VERITAS™

VERITAS NetBackup™ 6.0

Installation Guide

for UNIX and Linux

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VERITAS Software Corporation
350 Ellis Street
Mountain View, CA 94043
USA
Phone 650-527-8000
Fax 650-527-2908
www.veritas.com

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For a list of third-party copyrights, see the *NetBackup Release Notes* appendix.

Contents

Preface

The purpose of this guide is to help NetBackup™ administrators install the software. The NetBackup system administrator is responsible for maintaining backups and disaster recovery plans using NetBackup.

This guide assumes that you have a basic understanding of UNIX system administration, experience with the system on which NetBackup is to be installed, and that you have properly attached and configured your SCSI devices for the operating system.

Caution If a device is not properly configured for the operating system, backups made to that device result in backup failures and/or data loss.

Getting Help

You can find answers to questions and get help from the NetBackup documentation and from the VERITAS technical support web site.

Finding NetBackup Documentation

A list of the entire NetBackup documentation set appears as an appendix in the *NetBackup Release Notes*. All NetBackup documents are included in PDF format on the NetBackup Documentation CD.

For definitions of NetBackup terms, consult the online glossary.

▼ **To access the NetBackup online glossary**

1. In the NetBackup Administration Console, click **Help** > **Help Topics**.
2. Click the **Contents** tab.
3. Click **Glossary of NetBackup Terms**.

Use the scroll function to navigate through the glossary.

Accessing the VERITAS Technical Support Web Site

The address for the VERITAS Technical Support Web site is http://support.veritas.com.

The VERITAS Support Web site lets you do any of the following:

- Obtain updated information about NetBackup, including system requirements, supported platforms, and supported peripherals
- Contact the VERITAS Technical Support staff and post questions to them
- Get the latest patches, upgrades, and utilities
- View the NetBackup Frequently Asked Questions (FAQ) page
- Search the knowledge base for answers to technical support questions
- Receive automatic notice of product updates
- Find out about NetBackup training
- Read current white papers related to NetBackup

From http://support.veritas.com, you can complete various tasks to obtain specific types of support for NetBackup:

1. Subscribe to the VERITAS Email notification service to be informed of software alerts, newly published documentation, Beta programs, and other services.

   a. From the main http://support.veritas.com page, select a product family and a product.

   b. Under Support Resources, click **Email Notifications**.

      Your customer profile ensures you receive the latest VERITAS technical information pertaining to your specific interests.

2. Locate the telephone support directory at http://support.veritas.com by clicking the **Phone Support** icon. A page appears that contains VERITAS support numbers from around the world.

   Note Telephone support for NetBackup is only available with a valid support contract. To contact VERITAS for technical support, dial the appropriate phone number listed on the Technical Support Guide included in the product box and have your product license information ready for quick navigation to the proper support group.

3. Contact technical support using e-mail.

a. From the main http://support.veritas.com page, click the **E-mail Support** icon.

A wizard guides you to do the following:

- Select a language of your preference
- Select a product and a platform
- Provide additional contact and product information, and your message
- Associate your message with an existing technical support case

b. After providing the required information, click **Send Message**.

Contacting VERITAS Licensing

For license information, you can contact us as follows:

- Call 1-800-634-4747 and select option 3
- Fax questions to 1-650-527-0952
- In the Americas, send e-mail to amercustomercare@veritas.com.

  In the Asia and Pacific areas, send email to apaccustomercare@veritas.com.

  In all other areas, send email to internationallicense@veritas.com.

Accessibility Features

NetBackup contains features that make the user interface easier to use by people who are visually impaired and by people who have limited dexterity. Accessibility features include:

- Support for assistive technologies such as screen readers and voice input (Windows servers only)
- Support for keyboard (mouseless) navigation using accelerator keys and mnemonic keys

For details on how NetBackup provides accessibility, refer to the Accessibility Appendix in this document.

Comment on the Documentation

Let us know what you like and dislike about the documentation. Were you able to find the information you needed quickly? Was the information clearly presented? You can report errors and omissions or tell us what you would find useful in future versions of our manuals and online help.

Please include the following information with your comment:

- The title and product version of the manual on which you are commenting
- The topic (if relevant) on which you are commenting
- Your comment
- Your name

Email your comment to NBDocs@veritas.com.

Please only use this address to comment on product documentation. See “Getting Help” in this preface for information on how to contact Technical Support about our software.

