup scripts before the upgrade, apply those changes to the new, upgraded versions of the scripts. |

Media server upgrade

This chapter includes the following topics:

- Upgrading NetBackup media servers to NetBackup 8.0

Upgrading NetBackup media servers to NetBackup 8.0

In addition to the upgrade to the NetBackup binaries, one additional step for a NetBackup media server upgrade is the MSDP conversion. If you use MSDP in your NetBackup environment, you must plan for the MSDP conversion as a part the upgrade to NetBackup 7.7.

NetBackup also requires that media servers have a security certificate so that they function correctly in certain use cases. More information about this topic is available.

See "About security certificates for NetBackup hosts" on page 40.

When you install or upgrade NetBackup server software, multiple versions of the NetBackup Java Administration Console are installed by default. For example, when you install or upgrade to NetBackup media server 7.7, versions 7.0 through 7.7 of the console are all installed.

Note: Veritas recommends that after you install or upgrade NetBackup server software, you should uninstall older versions of the Remote Administration Console (Windows and Java) present on the host. If the native NetBackup Administration Console for Windows is present, it is automatically uninstalled when you install or upgrade the NetBackup server software.

Table 4-1   Media server migration procedure

Step	Task	Completed
1	Perform any pre-MSDP conversion checks and tasks. For example: ■ Estimate the MSDP conversion time for each media server. See "Predicting time for the MSDP conversion process" on page 38. ■ Confirm a minimum of 12% free space is available for each pre-NetBackup 7.7 media server that uses MSDP. To check the available free space, open the **NetBackup Administration Console**, and the **Media and Device Management** > **Devices** > **Disk Pools** window shows the percentage of used space in disk pools. If free space is less than 12%, free up enough so that free space is equal to or greater than 12%.	
2	If your media server upgrade is part of the master server upgrade, you can proceed to the next step. If not, deactivate the media server.	
3	Stop all NetBackup services. ■ On UNIX systems: `/usr/openv/netbackup/bin/bp.kill_all` ■ On Windows systems: `install_path\NetBackup\bin\bpdown -f`	

Table 4-1   Media server migration procedure *(continued)*

Step	Task	Completed
4	Upgrade the NetBackup binaries. More information is available about this topic. ■ See "Performing local, remote, or clustered server upgrades on Windows systems" on page 56. ■ See "Performing silent upgrades on Windows systems" on page 65. ■ See "Upgrading UNIX/Linux server software to NetBackup 8.0" on page 67. As a part of the installation, NetBackup checks to see if MSDP is configured. If it is, you have the option to start the conversion at the end of the installation. If you select **No** or if the installer does not detect your MSDP installation, you must start the conversion manually. More information about this topic is available. See "Converting the MSDP metadata during an upgrade to NetBackup 8.0" on page 88. **Note:** If this upgrade is of NetBackup 7.7 FA release on a Windows server with MSDP, please select **Yes** to run the conversion automatically. The conversion is not performed, since that was done during the upgrade to 7.7 FA release, but the required MSDP processes are started. **Note:** If this upgrade is of a Solaris SPARC server with MSDP currently at NetBackup 7.0.*x*, the installer does not detect the MSDP installation. More information about this topic is available. See "Additional steps required for upgrade of Solaris SPARC with MSDP" on page 28. See "Converting the MSDP metadata during an upgrade to NetBackup 8.0" on page 88. If you select **Yes**: ■ UNIX/Linux: The conversion takes place as a background process. ■ Windows: A new window opens that shows the conversion progress.	

Table 4-1 Media server migration procedure *(continued)*

Step	Task	Completed
5	(Conditional) If the NetBackup installer does not detect the MSDP configuration or if you choose not to start the conversion automatically, the MSDP conversion must be started manually. One known cause for the installer not detecting the MSDP configuration is an upgrade of a NetBackup 7.0.*x* Solaris SPARC computer without the `pduninstall.sh` script applied. Start the MSDP conversion manually by running the following command:	

`/usr/openv/pdde/pdconfigure/scripts/installers/PDDE_convert.sh`
`--storagepath PathToMSDPStorage`

Wait for the `PDDE_convert` command to complete before you proceed.

Please note this command performs the MSDP conversion. Be aware of the disk space and the time requirements.

See "About upgrading MSDP to NetBackup 8.0" on page 82.

See "Predicting time for the MSDP conversion process" on page 38.

See "Additional steps required for upgrade of Solaris SPARC with MSDP" on page 28.

Table 4-1   Media server migration procedure *(continued)*

Step	Task	Completed
6	(Conditional) If your media server has an MSDP Disk Pool, monitor the progress of the MSDP conversion. Do not proceed until the conversion is complete.	

The following command indicates if the conversion is still active:

- UNIX/Linux:

  `/usr/openv/pdde/pdcr/bin/stconv --status`
- Windows:

  `install_path\pdde\stconv.exe --status`

The output of the `stconv.exe --status` displays one of the following messages:

- The conversion has not started:

  ```
  Your Media Server Deduplication Pool requires conversion
  ```

- The conversion is in progress:

  ```
  Conversion of Media Server Deduplication Pool is running
  Please Check logs under <MSDP_log_path>/convert to see
  details
  ```

- The conversion is complete:

  ```
  Your Media Server Deduplication Pool is up to date!
  ```

- The conversion failed:

  ```
  Conversion of Media Server Deduplication Pool has failed.
  Please Check logs under <MSDP_log_path>/convert to see
  details
  ```

You can also check the status of the conversion by looking at the log file at `MSDPStorage\log\convert`.

Table 4-1   Media server migration procedure *(continued)*

Step	Task	Completed
7	Check for an available NetBackup 7.7 maintenance release. Maintenance releases include very important fixes that are released after NetBackup 7.7. Veritas encourages you to install the latest available maintenance release during upgrade activities. To access the latest NetBackup 7.7 maintenance release: **1** Go to the NetBackup SORT website. https://sort.veritas.com/netbackup **2** In the **Installation and Upgrade Checklist** section: ■ Under **Product**, select the correct product (NetBackup Enterprise Server or NetBackup Server) ■ Under **Product version you are installing or upgrading to** specify the latest version of NetBackup ■ Under **Platform** select the platform of the server you want to upgrade. ■ Under **Processor** specify the processor of your server. ■ Under **Product version you are upgrading from (Optional)** select the current version of NetBackup on the server you want to upgrade. ■ Click **Generate Checklist**. **3** Under **Upgrade Information**, there is a *version_number* **Download Links** hyperlink. Click that hyperlink for the latest maintenance release. **4** If no maintenance release is available, proceed to step 8. **5** If you find a maintenance release is available, download it now. **6** Prepare for the install by stopping all NetBackup processes and services. Use the command shown: UNIX/Linux: `/usr/openv/netbackup/bin/bp.kill_all` Windows: *install_path*`\NetBackup\bin\bpdown -f` **7** Install the maintenance release. **8** Restart NetBackup with the commands shown: UNIX/Linux systems: `/usr/openv/netbackup/bin/bp.start_all` Windows systems: *install_path*`\NetBackup\bin\bpup -f`	
8	(Conditional) If your environment requires a security certificate to function correctly, generate the certificates as necessary. More information about this topic is available. See "About security certificates for NetBackup hosts" on page 40.	

Table 4-1   Media server migration procedure *(continued)*

Step	Task	Completed
9	(Conditional) If the media server upgrade is part of a master server upgrade, skip this step. Reactivate the media server.	
10	(Conditional) If the media server upgrade is part of a master server upgrade, resume the master server upgrade procedure.	

After successful conversion and when you are comfortable with the new storage format, clean up storage artifacts from the conversion process, as follows:

- UNIX: `/usr/openv/pdde/pdcr/bin/stconv --cleanup`

- Windows: `install path\Veritas\pdde\stconv.exe --cleanup`

5

MSDP upgrade for NetBackup

This chapter includes the following topics:

- About upgrading MSDP to NetBackup 8.0

- MSDP upgrade prerequisites

- Freeing up MSDP storage space for an upgrade to NetBackup 8.0

- Converting the MSDP metadata during an upgrade to NetBackup 8.0

About upgrading MSDP to NetBackup 8.0

NetBackup 8.0 brings several improvements to the Media Server Deduplication Pool (MSDP). The MSDP metadata and reference management changes in NetBackup 8.0 require that the existing database records be converted to the new format during an upgrade. Until your MSDP storage directory is converted to the new format, you cannot perform operations using that MSDP storage unit.

A utility converts the database and the storage. You can convert the database and storage even if NetBackup is not running.

The following items provide information about some of the upgrade utility behavior:

- The utility creates checkpoints during the conversion. If the utility fails, when you start it again it continues from the most recent checkpoint.
  The utility is designed to handle all possible data scenarios. External factors may, however, cause it to fail. External factors are events such as the host computer crashes, the storage is on a network device and the network goes down, and so on.

- The utility logs its activity in the following directory:

Windows: *storage_path*\log\convert

UNIX: *storage_path*/log/convert

During the NetBackup 8.0 upgrade, the installer detects if an existing MSDP configuration is present on a media server. The installer also determines if enough free space is available, as follows:

Required free space for each **Media Server Deduplication Pool**:*12%*

Only the media servers that are upgraded from pre-NetBackup 7.6 require 12% free space. Media servers that are upgraded from NetBackup 7.6.0.*x* and later require minimal free space for the upgrade.

The following table describes the possible upgrade outcomes for NetBackup 7.5.*x* media servers:

Table 5-1   MSDP upgrade outcomes for NetBackup 7.5.*x* media servers

Free space	Outcome
Greater than or equal to 12%	NetBackup is upgraded to 8.0. After a successful upgrade, you must run a utility to convert the existing MSDP database to the new database format. See "Converting the MSDP metadata during an upgrade to NetBackup 8.0" on page 88.
Less than 12%	The installation fails with an insufficient free space warning. The installer provides advice about freeing up storage space. The insufficient free space warning that you receive depends on the operating system. See "MSDP 8.0 upgrade free space warning" on page 85.