We appreciate your feedback.

Before You Begin Installing NetBackup 1

Installing NetBackup servers and clients is the first step in providing an easy-to-use, reliable solution for backing up and restoring data. However, before you start the installation, it is important that you take a few minutes to look through your NetBackup software package and become familiar with its contents.

It is important to read the requirements in this chapter, because they list information about the installation and the hardware, cluster, and upgrade requirements that are new to this release.

Pre-Installation Software Requirements

This release of NetBackup contains many changes and enhancements that have caused the software to become larger. You can read a brief description of these enhancements in the *NetBackup Release Notes*.

Depending on the type of platform you are installing, the growth in the software may require you to mount more CDs than in earlier releases.

Note To determine how much memory you need before you begin installing NetBackup, refer to "NetBackup Server Installation Requirements" on page 5. To view the different binary sizes, refer to "NetBackup Binary Sizes" in the *NetBackup Release Notes*.

NetBackup License Key Requirements

When installing a NetBackup master or media server, you must enter a NetBackup base product license key. Check your release package to make sure that you have license keys for all the NetBackup servers, clients, options, and agents that you requested.

Enter all product license keys on the master server when prompted during the installation.

For more information about license keys, refer to "NetBackup License Keys" on page 75. For detailed information on how to administer NetBackup license keys, refer to the both volumes of the *NetBackup System Administrator's Guide, Volume 1*.

NetBackup Supportability

Note The "Supported Platforms and Operating Systems" table in the *NetBackup Release Notes* provides a Client Selection column that identifies which clients to install with which operating systems.

NetBackup supports mixed versions between master and media servers, enabling you to upgrade NetBackup one server at a time, which minimizes impact on overall system performance.

Caution VERITAS supports upgrading NetBackup 5.0MP4 or later servers to NetBackup 6.0. However, VERITAS does *not* support a server upgrade directly from NetBackup 4.5 GA, FP*x*, or MP*x* to NetBackup 6.0. If you currently have NetBackup 4.5 installed on a server that you want to upgrade, you must perform an intermediate upgrade to NetBackup 5.*x* and then upgrade to NetBackup 6.0.

The following table shows all of the server and client configurations for which VERITAS provides support. VERITAS supports *only* these combinations of servers and clients.

Master Server Version	Media Server Version	Client Version
NetBackup 6.0	6.0	6.0
NetBackup 6.0	6.0	5.0MP4 (or later) or 5.1
NetBackup 6.0	5.0MP4 (or later) or 5.1	5.0MP4 (or later) or 5.1

Servers are able to *pull* and *push* their version information between master and media servers. The version of NetBackup on your server determines whether the version information can be pushed.

- A media server that is upgraded to NetBackup 6.0 uses the `vmd` service to push its version information to all servers in its master server list after start-up is initiated. In addition, every 24 hours an automatic update occurs when servers with this revision push their version information out to the servers again.

- Servers running a version of NetBackup that is earlier than NetBackup 5.0MP4 are not supported in a NetBackup 6.0 environment. If a query times out for a particular server, it is classified as a "pre-5.*x*" version of NetBackup.

Caution Before you upgrade the NetBackup software on a NetBackup master server or Enterprise Media Manager (EMM) server, you *must* back up your NetBackup catalogs and verify that the catalog backup was successful.

Understanding the Contents of Your NetBackup Media Kit

Your VERITAS NetBackup media kit includes multiple CDs. The contents of each CD is shown on the CD label.

The following table lists the title of each CD, along with a brief description of its contents.

NetBackup Software CD Contents

VERITAS CD	Contents
Documentation CD	The documentation CD is provided with each product order and provides documentation for all VERITAS NetBackup Software products included in this release. The documentation on this CD is in PDF format and organized into product groups. You can print selected PDF files using Acrobat Reader. If you insert the documentation CD in a Microsoft Windows system CD drive with Autorun enabled, you see a web page listing the documents that you can select to view. If Autorun is not enabled, navigate to the CD drive to view the CD contents. To use the documentation CD on a UNIX- or Linux-based system, mount the CD according to the instructions in "Mounting the Software CD" on page 13 and either view the documents from the CD or copy the documents from the CD to a local drive for future reference.
Windows Server CDs	
Windows 32-bit Server	Contains the Windows 32-bit server and all Windows clients and databases/add-ons for a Windows 32-bit operating system.