You can attempt to free up storage space before you begin your upgrade. More information about this topic is available.

See "Freeing up MSDP storage space for an upgrade to NetBackup 8.0" on page 86.

Note: NetBackup Media Server Deduplication storage space cannot be determined accurately if you try to install NetBackup to a Solaris alternate root. Therefore, to upgrade the storage server you must first restart with the alternate root path as the running root.

The installer offers to start the conversion process for you. If you choose to have the installer start the conversion process automatically, it starts the conversion after the installation has finished.

- On Windows platforms, a new command line interface window opens to show the progress of the conversion.
- On UNIX platforms, the installer prints the paths to the log files that you can use to monitor the conversion process.

More information about how to start the conversion process manually is available.

See "Converting the MSDP metadata during an upgrade to NetBackup 8.0" on page 88.

The amount of time the conversion process takes is based on the number of images in your MSDP storage directory and the seek time of your storage media. The conversion process writes log files to *storage_path*/log/convert.

Once the conversion process is complete, your MSDP services should start automatically and you can continue operations using the MSDP storage unit.

If the MSDP services (spad, spoold, and mtstrmd) do not restart automatically, attempt to restart them. For UNIX or Linux, use the bp.start_all script to try to start the services. For Windows, use the bpup.exe command to try to start the services. If the services still do not start, review the conversion logs for errors. The MSDP conversion log files are found in the *MSDPStorage*\log\convert directory.

About the inactive MSDP storage upgrade

The NetBackup installer cannot detect storage usage in a **Media Server Deduplication Pool** that is inactive. An MSDP may be inactive if you deactivate deduplication on the media server or if you uninstall NetBackup from the media server. The storage space exists, but the installer cannot read the storage usage because the deduplication services are not active or present.

If you want to reuse that inactive MSDP storage space after you upgrade to 8.0, you must ensure that enough free space exists for the upgrade conversion. In the **NetBackup Administration Console**, the **Media and Device Management** > **Devices** > **Disk Pools** window shows the percentage of used space in disk pools. If free space is less than 12% for a pre-NetBackup 7.6 media server, free up enough so that free space is equal to or greater than 12%

See "Freeing up MSDP storage space for an upgrade to NetBackup 8.0" on page 86.

Then, you can convert the existing MSDP storage.

See "Predicting time for the MSDP conversion process" on page 38.

See "Converting the MSDP metadata during an upgrade to NetBackup 8.0" on page 88.

MSDP 8.0 upgrade free space warning

Pre-NetBackup 7.6 media servers with MSDP require 12% free space for the upgrade. The following figure shows an example of the free space warning on Windows.

Figure 5-1   Free space warning on Windows
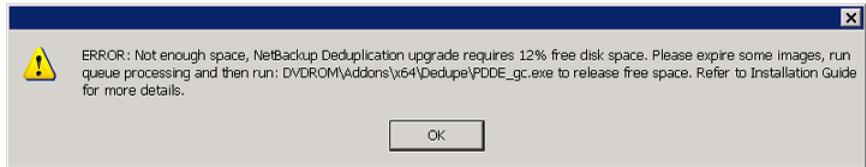
The following is the free space warning on non- Windows platforms:

```
Checking for VRTSpddea package...
   Package VRTSpddea found.
NetBackup Deduplication software is installed.

NetBackup Deduplication is configured.
ATTENTION! There is not enough free disk space.
NetBackup Deduplication upgrade needs 12% free disk space.
Please expire some images, run queue processing and then run
PATH/PDDE_gc to release
free space.
Read NetBackup Installation Guide for more details.
```

MSDP upgrade prerequisites

Before you begin the upgrade, confirm that you meet the prerequisites listed:

- Windows

  - Confirm that the MSDP storage location is included in the virus scanner's exclusion list, if a virus scanner is installed.

  - Confirm that Microsoft file indexing is disabled for the MSDP storage volume.

  - Confirm no other processes (such as Windows Explorer or Windows command prompt) have files or directories open within the MSDP storage volume.

- UNIX or Linux

  - Confirm no other processes (such as terminal sessions) have files or directories open within the MSDP storage volume.

Freeing up MSDP storage space for an upgrade to NetBackup 8.0

The upgrade process checks your storage to verify that enough free space exists for the upgrade. If not, the process exits and provides recommendations to free up storage space. The recommendations include:

- Expire unnecessary backup images.

- Run deduplication queue processing.

- Run the `PDDE_gc` program to release free space. The program is on the NetBackup 8.0 release media.

Step 1 through step 3 in Table 5-2 are the procedures that the NetBackup installer recommends to free up storage space. Step 4 and step 5 provide more advice about freeing up storage space.

Table 5-2   Storage reclamation process overview

Step	Task	Procedure
Step 1	Expire unnecessary backup images.	More information about this subject is available. *NetBackup Administrator's Guide, Volume I* http://www.veritas.com/docs/DOC5332
Step 2	Run deduplication queue processing.	On NetBackup 7.5 systems, process the transaction queue twice. On NetBackup 7.0.*x* and 7.1.*x* systems, do the following: ■ Process the transaction queue. See "Processing the MSDP transaction queue manually" on page 87. ■ Run garbage collection. See "Manual garbage collection on an MSDP storage server" on page 87. ■ Process the transaction queue.
Step 3	Reclaim the MSDP free space.	See "Reclaiming MSDP free space before an upgrade to NetBackup 8.0" on page 88.
Step 4	Use more thorough storage reclamation procedures.	If the previous steps do not free up enough space, a Veritas tech note provides more thorough information about freeing up MSDP disk space. http://www.veritas.com/docs/TECH124914

Table 5-2		Storage reclamation process overview *(continued)*
Step	**Task**	**Procedure**
Step 5	Contact Veritas.	If you still do not have enough free space after following the tech note advice, contact your Veritas Support Representative. See "Contacting Technical Support."

Processing the MSDP transaction queue manually

NetBackup maintains a queue for MSDP database transactions.

Usually, you should not need to run the deduplication database transaction queue processes manually. However, when you recover the MSDP catalog from a backup, you must process the MSDP transaction queue. Processing the transaction queue is part of a larger process.

To process the MSDP transaction queue manually

1   On the MSDP storage server, run the following command:

UNIX: `/usr/openv/pdde/pdcr/bin/crcontrol --processqueue`

Windows: *install_path*`\Veritas\pdde\Crcontrol.exe --processqueue`

2   To determine if the queue processing is still active, run the following command:

UNIX: `/usr/openv/pdde/pdcr/bin/crcontrol --processqueueinfo`

Windows: *install_path*`\Veritas\pdde\Crcontrol.exe --processqueueinfo`

If the output shows `Busy : yes`, the queue is still active.

3   To examine the results, run the following command (number 1 not lowercase letter l):

UNIX: `/usr/openv/pdde/pdcr/bin/crcontrol --dsstat 1`

Windows: *install_path*`\Veritas\pdde\Crcontrol.exe --dsstat 1`

The command may run for a long time; if you omit the `1`, results return more quickly but they are not as accurate.

Manual garbage collection on an MSDP storage server

This procedure for manual garbage collection is for NetBackup versions 7.0 and 7.1. On NetBackup 7.5 and later versions, garbage collection runs automatically. Manual garbage collection in NetBackup 7.5 and later is unnecessary unless technical support recommends the activity or as part of an upgrade.

To collect garbage manually

◆ On the MSDP storage server, run the following command:

UNIX: `/usr/openv/pdde/pdcr/bin/crcollect -v -m +1,+2 --noreport`

Windows: `install_path\Veritas\pdde\Crcontrol.exe -v -m +1,+2 --noreport`

Reclaiming MSDP free space before an upgrade to NetBackup 8.0

For an MSDP upgrade to NetBackup 8.0, the release package contains a utility to help free up MSDP storage space. The upgrade of a pre-NetBackup 7.6 media server requires 12% of free space.

Before you try to reclaim storage space, ensure that you run deduplication queue processing and expire unneeded backup images.

See "Processing the MSDP transaction queue manually" on page 87.

More information about expiring backup images is available.

NetBackup Administrator's Guide, Volume I

http://www.veritas.com/docs/DOC5332

To reclaim free space

1 Run the tool that reclaims free space. The following is the pathname to the tool on the installation media:

- UNIX: `/NetBackup_package/platform/catalog/anb/PDDE_gc`

- Windows: `DVDROM\Addons\x64\Dedupe\PDDE_gc.exe`

The following prompt appears in a command window:

```
This tool will attempt to reclaim disk space from expired images.
Please note that 12% free disk space is required for the Media
Server Deduplication Pool upgrade process.
```

2 Type **y** and then press Enter.

The tool reclaims the free space that was made available when you expired images and processed the transaction queue.

Converting the MSDP metadata during an upgrade to NetBackup 8.0

After you upgrade to NetBackup 8.0, you must convert the database to the new format before you can deduplicate backups.

Note: If the upgrade is of a NetBackup 7.0.*x* Solaris SPARC computer, you must specify the `storagepath` parameter.

To manually convert the MSDP metadata

1   Run the conversion utility. The following is the pathname to the tool on the installation media:

- UNIX/Linux:
  `/usr/openv/pdde/pdconfigure/scripts/installers/PDDE_convert.sh`

- Solaris SPARC with NetBackup 7.0.*x*:
  `/usr/openv/pdde/pdconfigure/scripts/installers/PDDE_convert.sh`
  `--storagepath PathToMSDPStorage`

- Windows: `mount_path\pdde\PDDE_convert.bat`

If you need to determine the location of the MSDP storage path, use one of the commands shown:

Note: It is possible you may find more than one MSDP storage directory. Use the one that has the most recent entries in the `PathToMSDPStorage`/log/spad directory.