NetBackup Software CD Contents (continued)

VERITAS CD	Contents
Windows IA64-bit Server	Contains the Windows 64-bit server and all Windows clients and databases/add-ons for a Windows IA 64-bit operating system.
UNIX Server CDs	
IBM AIX and HP Tru64 CD	• AIX 5.1 RS/6000, AIX 5.2, or AIX 5.3 server types • Alpha Tru64 5.1b and 5.1b2 server types and ALPHA: OSF1_V5 client types
HP CD	• HP9000 - PA-RISC: HP-UX 11.0, 11.11 and 11.23 • HP - Integrity: HP-UX 11.23
Linux CD	• Intel 32-bit Linux: Red Hat 2.4 client types • IA64 Linux: SuSE 2.4 client types
Sun Solaris	Solaris 8, 9, and 10 server types and corresponding Solaris: Solaris 8, 9, and 10 client types.
UNIX Clients CD	Contains all UNIX clients
UNIX Options CD	Contains all Database agents, Advanced Client, BMR, BMR boot, Encryption, NDMP and Vault
NetBackup Storage Migrator CD	Contains NetBackup Storage Migrator
Common-Component CDs	
Infrastructure Core Services (ICS) for AIX	VxSS Security and PBX Installer for AIX
ICS for HP900 PA-RISC	VxSS Security and PBX Installer for HP-UX
ICS for HP Integrity	VxSS Security and PBX Installer for HP IA-64
ICS for Intel 32-bit Linux	VxSS Security and PBX Installer for Linux
ICS for IA64 Linux	VxSS Security and PBX Installer for Linux IA-64
ICS for Solaris	VxSS Security and PBX Installer for Solaris

NetBackup Software CD Contents (continued)

VERITAS CD	Contents
ICS for Tru64	VxSS Security and PBX Installer for HP Tru64/Alpha
ICS for Windows 32	VxSS Security and PBX Installer for Windows
ICS for Windows IA64	VxSS Security and PBX Installer for Windows IA-64

NetBackup Server Installation Requirements

- VERITAS recommends that you remove any other vendor backup software currently configured on your system before installing this product. Other vendor backup software can negatively affect how NetBackup installs and functions.
- Ensure that you have a server of a supported hardware type running 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*.
- For reasonable performance of the NetBackup-Java interfaces, you need 512 MB of RAM, of which 256 MB are available to the interface program (`jnbSA` or `jbpSA`).
- Ensure that you have all NetBackup CDs.
- Ensure that you have the minimum screen resolution configuration is 1024x768, 256 colors.
- Ensure that you have the root password for the server and appropriate license keys.
- Ensure that the `gzip` and `gunzip` commands are installed on the local system, and that the directories where the commands are installed are part of the root user's `PATH` environment variable setting.
- Ensure that all NetBackup servers recognize and are recognized 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).
- Identify the devices you plan to use in your NetBackup configuration. See the *NetBackup Release Notes* for a list of the robot types supported.
- For some peripherals and platforms, kernel reconfiguration is required. For more details, see the *Media Manager Device Configuration Guide*.
- *For Red Hat Linux*:

  NetBackup requires server networking.

- *For Solaris systems*:

  There are several kernel-tunable parameters, such as Message Queue, Semaphore, and Shared Memory Parameters, that can affect NetBackup performance. Adjusting these values may prevent your system performance from slowing down or even reaching a deadlock state.For additional information such as parameter definitions and examples, refer to the *NetBackup Tuning Guide for UNIX* on the VERITAS Support Web site by entering this tuning guide title in the Search field.

  - Message Queue parameters: It can be necessary to increase the system's message queue resources to avoid having NetBackup daemons hang.

    For example, you may need to make the following changes to the `/etc/system` file:

    ```
    set msgsys:msginfo_msgmap=512
    set msgsys:msginfo_msgmax=8192
    set msgsys:msginfo_msgmnb=65536
    set msgsys:msginfo_msgmni=256
    set msgsys:msginfo_msgssz=16
    set msgsys:msginfo_msgtql=512
    set msgsys:msginfo_msgseg=8192
    ```

    Reboot the system.