- If your media server is still at NetBackup 7.0.x, run the command shown (the output is truncated for clarity):

  ```
  ls -l /etc/pdregistry.cfg
   /etc/pdregistry.cfg -> /Storage/etc/pdregistry.cfg
  ```

  In the example shown, the correct path for the MSDP storage is `/Storage`.

- If you have already upgraded the media server to NetBackup 8.0, use the find command to locate the `pdde-config.log` file:

  ```
  find / -type f -name pdde-config.log
  ```

  The listing of the storage path is near the top of the file.
  Example (bold added for clarity):

  ```
  /usr/openv/pdde/pdconfigure/etc $ head /Storage/log/
  pdde-config.log
  Mon Aug 5 15:53:31 CDT 2013 **** Starting PDDE_initConfig.sh
   ***
  Mon Aug 5 15:53:31 CDT 2013 SPA Log Path is /Storage/log
  Mon Aug 5 15:53:31 CDT 2013 SPA ID = 1234
  Mon Aug 5 15:53:31 CDT 2013 SPA Login = root
  ```

```
Mon Aug 5 15:53:31 CDT 2013 **Storage Path = /Storage**
Mon Aug 5 15:53:31 CDT 2013 Database Path = /Storage
Mon Aug 5 15:53:31 CDT 2013 Install Path = /usr/openv/pdde
Mon Aug 5 15:53:31 CDT 2013 SPA Logfile Path = /Storage/log
Mon Aug 5 15:53:31 CDT 2013 SPA Log Retention = 7
```

If the `PDDE_convert` script generates the failure shown, rerun the command and use the `storagepath` parameter.

UNIX:

```
root@server:~ $ /usr/openv/pdde/pdconfigure/scripts/installers/
PDDE_convert.sh
/usr/openv/pdde/pdconfigure/scripts/installers/PDDE_convert.sh: This
tool convert the current Media Server Deduplication Pool storage to
the new format
Do you want to start the conversion? [y,n] (n) y
Mon Aug 26 2013 16:20:47.329130 ERROR (1): Section Veritas/PureDisk/
ContentRouter not found in configfile.
Failed to locate contentrouter.cfg from /etc/pdregistry.cfg
Please specify your storage location with option --storagepath
```

Windows:

```
C:\>H:\dedupe\dedupe\libs\clibs\scripts\PDDE_convert.bat
H:\dedupe\dedupe\libs\clibs\scripts\PDDE_convert.bat: This tool
convert the current Media Server Deduplication Pool storage to
the new format
Do you want to start the conversion? [y,n] (n) y
ERROR: The system was unable to find the specified registry key or
value.
Failed to locate pdregistry.cfg
Please specify your storage location by option --storagepath
```

2 After successful conversion and when you are comfortable with the new storage format, clean up storage artifacts from the conversion process, as follows:

- UNIX: `/usr/openv/pdde/pdcr/bin/stconv --cleanup`

- Windows: *install path*`\Veritas\pdde\stconv.exe --cleanup`

NetBackup operational behavior changes

This chapter includes the following topics:

- About lock files

- About foreign media servers

- About holds in NetBackup Search

About lock files

To provide access control for the NetBackup relational database (NBDB), NetBackup versions 7.5 and later create a `.lck` lock file automatically for each backup image.

The `.lck` files reside in the following locations:

- On UNIX systems:

  /usr/openv/netbackup/db/images/*client_directory*/*time_directory*/*image_name.lck*

- On Windows systems:

  install_path\NetBackup\db\images*client_directory**time_directory**image_name.lck*

When all images in a *time_directory* directory are expired, any remaining `.lck` files are removed when the *time_directory* directory is deleted.

Warning: Do not delete, rename, move, or otherwise modify any `.lck` files.

About foreign media servers

Images may include the names of media servers that do not exist in the current domain. These media servers are known as foreign media servers.

The following describes when a foreign media server may appear in a backup image:

- When a backup image is migrated from one domain to another.

- When a media server is decommissioned.

Starting with NetBackup 7.5, foreign media servers also appear in the output for the following command:

```
nbemmcmd -listhosts
```

The output displays the foreign media server as follows:

```
foreign_media server
```

About holds in NetBackup Search

If your NetBackup environment previously used OpsCenter to place holds on backup images, these legal holds are converted to user holds.

Upgrade OpsCenter to version 8.0 before you upgrade the NetBackup master server to version 8.0.

After you upgrade the master server to version 8.0, the indexing information of the backup images is deleted, but the holds are retained. You can manage the holds by using the `nbholdutil` command. For more information about conversion of hold names and managing holds, see *NetBackup Administrator's Guide, Volume II*.

Reference

This appendix includes the following topics:

- About the NetBackup Java Runtime Environment
- About NetBackup software availability
- About the NetBackup media kit
- About the NetBackup Electronic Software Distribution (ESD) images
- Additional post-upgrade steps for NetApp clusters
- About the NetBackup preinstallation Environment Checker
- Running the preinstallation Environment Checker
- Using NetApp disk arrays with Replication Director
- About monitoring the phase 2 migration process
- About compatibility between NetBackup versions
- Installation and upgrade requirements for UNIX and Linux
- Installation and upgrade requirements for Windows and Windows clusters
- Requirements for Windows cluster installations and upgrades
- Upgrading clients after servers are upgraded
- Install and upgrade of the Linux client binaries with standard RPM tools

About the NetBackup Java Runtime Environment

Veritas installs a customized version of the Java Runtime Environment (JRE) when you install any of these products:

- NetBackup master server, media server, or client software
- NetBackup Remote Administration Console
- OpsCenter Server, Agent, or View Builder

The customized version of JRE does not include all the directories that a standard JRE installation includes, such as `man` and `plugin`.

Previously, the JRE package that is installed with NetBackup or OpsCenter were only updated when you upgraded to a later release of either software. You can use the `nbcomponentupdate` utility to update the JRE to a supported version for the products shown:

- NetBackup master server, media server, or client software
- NetBackup Remote Administration Console
- OpsCenter Server, Agent, or View Builder

Note: You cannot use this utility to update the JRE for the NetBackup Plug-in for VMware vCenter.

If your system is running NetBackup 8.0 or later, use Table A-1 to determine the location of the `nbcomponentupdate` utility.

Table A-1   Location of JRE update utility

Product	Operating system	Path
NetBackup	Windows	*install_path*\netbackup\java\nbcomponentupdate.exe
	UNIX or Linux	/usr/openv/java/nbcomponentupdate
OpsCenter Server	Windows	*install_path*\server\bin\nbcomponentupdate.exe
	UNIX or Linux	SYMCOpsCenterServer/bin/nbcomponentupdate
OpsCenter Agent	Windows	*install_path*\agent\bin\nbcomponentupdate.exe
OpsCenter View Builder	Windows	*install_path*\viewbuilder\bin\nbcomponentupdate.exe
Remote Administration Console	Windows	*install_path*\java\nbcomponentupdate.exe

If you have a NetBackup 7.7.x or earlier, download the `nbcomponentupdate` utility from the location shown:

https://www.veritas.com/support/en_US/article.000115043

More information about the `nbcomponentupdate` command and its parameters is available.

NetBackup Commands Reference Guide

The NetBackup installed version of the JRE is the supported major version for that NetBackup release. Use this utility to update to a minor version of the supported major JRE version. For example, if NetBackup 8.0 installed JRE 1.8.0.31, the supported major version is 1.8. Use this utility to update to JRE 1.8.0.92.

Veritas recommends that you update to another major JRE version only if the JRE vendor declares an end-of-life for the installed JRE version. If the JRE vendor declares an end-of-life for JRE 1.8, which is also the installed JRE version in your environment, update to JRE 1.9.

Close the product, such as NetBackup, before you attempt to update the JRE. If the product is active when you attempt the update, the utility exits with an error message that requests you to close the product.

Caution: Do not stop the utility while the JRE update is in progress. This action can cause the product that uses the JRE, such as NetBackup, to become unstable.

If there are additional versions of the JRE installed on your system for other applications, the NetBackup JRE does not interfere with them. The NetBackup JRE does not provide integration with web browsers and does not allow Java Applets or Web Start to run. For that reason, the NetBackup JRE cannot be used in a browser-based attack that uses Java Applet or Web Start vulnerabilities.

More information about NetBackup JRE alerts is available.

http://www.veritas.com/docs/TECH50711

About NetBackup software availability

NetBackup 8.0 is available in the following formats:

- DVD media kit
  All necessary software and documentation files are provided on several DVDs.
  See "About the NetBackup media kit" on page 96.
- Electronic Software Distribution (ESD) images

The DVD image files are posted and available for download on the **MyVeritas** website.

About the NetBackup media kit

The media kit includes a DVD for each supported UNIX platform or operating system and one DVD for Windows. The label on each DVD provides a brief description of its contents. Printed materials in the kit include a copy of the *NetBackup Getting Started Guide*.

Table A-2 describes the contents of each DVD.

Table A-2 NetBackup 8.0 DVD contents

Platform OS	Contents
AIX 64-bit	Server and supported options
HP-UX IA64	Server and supported options
Linux RedHat x86_64	Server and supported options
Linux SUSE x86_64	Server and supported options
Solaris SPARC64	Server and supported options
Solaris x86-64	Server and supported options
Windows	- Server and supported options - All x64 clients - All x86 clients
Linux zSeries RedHat x64	Media server and supported options
Linux zSeries SUSE x64	Media server and supported options
UNIX clients 1	- AIX - HP PA-RISC and IA64 - Solaris SPARC and X86
UNIX clients 2	All Linux platforms
Clients in LiveUpdate format 1	- AIX - HP IA64 - All Linux platforms - Solaris SPARC and X86

Table A-2   NetBackup 8.0 DVD contents *(continued)*

Platform OS	Contents
Clients in LiveUpdate format 2	■ HP PA-RISC ■ All Windows platforms
OpsCenter for Windows	All Windows platforms
OpsCenter for UNIX/Linux	All UNIX/Linux platforms
OpenVMS (CD format)	NetBackup Client for OpenVMS

Note: The NetBackup vCenter plug-in for ESX is available electronically from the **MyVeritas** download site. It is free to customers under maintenance contract. An e-mail with access information to the **MyVeritas** download site was sent when NetBackup 7.6.1 became generally available. More information is available.

See "About the NetBackup Electronic Software Distribution (ESD) images" on page 97.

About the NetBackup Electronic Software Distribution (ESD) images

The ESD images for NetBackup 8.0 are available for download from the **MyVeritas** webpage. The images adhere to a 1.8G size limitation.

To ensure the accuracy of the ESD download, some of the product images have been split into smaller, more manageable files. Before you uncompress any file, you must first join the split image files that you can identify as `1 of 2` and `2 of 2`. A `Download Readme.txt` file on **MyVeritas** describes how to join the files together.

See "About NetBackup software availability" on page 95.

See "About the NetBackup media kit" on page 96.

Additional post-upgrade steps for NetApp clusters

After a NetBackup 7.7 upgrade, review your NetApp cluster configuration as additional steps may be required to insure everything continues to work as expected. Table A-3 lists the various configurations and how to proceed.

Caution: If at any time after the upgrade from pre-NetBackup 7.7 to NetBackup 7.7 or later the mode changes from Node scope to Vserver aware, you must perform the additional steps. Failure to perform the additional steps places your data at risk.

Table A-3   Additional required NetApp cluster changes

NetApp cluster mode at time of upgrade	Changes to NetApp cluster mode after upgrade	More information
Node scope mode	No changes	Veritas and NetApp both recommend that you change to Vserver aware mode at your earliest convenience.
Node scope mode	Change to Vserver aware mode	Additional steps required. See "Additional changes for Node scope mode to Vserver aware mode" on page 98.
Vserver aware mode	Not applicable	Additional steps required. See "Additional changes required for NetApp clusters in Vserver aware mode" on page 100.

Note: Once a 7.7 media server detects Vserver aware mode, no further backup activities are performed on any other media server running any earlier releases of NetBackup. If you do not update all of the media servers to 7.7, you may encounter performance and scalability issues when the pre-NetBackup 7.7 media servers are no longer used to perform the backup activities.

If you change from Node scope mode to Vserver aware mode, you must do the following:

Additional changes for Node scope mode to Vserver aware mode

1   Enable the Vserver aware mode on the cluster by disabling node-scope-mode.

2   If there are tape devices attached to the cluster nodes, you must reconfigure them. Configure the tape devices to use the cluster-management logical interface (LIF) as the NDMP host for the device configuration. NetBackup does not support use of node name for device configuration.

     See the *Veritas NetBackup for NDMP Administrator's Guide* for additional information.

3 Credential all the LIF that are used for backups.

This activity includes the Cluster Management LIF as well as any Vserver Data LIFs that are used for backup policies.

See the *Veritas NetBackup for NDMP Administrator's Guide* for additional information.

4 Update the database for all existing NDMP hosts in your environment. Use the command that is shown to update the database.

```
tpautoconf –verify NDMP_host_name
```

5 Update or replace any storage units that use the node names of the cluster to use the cluster LIF.

6 Update or replace any existing policies that back up the cluster.

You must use either the Data LIF or the Cluster-management LIF as the client name. NetBackup does not support the use of the node name for the client name. The backup selections may also need to be modified.

7 Add an intercluster management LIF for each node that does not host a cluster management LIF.

The NetApp cluster requires this activity to perform NDMP 3 way or NDMP Remote backups. Without these LIFs, all 3 way or remote backups from the volumes that are not hosted on the same node as the cluster management LIF fail.

8 To restore, verify, or duplicate the old images, you may have to use alternate read host.

Additional changes required for NetApp clusters in Vserver aware mode

1 Run `tpautoconf` command on each Vserver. This command must be run from the media servers that have credentials to the Vserver.

```
tpautoconf –verify ndmp_host
```

Once the command runs successfully, the output of the `nbemmcmd` should look similar to the following:

```
servername1@/>nbemmcmd -listsettings -machinename machinename123 -
machinetype ndmp
NBEMMCMD, Version: 7.7
The following configuration settings were found:
NAS_OS_VERSION="NetApp Release 8.2P3 Cluster-Mode"
NAS_CDOT_BACKUP="1"
Command completed successfully.

NAS_OS_VERSION displays the NetApp Version.
NAS_CDOT_BACKUP tells us if NetBackup uses the new cDOT capabilities.
```

The `tpautoconf –verify ndmp_host` command is not required when a new Vserver is added.

2 Add devices to the NDMP cluster as necessary and access them using the cluster management LIF. As you add devices, you must discover the devices.

3 Add storage units for the newly discovered devices.

4 Update any existing policies that back up the cluster.

You must use either the Data LIF or the Cluster-management LIF as the client name. NetBackup does not support the use of the node name for the client name. The backup selections may also need to be modified.

About the NetBackup preinstallation Environment Checker

Note: The preinstallation Environment Checker is a deprecated utility. Veritas recommends use of the SORT tool.

See "About Veritas Services and Operations Readiness Tools" on page 16.

https://sort.veritas.com/netbackup

Starting with NetBackup 7.1, an Environment Checker is included to help identify any problems that may prevent a successful NetBackup server installation or upgrade. The Environment Checker is currently only available for Windows.

The Environment Checker is available as a link on the DVD browser. The checker is a standalone function that you run before an installation or an upgrade.

The Environment Checker provides you with the following abilities:

- Assess a system to determine if it is ready for a new NetBackup installation or upgrade.

- Perform the assessment on local and remote Windows systems.

- Create a list of remote computers to check, either manually or by browsing the network.

- Run the Environment Checker on all supported Windows platforms that support NetBackup as a master server or a media server (x86 and x64).

- Generate HTML reports for immediate viewing.

See "Running the preinstallation Environment Checker" on page 101.

Running the preinstallation Environment Checker

Note: The preinstallation Environment Checker is a deprecated utility. Veritas recommends us of the SORT tool.

See "About Veritas Services and Operations Readiness Tools" on page 16.

https://sort.veritas.com/netbackup

Use the following procedure to run the Environment Checker and assess whether computers are ready for NetBackup installation.

To run the Environment Checker

1   Start the NetBackup Installation Wizard with one of the following methods:

- DVD media
  Insert the NetBackup for Windows DVD in the drive. If Autorun is disabled, navigate to the DVD drive and run `Browser.exe`.

- ESD images (downloaded files)
  Navigate to the directory where the images reside and run `Browser.exe`.

2   On the **Home** screen, click **Preinstallation**.

3 On the **Preinstallation** screen, click **Run the preinstallation Environment Checker**.

4 On the **Welcome** screen, review the content and click **Next**.

5 On the **Choose** screen, select the systems to check as follows:

Local Environment Check (default)	To check the local computer only, leave this option checked and click **Next**.
	After the computer check has completed, a summary page appears that describes the results.
Remote Environment Check	■ To check one or more remote computers, select this option and click **Next**.

    Note: You can keep the **Local Environment Check** option to include the local computer. You can also deselect this option to exclude it.

    ■ On the **Remote** screen, add or remove computers to check as follows:

        ■ **Add Server From List**
        Click this option to select a computer from a list of available systems on your network. Then click **Next**.
        Enter the appropriate **User Name** and **Password** for the selected computer, then click **OK**.

        ■ **Add Server Manually**
        Click this option to add computer names manually.
        On the **Manual Remote Computer Selection** dialog box, enter the appropriate **Domain Name** and the **Server Name**, then click **OK**.
        On the **Remote Computer Login Credentials** dialog box, enter the appropriate **User Name** and **Password**, then click **OK**.

        ■ **Remove**
        To remove a computer from the **Remote Computers** list, select the computer from the list and click **Remove**.

    ■ After all computers that you want to check are added to the **Remote Computers** list, click **Next**.
    The Environment Checker performs a validation process for each remote computer. After all have been completed, click **Next** to start the check on all listed computers.

6 When all computers have been checked, the **Results** screen displays a list of the checked systems with a brief result under each computer name. Click on a computer name to see the complete results for that computer. The following describes the symbols that may appear in a summary:

Green check mark	Indicates that the item meets the requirements for a NetBackup installation or an upgrade.
Yellow exclamation point	Indicates that a potential issue has been detected that may, or may not cause a problem for a NetBackup installation or an upgrade.
Red X	Indicates that the item does not meet the NetBackup installation requirements. Any summary report items with a red X must be corrected before you attempt a NetBackup installation or an upgrade.

Note: Veritas recommends that you address all items that are marked with a yellow exclamation point and a red X. Then run the Environment Checker again.

7 To save the results file, do one of the following:

- To save the results file to the default location, leave the check mark for the **Save Results To** check box.

- To save the results file to a different location, click **Change Path**, enter the appropriate location, then click **Save**.

If you do not want to save the results file, click the **Save Results To** check box to remove the check mark.

8 To exit from the Environment Checker, click **Finish**.

See "About the NetBackup preinstallation Environment Checker" on page 100.

See "About Veritas Services and Operations Readiness Tools" on page 16.