  - Semaphore parameters: On UNIX systems, errors may occur on systems that do not have enough semaphores allocated. System requirements vary; thus, no absolute recommendations can be made. However, the following changes to the `/etc/system` file should be sufficient for an average system:

    ```
    set semsys:seminfo_semmap=64
    set semsys:seminfo_semmni=1024
    set semsys:seminfo_semmns=1024
    set semsys:seminfo_semmnu=1024
    set semsys:seminfo_semmsl=300
    set semsys:seminfo_semopm=32
    set semsys:seminfo_semume=64
    ```

    You must reboot the system.

- To avoid potential shared memory problems, the default buffer size for disk backups has been increased to 256K with this release. If you are performing multiple copies of disk and tape, the default buffer size should, at a minimum, equal the tape buffer size.

  If you encounter a `system could not allocate enough shared memory` error, you should refer to your vendor documentation for instructions on how to increase the amount of shared memory on your system. For Solaris platforms, you can make the following changes to the `/etc/system` file to obtain a sufficient amount of memory.

  ```
  set shmsys:shminfo_shmmax=16777216
  set shmsys:shminfo_shmmin=1
  set shmsys:shminfo_shmmni=220
  set shmsys:shminfo_shmseg=100
  ```

  Note that `shminfo_shmmin` must be less than or equal to 100.

  After making these changes, you must reboot using the `boot -r` command.

- *For clustered environments*:
  - Make sure that each node in the cluster where you install NetBackup can run the `rsh` command or its equivalent (on HP-UX, the command is `remsh`). As the root user you need to be able to perform a remote login to each node in the cluster without entering a password. This is only necessary for installation and configuration of the NetBackup server and any NetBackup agents and options. Once installation and configuration is complete, this is no longer required.
  - You must have the cluster frameworks installed, configured, and started before installing NetBackup. Refer to the *NetBackup High Availability System Administrator's Guide* for additional installation prerequisites and installation notes.
  - You must have a virtual name defined using DNS, NIS, or `/etc/hosts`. The IP address is defined at the same time. (The virtual name is a label for the IP address.)
- *For access-controlled environments:*
  - You must install the VERITAS Security Software (VxSS) either before or after you install or upgrade NetBackup on your server. The order does not matter, however it is important that you install this software before you use NetBackup, to benefit from an access controlled environment.
  - The Authorization broker must reside on the master server.

Installation Notes

- *NetBackup Enterprise only:* If you are not adding any NetBackup media servers, ignore all references to them.
- Allow about 30 minutes to install the server software. Additional time is required to configure the product for your environment.
- On the NetBackup server, the installation directory contains the software and the NetBackup catalog, and these can become quite large.

  If space is an issue, consider installing NetBackup on an alternate file system. The installation allows you to select an alternate install location, and creates the appropriate link from `/usr/openv`.
- Because the product uses file locking, VERITAS recommends that you not install NetBackup in an NFS mounted directory. File locking in NFS mounted file systems can be unreliable.
- *For HP-UX systems*:
  - Install NetBackup on a file system that supports long file names.
  - An error may occur while creating the NetBackup database during the installation process. This error, shown below, can be corrected by increasing the number of semaphores in the HP-UX kernel. For a detailed explanation on how to change HP-UX kernel parameters, refer to TechNote number 243461 on the VERITAS support web site.

    ```
    SQL error (-832) -- Connection error: Insufficient system
    resources - failed to allocate a SYSV semaphore
    ```

- NetBackup 6.0 contains features that are dependent on a new Infrastructure Core Services (ICS) product called VERITAS Private Branch Exchange (PBX).

  PBX helps limit the number of TCP/IP ports used by many new features in NetBackup. In addition, it allows all socket communication to take place while connecting through a single port. The PBX port number is 1556. For more information about PBX and configuring NetBackup ports, refer to the both volumes of the *NetBackup System Administrator's Guide, Volume 1.*

  Because PBX is required for all NetBackup products, its installation is part of the NetBackup installation procedure unless it is already present on the system. When you begin installing NetBackup on a server, the installation procedure determines if a version of PBX is already installed. Whether PBX is installed causes one of the following to happen:

  - If a version of PBX already exists, the installation procedure uses that version of PBX and continues.
  - If PBX does not exist, you see message similar to the following:

    ```
    The following package(s) are missing and must be installed
    before NetBackup can be installed:

    VRTSpbx
    ```

    The missing package(s) are located on the VERITAS Infrastructure Core Services (ICS) CD, which is included in the NetBackup media kit. You need to do the following:

    a. From a different window, unmount/eject the NetBackup Server software installation CD.

    b. Mount the CD that contains the PBX software. Refer to the table "NetBackup Software CD Contents" on page 3 for an exact name of this CD.

    c. From the original window where you began installing NetBackup, enter the CD pathname (the directory where the `installics` script is located).

    d. The NetBackup installation script attempts to install PBX automatically.