Using NetApp disk arrays with Replication Director

Replication Director can replicate snapshots on a NetApp disk array in two different situations:

■ In non-cluster mode: 7-mode is used to replicate snapshots on NAS and SAN. The plug-in must be installed on the OnCommand Unified Manager (OCUM) server (Figure A-1).

■ In cluster-mode: Clustered Data ONTAP (cDOT) is used to replicate snapshots between storage virtual machines (SVMs or vServers). Support is for NAS only. The plug-in must be installed on either a Windows or a Linux computer other than the OCUM server, the master server, or any media servers (Figure A-2).

Both modes support the same topologies.

Table A-4 describes the association between NetBackup versions and the NetApp plug-ins.

Table A-4   Version compatibility

NetBackup version	NetApp plug-in version	Description	Ratio of master server to OCUM server	Supported policy types
7.7 and later	1.1	Provides 7-mode support for all NetBackup 7.7 Replication Director features.	One master server supports many OCUM servers. The plug-in must be installed on the OnCommand Unified Manager (OCUM) server.	MS-Windows, Standard, NDMP, VMware, Oracle
	1.1 P1	Provides 7-mode support for all NetBackup 7.7 Replication Director features.	One master server supports many OCUM servers.	MS-Windows, Standard, NDMP, VMware, Oracle
	2.0	Provides cDOT support.	One master server supports many OCUM servers. The plug-in must be installed on either a Windows or a Linux computer other than the OCUM server, the master server, or any media servers.	MS-Windows, Standard, NDMP, VMware, Oracle
7.6	1.1	NetApp Data ONTAP 7-Mode support for all of NetBackup 7.6 Replication Director features.	One master server to many OCUM servers	MS-Windows, Standard, NDMP, VMware, Oracle

Note: You must upgrade the entire NetBackup environment before upgrading the plug-in. Upgrade all master servers, media servers, clients, and any hosts which communicate with the plug-in.

Figure A-1   Communication between NetBackup and the NBUPlugin for 7-mode
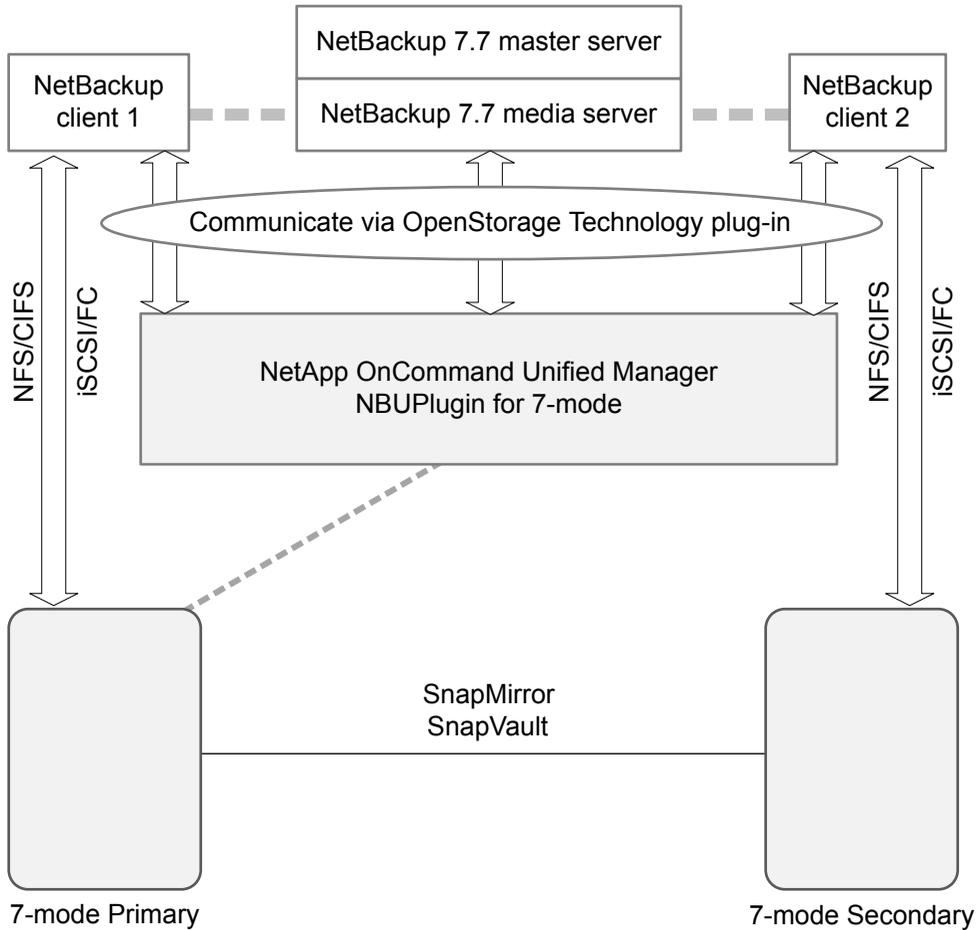
Figure A-2   Communication between NetBackup and the NBUPlugin for
Clustered Data ONTAP
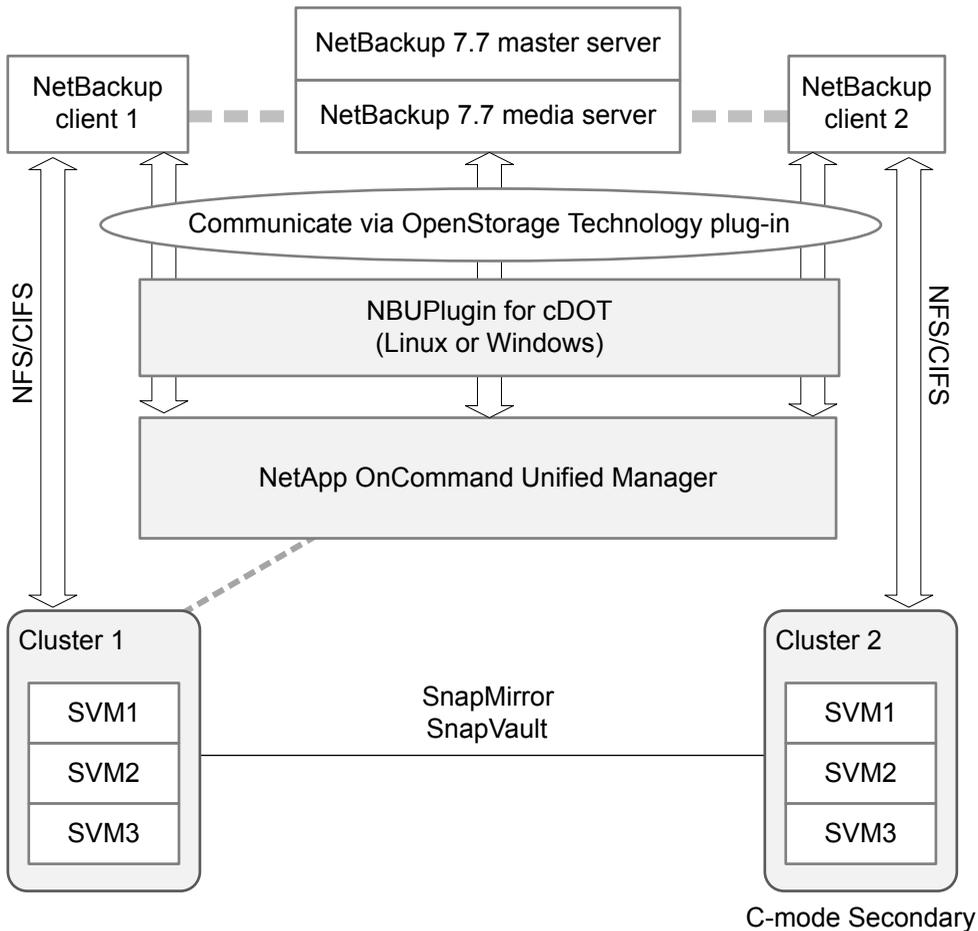
Determining the version of the plug-in

To determine the NBUPlugin version, look for the following version file on the system where the NBUPlugin is installed:

On Windows: *Install_path*\Program Files\Netapp\NBUPlugin\version.txt

On UNIX: /usr/NetApp/NBUPlugin/version.txt

The contents of the file lists the product name, the build date, and the NBUPlugin version. If more than one plug-in is installed, both are listed.

Upgrading the plug-in

If upgrading the NetApp Plug-in for Veritas NetBackup, make sure that all storage lifecycle policy jobs that use the old plug-in are complete before upgrading.

To determine whether all of the jobs that are associated with a storage lifecycle policy are complete, in process, or not started, use the following command:

On Windows: *install_path*`\NetBackup\bin\admincmd>nbstlutil.exe stlilist -U`

On UNIX: `/usr/openv/netbackup/bin/admincmd/nbstlutil stlilist -U`

About monitoring the phase 2 migration process

While the clean-up job runs, you can monitor the progress of the phase 2 migration.

In the **Activity Monitor**, double-click on the clean-up job. When the **Job Details** dialog box appears, click the **Detailed Status** tab.

The following describes an example of how phase 2 migration progress appears:

- The start of phase 2 migration is logged as follows:

  ```
  2/8/2012 4:05:50 PM - Info bpdbm(pid=5948) image catalog cleanup
  2/8/2012 4:05:50 PM - Info bpdbm(pid=5948) Importing flat file
  image headers into the database.
  ```

- Phase 2 migration of each client is logged as follows:

  ```
  2/8/2012 4:09:16 PM - Info bpdbm(pid=5948) [000:03:26] Initiating
  import for client: section8
  2/8/2012 4:09:18 PM - Info bpdbm(pid=5948) [000:03:28] Finished
  importing images for client: section8 with 36 imported, 0 skipped,
  0 corrupt.
  2/8/2012 4:09:18 PM - Info bpdbm(pid=5948) [000:03:28] Overall
  progress: 5525 images imported, 0 skipped, 0 corrupt. Import rate
  = 26 images/sec
  ```

- The end of phase 2 migration is logged as follows:

  ```
  2/8/2012 4:09:44 PM - Info bpdbm(pid=5948) Finished importing all
  images into the database. (Count = 6371)
  ```

The following describes the key parameters in the log:

Table A-5   Key log parameters for phase 2 migration progress

Parameter	Description
`[hhh:mm:ss]`	The cumulative time that phase 2 has been running.
`n skipped`	The number of images that were skipped for some reason, and would need to be looked at.
`n corrupt`	The number of images that are determined to be corrupt, and have been moved to the `db.corrupt` directory.
`Import rate = n images/sec`	The cumulative import rate, which can be used to validate the estimated migration time.

About compatibility between NetBackup versions

You can run mixed versions of NetBackup between master servers, media servers, and clients. This back-level support lets you upgrade NetBackup one server at a time, which minimizes the effect on overall system performance. Veritas supports only certain combinations of servers and clients. The NetBackup catalog resides on the master server. Therefore, the master server is considered to be the client for a catalog backup. If your NetBackup configuration includes a media server, it must use the same NetBackup version as the master server to perform a catalog backup.

For complete information about compatibility between NetBackup versions, see the *NetBackup Release Notes* for version 8.0.

http://www.veritas.com/docs/DOC8512

Veritas recommends that you review the End of Support Life information available online.

http://www.veritas.com/docs/TECH74757

See "About NetBackup software availability" on page 95.

Installation and upgrade requirements for UNIX and Linux

Table A-6 describes the requirements to prepare your UNIX and Linux systems for NetBackup installation. Use this table as a checklist to address each item.

For the most up-to-date information about installation requirements, Veritas recommends use of the SORT website. More information about SORT is available.

See "About Veritas Services and Operations Readiness Tools" on page 16.

Table A-6 NetBackup installation and upgrade requirements for UNIX and Linux

Check	Requirement	Details
	Operating System	■ For a complete list of compatible UNIX and Linux operating systems, refer to the *Software Compatibility List (SCL)* at the following website: http://www.netbackup.com/compatibility https://sort.veritas.com/netbackup
	Memory	■ Master servers in a production environment with several database agents enabled should have a minimum of 8 GB of memory each. ■ Media servers in a production environment with several database agents enabled should have a minimum of 4 GB of memory each. ■ Any client in a production environment should have a minimum of 512 MB of memory. ■ For reasonable performance of the NetBackup-Java interfaces, you need 512 MB of RAM. Of that space, 256 MB must be available to the interface program (jnbSA or jbpSA). For additional information about memory requirements, refer to the *NetBackup Backup Planning and Performance Tuning Guide*. http://www.veritas.com/docs/DOC5332

Table A-6   NetBackup installation and upgrade requirements for UNIX and Linux *(continued)*

Check	Requirement	Details
	Disk space	■ The exact amount of space that is required depends on the hardware platform. More information about this topic is available. *NetBackup Release Notes for 8.0* http://www.veritas.com/docs/DOC5332 ■ NetBackup catalogs contain information about your backups that become larger as you use the product. The disk space that the catalogs require depends primarily on the following aspects of your backup configuration: 　■ The number of files that are backed up. 　■ The frequency of your backups. 　■ The amount of time that you set to retain your backup data. If space is an issue, you can install NetBackup on an alternate file system. The installation lets you select an alternate install location, and creates the appropriate link from `/usr/openv`. **Note:** The value for disk space is for initial installation only. The NetBackup catalog requires considerably more space once the master server is placed in a production environment. For additional information on sizing requirements for the NetBackup catalog, refer to the *NetBackup Backup Planning and Performance Tuning Guide*. http://www.veritas.com/docs/DOC5332
	General requirements	■ Ensure that the `gzip` and the `gunzip` commands are installed on the local system. The directories where these commands are installed must be part of the root user's path environment variable setting. ■ All NetBackup installation DVDs or ESD images, appropriate licenses, and the root password for all servers. ■ A server of a supported hardware type that runs a supported version of its operating system (with applicable patches), adequate disk space, and supported peripherals. For details on these requirements, refer to the *NetBackup Release Notes*. http://www.veritas.com/docs/DOC5332 ■ All NetBackup servers must recognize and be recognizable by their client systems. In some environments, this means that each must be defined in the other's `/etc/hosts` file. Other environments may use the Network Information Service (NIS) or Domain Name Service (DNS). ■ The minimum screen resolution configuration is 1024x768, 256 colors.

Table A-6   NetBackup installation and upgrade requirements for UNIX and Linux *(continued)*

Check	Requirement	Details
	Clustered systems	■ Ensure that each node in the NetBackup cluster can run the `ssh` command, the `rsh` command, or its equivalent (on HP-UX, the command is `remsh`). The root user must be able to perform a remote login to each node in the cluster without entering a password. This remote login is necessary for installation and configuration of the NetBackup server and any NetBackup agents and options. After installation and configuration are complete, it is no longer required. ■ You must install, configure, and start the cluster framework before you install NetBackup. ■ You must have defined a virtual name using DNS, NIS, or the `/etc/hosts` file. The IP address is defined at the same time. (The virtual name is a label for the IP address.) More information about cluster requirements is available. *Veritas NetBackup Clustered Master Server Administrator's Guide* http://www.veritas.com/docs/DOC5332
	NFS compatibility	Veritas does not support installation of NetBackup in an NFS-mounted directory. File locking in NFS-mounted file systems can be unreliable.
	Kernel reconfiguration	For some peripherals and platforms, kernel reconfiguration is required. For more details, see the *NetBackup Device Configuration Guide*. http://www.veritas.com/docs/DOC5332
	Red Hat Linux	For Red Hat Linux, NetBackup requires server networking.
	Other backup software	Veritas recommends that you remove any other vendor backup software currently configured on your system before you install this product. Other vendor backup software can negatively affect how NetBackup installs and functions.

Table A-6 NetBackup installation and upgrade requirements for UNIX and Linux *(continued)*

Check	Requirement	Details
	Web Services	Beginning with NetBackup 8.0, the NetBackup master server includes a configured Tomcat web server to support critical backup operations. This web server operates under user account elements with limited privileges. These user account elements must be available on each master server (or each node of a clustered master server). You must create these required account elements before installation. More information is available:
		http://www.veritas.com/docs/000081350
		Note: Veritas recommends that you save the details of the user account that you use for the NetBackup Web Services. A master server recovery requires the same NetBackup Web Services user account and credentials that were used when the NetBackup catalog was backed up.
		Note: If the NetBackup PBX is running in secure mode, please add the web service user as authorized user in PBX. More information about determining PBX mode and how to correctly add users is available.
		http://www.veritas.com/docs/000115774
		By default, the UNIX installation script attempts to associate the web server with user account `nbwebsvc` and group account `nbwebgrp`. You can override these default values with the NetBackup installation answer file. You must populate the NetBackup installation answer file on the target host before you start the UNIX installation script. Populate the NetBackup installation answer file with custom web server account names as shown.
		1 Log in to the server as root.
		2 Open the file /tmp/NBInstallAnswer.conf with your preferred text editor. Create the file if it does not exist.
		3 Override the default web server user account name by adding the line shown:
		`WEBSVC_USER=custom_user_account_name`
		4 Override the default web server group account name by adding the line shown:
		`WEBSVC_GROUP=custom_group_account_name`
		5 Save and close the file.

Installation and upgrade requirements for Windows and Windows clusters

Table A-7 describes the requirements to prepare your Windows systems for NetBackup installation. Use this table as a checklist to address each item.

For the most up-to-date information about installation requirements, Veritas recommends use of the SORT website. More information about SORT is available.

See "About Veritas Services and Operations Readiness Tools" on page 16.

Table A-7   NetBackup installation and upgrade requirements for Windows and Windows clusters

Check	Requirement	Details
	Operating system	■ Make sure that you have applied the most current operating system patches and updates. If you are not certain that your operating system is current, contact your operating system vendor and request the latest patches and upgrades. ■ For a complete list of compatible Windows operating systems, refer to the *Software Compatibility List (SCL)* at the following website: http://www.netbackup.com/compatibility
	Memory	■ Master servers in a production environment with several database agents enabled should have a minimum of 8 GB of memory each. ■ Media servers in a production environment with several database agents enabled should have a minimum of 4 GB of memory each. For additional information about memory requirements, refer to the *NetBackup Backup Planning and Performance Tuning Guide*. http://www.veritas.com/docs/DOC5332

Table A-7   NetBackup installation and upgrade requirements for Windows and Windows clusters *(continued)*

Check	Requirement	Details
	Disk space	■ An NTFS partition. ■ The exact amount of space that is required to accommodate the server software and the NetBackup catalogs depends on the hardware platform. More information about this topic is available. *NetBackup Release Notes for 8.0* http://www.veritas.com/docs/DOC5332 ■ For upgrades, you must have an additional 500 MB of disk space on the drive where Windows is installed. After the upgrade is complete, this additional space is not needed. ■ NetBackup catalogs contain information about your backups that become larger as you use the product. The disk space that the catalogs require depends primarily on the following aspects of your backup configuration: 　■ The number of files that are backed up. 　■ The frequency of your backups. 　■ The amount of time that you set to retain your backup data. ■ Veritas recommends that you have a minimum available disk space of 5% in any Disk Storage Unit volume or file system. **Note:** The value for disk space is for initial installation only. The NetBackup catalog requires considerably more space once the master server is placed in a production environment. For additional information on sizing requirements for the NetBackup catalog, refer to the *NetBackup Backup Planning and Performance Tuning Guide*. http://www.veritas.com/docs/DOC5332
	General requirements	Make sure that you have all of the following items: ■ NetBackup installation DVDs or ESD images ■ Appropriate license keys ■ Administrator account and password for all servers ■ Screen resolution configured for at least 1024x768, 256 colors. **Note:** To install NetBackup on Windows 2008 Server, Windows 2008 R2 Server, Windows 2012 R2, and Windows 2012 UAC-enabled environments, you must log on as the official administrator. Users that are assigned to the Administrators Group and are not the official administrator cannot install NetBackup in UAC-enabled environments. To allow users in the Administrators Group to install NetBackup, disable UAC.