NetBackup Server Upgrade Requirements

With the many new features included in NetBackup 6.0, some new upgrade requirements have been put in place to make your transition to this version of NetBackup easier.

- VERITAS only supports server upgrades from NetBackup 5.0MP4 (or later) or 5.1 to this version of NetBackup. NetBackup does not support an upgrade from any pre-NetBackup 5.0MP4 version to NetBackup 6.0. If you currently have a pre-NetBackup 5.0MP4 version installed, you must perform an intermediate upgrade to NetBackup 5.*x* first, and then you can upgrade to NetBackup 6.0.
- After you install the NetBackup server software as a part of an upgrade installation, you must run the command `nbpushdata`. This command moves data from your current database files (a subset of the NetBackup catalog) into a newly created EMM database.

  This final step in the upgrade process is critical to ensure that your NetBackup environment is functional.

The sequence of when and where you run the `nbpushdata` command is extremely important. With earlier releases, VERITAS has always suggested that you upgrade your master servers first, followed by the media servers, the volume database host server(s), and finally the clients. However, this is *not* the recommended order for running `nbpushdata` and populating the EMM database. For more detail on running `nbpushdata` and creating the EMM database when you upgrade, refer to "Populating the NetBackup EMM Database" on page 55.

The following list provides the order in which you must run the `nbpushdata` command in your environment. (You only need to run `nbpushdata -add` once on a particular host.)

1. 5.*x* Global Device Database Host - You must run `nbpushdata -add` on the 5.*x* server that was configured as the Global Device Database Host. This is usually a master server, but a media server as the Global Device Database Host is also a supported configuration.

2. Master servers - There is no particular order in which you must run `nbpushdata -add` on your master servers after you have run it on the server that was configured as the Global Device Database Host.

3. Volume Database Hosts - You must next run `nbpushdata -add` on the server designated as a Volume Database Host. If the Volume Database Host was also the Global Device Database Host, this step does not apply.

4. Media Servers - Any remaining media servers that have been upgraded to NetBackup 6.0. Media servers can be upgraded at a later time.

   If you are leaving any media servers at NetBackup 5.*x*, you must log in to the master server(s) administering those backlevel media servers and run `nbpushdata -modify_5x_hosts`. See "To configure 5.x media servers for compatibility with 6.0 environments" on page 60 for detailed instructions.

After you have upgraded to NetBackup 6.0 and run the `nbpushdata` command, once, you do not need to run it again because all of the appropriate data has been moved into the new EMM database.

The following list shows the version 5.*x* database files that are moved to the EMM database.

- `volmgr/database/globDB`
- `volmgr/database/ltidevs`
- `volmgr/database/robotic_def`
- `volmgr/database/.namespace.chksum` (NDMP)
- `volmgr/database/ruleDB`
- `volmgr/database/poolDB`
- `volmgr/database/volDB`
- `netbackup/db/media/mediaDB`
- `netbackup/db/config/storage_units`
- `netbackup/db/config/stunit_groups`
- `volmgr/vm.conf` entries
  - `DISALLOW_NONNDMP_ON_NDMP_DRIVE`
  - `DO_NOT_EJECT_STANDALONE`
  - `DRIVE_NAME_SEED`
  - `RETURN_UNASSIGNED_MEDIA_TO_SCRATCH_POOL`
  - `SCRATCH_POOL`
  - `SSO_SCAN_ABILITY`
  - `VAULT_CLEAR_MEDIA_DESC`

- `netbackup/bp.conf` on UNIX or the corresponding Windows registry entries
  - `ALLOW_MULTIPLE_RETENTIONS_PER_MEDIA`
  - `DISABLE_STANDALONE_DRIVE_EXTENSIONS`
  - `MEDIA_ID_PREFIX`
  - `MEDIA_REQUEST_DELAY`
  - `MUST_USE_LOCAL_DRIVE`
- Touch files
  - `netbackup/DONT_USE_SLAVE`
  - `netbackup/DRIVE_ERROR_THRESHOLD`
  - `netbackup/MEDIA_ERROR_THRESHOLD`
  - `netbackup/TIME_WINDOW`
  - `volmgr/NO_STANDALONE_UNLOAD`
- If you are concerned that your current installation of NetBackup is corrupt, contact VERITAS Technical Support for assistance.
- You can upgrade to this version of NetBackup only if the NetBackup software that you currently have installed is NetBackup 5.0MP4 or later.