Table A-7   NetBackup installation and upgrade requirements for Windows
                       and Windows clusters *(continued)*

Check	Requirement	Details
	Remote and cluster installations	

Table A-7   NetBackup installation and upgrade requirements for Windows and Windows clusters *(continued)*

Check	Requirement	Details
		In addition to all previously stated installation requirements, the following guidelines apply to remote installations and cluster installations:

- All nodes in the cluster must run the same operating system version, service pack level, and NetBackup version. You cannot mix versions of server operating systems.
- The installation account must have administrator privileges on all remote systems or on all nodes in the cluster.
- The source system (or primary node) must run Windows 2008/2008 R2 Server/Windows 2012/2012 R2.
- The destination PC (or clustered nodes) must have Windows 2008/2008 R2/Windows 2012/2012 R2.
- The Remote Registry service must be started on the remote system.
  Starting with NetBackup 7.5.0.6, the NetBackup installer can enable and start the Remote Registry service on the remote system. If the Remote Registry service is not started, the installation receives the following error message:
  ```
  Attempting to connect to server server_name failed with the
  following error: Unable to connect to the remote system. One
  possible cause for this is the absence of the Remote Registry
  service. Please ensure this service is started on the remote
  host and try again.
  ```
- NetBackup virtual name and IP address
  Have the virtual name and IP address for NetBackup available. You must provide this information during installation.
- Cluster support changes for media servers
  Beginning with NetBackup 7.1, you cannot perform a new installation of a clustered media server. You can, however, upgrade existing 6.x clustered media servers to NetBackup 8.0 and still keep them clustered.
- Windows Server Failover Clusters (WSFC)
  - The shared disk that the NetBackup Group uses must already be configured in the cluster and online on the active node.
  - Install NetBackup from the node with the shared disk (that is, the active node).
  - Computer or host names cannot be longer than 15 characters.
- Cluster server (VCS) clusters
  - For SFW-HA 4.1 and SFW-HA 4.2:
    Make sure that you install the patch from the following website before you install versions 7.x or upgrade from versions 6.x:
    http://entsupport.veritas.com/docs/278307
  - All NetBackup disk resources must be configured in Veritas Enterprise Administrator (VEA) before you install NetBackup.
- Cluster node device configuration and upgrades

Table A-7   NetBackup installation and upgrade requirements for Windows and Windows clusters *(continued)*

Check	Requirement	Details
		When you upgrade clusters, the `ltid` and the robotic daemons retrieve the device configuration for a particular cluster node from the EMM database. The cluster node name (provided by `gethostname`) stores or retrieves the device configuration in the EMM database. The cluster node name is used when any updates are made to the device configuration, including when `ltid` updates the drive status. The cluster node name is only used to indicate where a device is connected. The NetBackup virtual name is employed for other uses, such as the robot control host.
		More information about cluster requirements is available.
		Veritas NetBackup Clustered Master Server Administrator's Guide
		http://www.veritas.com/docs/DOC5332
	Remote Administration Console host names	You must provide the names of the Remote Administration Console hosts during master server installation.
	NetBackup communication	Make sure that your network configuration allows all servers and clients to recognize and communicate with one another.
		Generally, if you can reach the clients from a server by using the ping command, the setup works with NetBackup.
		■ NetBackup services and port numbers must be the same across the network.
		■ Veritas suggests that you use the default port settings for NetBackup services and Internet service ports. If you modify the port numbers, they must be the same for all master servers, media servers, and clients. The port entries are in the following file: `%SYSTEMROOT%\system32\drivers\etc\services`. To change the default settings, you must perform a custom installation of NetBackup or manually edit the `services` file.
	CIFS-mounted file systems	Veritas does not support installation of NetBackup in a CIFS-mounted directory. File locking in CIFS-mounted file systems can be unreliable.
	Storage devices	Devices such as robots and standalone tape drives must be installed according to the manufacturers' instructions and recognized by the Windows software.
	Server names	When you are prompted for server names, always enter the appropriate host names. Do not enter IP addresses.

Table A-7   NetBackup installation and upgrade requirements for Windows
and Windows clusters *(continued)*

Check	Requirement	Details
	Mixed versions	Make sure to install NetBackup servers with a release level that is at least equal to the latest client version that you plan to use. Earlier versions of server software can encounter problems with later versions of client software. See "About compatibility between NetBackup versions" on page 108.
	Installations on Windows 2008/2008 R2 Server Core, 2012/2012 R2 Server Core	You can only install NetBackup on these computers with the silent installation method. See "Performing silent upgrades on Windows systems" on page 65.
	Other backup software	Remove any other vendor's backup software currently configured on your system. The backup software of another vendor can negatively affect how NetBackup installs and functions.
	Web Services	Beginning with NetBackup 8.0, the NetBackup master server includes a configured Tomcat web server to support critical backup operations. This web server operates under user account elements with limited privileges. These user account elements must be available on each master server (or each node of a clustered master server). More information is available: http://www.veritas.com/docs/000081350 **Note:** Veritas recommends that you save the details of the user account that you use for the NetBackup Web Services. A master server recovery requires the same NetBackup Web Services user account and credentials that were used when the NetBackup catalog was backed up. **Note:** If the NetBackup PBX is running in secure mode, please add the web service user as authorized user in PBX. More information about determining PBX mode and how to correctly add users is available. http://www.veritas.com/docs/000115774

See "Installation and upgrade requirements for UNIX and Linux" on page 108.

Requirements for Windows cluster installations and upgrades

In addition to the normal server requirements, NetBackup cluster installations require special considerations.

The following describes the guidelines for NetBackup cluster installations and upgrades on Windows systems:

Table A-8   Windows cluster requirements for installation and upgrade

Item	Requirement
Server operating system	The source and the destination systems must run Windows 2008, 2008 R2, 2012, or 2012 R2 Server.
Privileges	To perform clustered installations, you must have administrator privileges on all of the remote nodes in the cluster. Veritas recommends that you keep a record of all nodes in the cluster and what software exists on each node.
NetBackup virtual name and IP address	Have the virtual name and IP address for NetBackup available. You must provide this information during installation.
Operating system on nodes	All clustered nodes must use the same operating system version, service pack level, and NetBackup version. You cannot run mixed server versions in a clustered environment.
Cluster support changes for media servers	Beginning with NetBackup 7.1, you cannot perform a new installation of a clustered media server. You can, however, upgrade existing 6.x clustered media servers to NetBackup 8.0 and still keep them clustered.
Windows Server Failover Clusters (WSFC)	■ The shared disk that the NetBackup Group uses must already be configured in the cluster and online on the active node. ■ Install NetBackup from the node with the shared disk (that is, the active node). ■ Computer or host names cannot be longer than 15 characters.
Cluster Server (VCS) clusters	■ For SFW-HA 4.1 and SFW-HA 4.2: Make sure that you install the patch from the following website before you install versions 7.x or upgrade from versions 6.x: http://entsupport.veritas.com/docs/278307 ■ All NetBackup disk resources must be configured in Veritas Enterprise Administrator (VEA) before you install NetBackup.

Table A-8   Windows cluster requirements for installation and upgrade
                  (continued)

Item	Requirement
Cluster node device configuration and upgrades	When you upgrade clusters, the ltid and the robotic daemons retrieve the device configuration for a particular cluster node from the EMM database. The cluster node name (provided by gethostname) stores or retrieves the device configuration in the EMM database. The cluster node name is used when any updates are made to the device configuration, including when ltid updates the drive status. The cluster node name is only used to indicate where a device is connected. The NetBackup virtual name is employed for other uses, such as the robot control host.

Upgrading clients after servers are upgraded

The update_clients installation script lets you push client software to clients. It does not let you push client software to a remote client that is also a NetBackup media or master server. You cannot push software this way because the server software and client binaries must be of the same version on a single host.

The update_clients installation script can determine the full client list that is configured on the server. When it is run without any parameters, it attempts to update all clients (as determined by /usr/openv/netbackup/bin/admincmd/bpplclients). If you do not want to upgrade all clients, you can specify a subset of clients. Use the hardware type and operating system parameters or use the -ClientList parameter.

You can run update_clients from a media server. The -ClientList parameter is required in this situation. The script lets you maintain a media server and a set of clients at an earlier release level than the master server. Doing so requires the informed use of the update_clients -ClientList command on a master server and a media server to avoid unwanted client upgrades.

For clustered environments, you can push client software only from the active node.

During a client upgrade, the new client files are written to a directory in /tmp on the client. This directory must have sufficient space to temporarily store the new client files to ensure a successful upgrade. If sufficient space is not available, a status message informs you that the upgrade script could not write to the location in the /tmp directory. To resolve this issue, allocate more space to the /tmp directory and perform the upgrade procedure again. The temporary directory is removed when the upgrade is complete.

To upgrade clients after you have upgraded servers

1 Use one of the following methods to start the installation script:

DVD	■ Insert the NetBackup UNIX Clients DVD into the drive. See "About the NetBackup media kit" on page 96. ■ If necessary, mount the DVD. See "Mounting NetBackup software media on UNIX or Linux systems" on page 70. ■ Enter the following command: `cd_directory/install` The *cd_directory* is the path to the directory where you can access the DVD.
ESD images (downloaded files)	■ Navigate to the location where the installation images reside. ■ Enter the following command: `./install`

2 When the following message appears, press **Enter** to continue:

```
Installing NetBackup Client Software.
Do you wish to continue? (y/n) [y]
```

The client binaries represent the operating system versions where the binaries were compiled. The binaries typically function perfectly on later versions of the operating system. For example, HP PA-RISC 11.11 binaries also are used on the HP PA-RISC 11.23 level of the operating system.

3 Select the client type that you want to load and follow the prompts to load that client type. Repeat as necessary until all desired client types have been loaded.

Make sure that you load the software for all of the UNIX client types that you intend to push to from this server. Otherwise, you cannot add these client types to the NetBackup policy configuration.

4 After the installation is complete, unmount the DVD.

5 As a root user on the NetBackup master server, enter the following command to see whether `bprd` is running:

```
/usr/openv/netbackup/bin/bpps
```

If `bprd` is running, stop it with the following command:

```
/usr/openv/netbackup/bin/admincmd/bprdreq -terminate
```

6 Enter the following command to make sure that backups or restores are not in progress:

```
/usr/openv/netbackup/bin/admincmd/bpdbjobs
```

7 Update UNIX client software by running the `update_clients` script. Specify the host names of the individual nodes (not virtual names) in the list of clients.

Use one of the following commands:

If you do not use a `-ClientList` file:	`/usr/openv/netbackup/bin/update_clients`
If you use a `-ClientList` file:	`/usr/openv/netbackup/bin/update_clients -ClientList` *filename*

The `-ClientList` parameter is required on a media server.

For more than 30 clients, you can divide the list into multiple files and run `update_clients` for each file.

To create a client list file, perform the following steps:

- Change to the NetBackup `admincmd` directory, as follows:

  ```
  cd /usr/openv/netbackup/bin/admincmd
  ```

- Use the `bpplclients` command to create a file that contains a list of clients currently configured in the NetBackup database. The options to use on this command differ depending on whether you push from a master server or from a media server, as follows:

If you push from the master server:	`./bpplclients -allunique -noheader > ` *file*
If you push from a media server:	`./bpplclients -allunique -noheader -M \` *m_server_name > file*

The option descriptions are as follows:

m_server_name   Name of the NetBackup master server in this environment.

file   Name of the file to contain the list of unique clients. If no clients have been configured in the NetBackup database, the file is empty.

The `bpplclients` command writes output to `file` in the following format:

```
hardware os client
```

hardware   The hardware name. For example, run the `ls` command in directory `/usr/openv/netbackup/client`.

os   The operating system name. For example, run the `ls` command in directory `/usr/openv/netbackup/client/`*hardware*.

client   The name of the client.

The contents of `file` might look like the following example:

```
Solaris Solaris9 curry
```

- (Optional) Edit `file`.

  Perform this step to change the contents of `file`. Edit `file` to contain only those clients you want to update with NetBackup client software. The host names of the clients must be the clients' individual node names. They cannot be virtual names. The `hostname` command and the `domainname` command return the correct values for the individual node names. The format can be either `hostname` or `hostname.domainname`.

8 The `update_clients` script requests information from you. The following information appears in the script:

```
Starting update_clients script.
There are N clients to upgrade.
Do you want the bp.conf file on the clients updated to list this
server as the master server? (y/n) [y]
```

Type either **y** or **n**.

```
Enter the number of simultaneous updates you wish to take
place. [1 - 30] (default: 15):
```

Press **Enter**.

```
The upgrade will likely take Y to Z minutes.
Do you want to upgrade clients now? (y/n) [y]
```

Type either **y** or **n**.

9 After all servers and clients are updated, start the `bprd` daemon as the root user on the master server by entering the following command:

```
/usr/openv/netbackup/bin/initbprd
```

Install and upgrade of the Linux client binaries with standard RPM tools

You can now install and upgrade NetBackup Linux clients with a standard RPM installer. This change does not include those clients that use the Debian package. You can use either your preferred installer method (`rpm`, `yum`, etc.) or the NetBackup install script. A successful installation or upgrade is recorded in the `/usr/openv/pack/install.history` file.

Converting from Symantec RPM packages to Veritas RPM packages

Because of package name changes, `rpm -U` does not work to upgrade Linux clients from NetBackup 7.7.2 and earlier to NetBackup 7.7.3 and later. You have two options to correctly upgrade your client and convert to the Veritas RPM packages.

■ Remove the old `SYMC*` RPM packages with the command shown. This process preserves your NetBackup client configuration.

```
rpm -e SYMCnbjava
rpm -e SYMCpddea
```

```
rpm -e SYMCnbclt
rpm -e SYMCnbjre
```

Then upgrade to the new Veritas RPM packages using the RPM installer of your choice. More information is available.

See "To install or upgrade the Linux client binaries using standard RPM tools:" on page 125.

- Alternatively, you can use the NetBackup installer to upgrade the client to the new Veritas RPM packages.

Both of these upgrade options result in the same outcome. Once you have successfully upgraded to the Veritas RPM packages, you can perform future upgrades with `rpm -U` or the RPM installer of your choice.

To install or upgrade the Linux client binaries using standard RPM tools:

1 Please create the NetBackup installation answer file (`NBInstallAnswer.conf`) in the client `/tmp` directory.

2 Populate `NBInstallAnswer.conf` with the following information:

```
SERVER=master_server_name
CLIENT_NAME=client_name
```

Example:

```
SERVER=master_01
CLIENT_NAME=client_101
```

Additionally, you can add either of the following options to the `NBInstallAnswer.conf` file:

- `CLIENT_NAME=XLOCALHOSTX`
  This option allows the local host to provide the client name. If you specify this option, you can use the same answer file on all clients within a single master server domain.

- `SERVICES=no`
  This option tells NetBackup not to start the NetBackup services after the installation or upgrade. This option lets you perform additional configuration after the install or upgrade before you start the services on the NetBackup client.

3 Extract the required client RPM files from the `CLIENTS2` package and copy them to the client computer.

- Download the `CLIENTS2` package to a system with sufficient space.

- Extract the contents from the `CLIENTS2` file.

Example:

```
tar xzvf NetBackup_7.7.3_CLIENTS2.tar.gz
```

■ Change to the directory for your desired operating system.
Example:

```
CLIENTS2/NBClients/anb/Clients/usr/openv/netbackup/client/
Linux/RedHat2.6.18/
```

■ Copy the `.rpm` files that are shown to the client computer.

```
VRTSnbpck.rpm
VRTSpbx.rpm
VRTSnbclt.rpm
VRTSnbjre.rpm
VRTSnbjava.rpm
VRTSpddea.rpm
VRTSnbcfg.rpm
```

Note: The NetBackup Java Console RPM, `VRTSnbjava.rpm`, is optional. You may not want to install the NetBackup Java Console on every client in your environment.

Note: Be aware there is no `VRTSpddea.rpm` for the **z/Architecture** client.

---

4 Install the `.rpm` files in the order that is shown with the command shown:

```
rpm -U VRTSnbpck.rpm
rpm -U VRTSpbx.rpm
rpm -U VRTSnbclt.rpm
rpm -U VRTSnbjre.rpm
rpm -U VRTSnbjava.rpm
rpm -U VRTSpddea.rpm
rpm -U VRTSnbcfg.rpm
```

5 (Conditional) If you do not have the answer file in place, you receive the following message:

```
You are doing a silent install, with no answer file. The services
will not be started on this client. Please run
/usr/openv/netbackup/bin/private/nb_init_cfg to configure
NetBackup.
```

Change to the `/usr/openv/netbackup/bin/private` directory and run the `nb_init_cfg` command to get the appropriate prompts. You can also manually configure the `bp.conf` file.

Customers who use the NetBackup installation script for their Linux clients only see a single change to the installation behavior. The NetBackup installation script no longer copies the installation package into the `/usr/openv/pack/` directory on the client. A successful installation or upgrade is recorded in the `/usr/openv/pack/install.history` file.

RPM installation error messages, their causes, and their solutions

Installation attempts that vary from the procedure that is shown may generate error messages. Table A-9 shows some of the actions and the message that is generated.

Table A-9   Installation error messages and solutions

Install action	Error message	Solution

User attempts to install the binaries on top of the same version of the binaries.	`# rpm -U VRTSnbpck.rpm`
	
	`package`
	`VRTSnbpck.rpm-`*version-platform* `is`
	`already installed`
		Use the `rpm` command to determine the name of the installed package. Uninstall this package and then retry the operation.

Table A-9   Installation error messages and solutions *(continued)*

Install action	Error message	Solution

User attempts to install the binaries in the incorrect order.	`# rpm -U VRTSnbcfg.rpm`
	
	`error: Failed dependencies:`
	
	`VRTSnbclt >= 7.7.3 is needed by`
	`VRTSnbcfg-`*`version-platform`*
		Refer to the documentation for the correct RPM installation order. More information is available.
		
		See "To install or upgrade the Linux client binaries using standard RPM tools:" on page 125.

User attempts to install an older version of a binary over the top of a newer version of the binary.	`# rpm -U VRTSnbclt.rpm`
	`file`
	`/usr/openv/lib/java/nbvmwaretags.jar`
	`from install of`
	`VRTSnbclt-`*`version-platform`*
	`conflicts with file from package`
	`VRTSnbclt-`*`version-platform`*
		Use the `rpm` command to determine the name of the installed package. Uninstall this package and then retry the operation.

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