  Note VERITAS supports upgrading NetBackup 5.0MP4 or later servers to NetBackup 6.0. However, VERITAS does *not* support an upgrade directly from NetBackup 4.5 GA, FP*x*, or MP*x* to NetBackup 6.0. If you currently have NetBackup 4.5 installed on a server that you want to upgrade, you must perform an intermediate upgrade to NetBackup 5.*x* and then upgrade to NetBackup 6.0.

- Changing a master server into a media server is not an allowable upgrade. It is considered a downgrade. To make this change, you must first uninstall the earlier version of NetBackup and perform a new installation.
- Make certain that the NetBackup release level on the server is at least equal to that on the clients. Older versions of server software can encounter problems with newer clients.
- Add-ons must be at the same level as the NetBackup client or server on which the add-on is installed.
- *NetBackup Enterprise only*: NetBackup does not support converting an existing non-failover server to a highly available failover NetBackup server.

Installing NetBackup 2

NetBackup includes wizards that make installing and configuring the software easy.

Installing and configuring NetBackup involves the following steps:

1. Mounting the Software CD
2. Installing NetBackup Server Software
3. Installing Alternative Administration Interfaces
4. Installing NetBackup Agents and Options (optional)

Note After you have finished the installation, you can perform basic configuration steps as described in "Initial NetBackup Configuration" on page 101.

Mounting the Software CD

Use the following directions as a guideline for mounting NetBackup CDs. You may need to use other flags or mounting options, which you can determine by working with your hardware vendor.

In the examples in this section, the options and arguments specify the following:

A `-v`, `-t`, or `-F` option specifies the type of file system to mount.

A `-o` option on systems other than IRIX translates files names properly, if required. On IRIX systems, a `-o ro` option specifies that you want to mount the CD as read-only.

A `-r` option specifies that you want to mount the CD for reading.

The *`device_path`* specifies the name of the CD drive.

The *`mount_point`* specifies the directory where you want to mount the CD.

AIX

1. Log in as root.
2. Mount the CD using *either* of the following methods:
   - *Using smitty*:

     `smitty cdrfs`

     OR

     `smitty mountfs`

   - *Manually*:
     - Create the mount point (for example, `mkdir /cdrom`).
     - Run the `mount` command, as follows:

       `mount -v cdrfs -r device_path mount_point`

       For example, the following command mounts the CD manually using `/cdrom` as the mount point and `/dev/cd0` as the device path:

       `mount -v cdrfs -r /dev/cd0 /cdrom`

Alpha Tru64

1. Log in as root.
2. Create the mount point (for example, `mkdir /cdrom`).
3. Mount the CD, as follows:

   `mount -r -t cdfs -o noversion device_path mount_point`

   For example, the following command mounts the CD using `/cdrom` as the mount point and `/dev/disk/cdrom0a` as the device path:

   `mount -r -t cdfs -o noversion /dev/disk/cdrom0a /cdrom`

FreeBSD

1. Log in as root.
2. Create the mount point (for example, `mkdir /cdrom`).

3. Mount the CD, as follows:

   ```
   mount -r -t cd9660 device_path mount_point
   ```

   For example, the following command mounts the CD using `/cdrom` as the mount point and `/dev/acd0c` as the device path:

   ```
   mount -r -t cd9660 /dev/acd0c /cdrom
   ```

HP-UX

Mounting and unmounting the CD on HP-UX differs depending on the version of the operating system you are running.

▼ To mount the CD on HP-UX 11.23 or later operating systems

1. Log in as root.
2. Mount the CD, as follows:

   ```
   mount -F cdfs device_path mount_point
   ```

▼ To unmount the CD on HP-UX 11.23 or later operating systems

3. Unmount the CD, as follows:

   ```
   umount mount_point
   ```

4. Remove the CD from the drive.

▼ To mount the CD on HP-UX operating systems earlier than 11.23

1. Log in as root.
2. Create the mount point (for example, `mkdir /cdrom`).
3. Start the PFS daemons, as follows:

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


4. Mount the CD, as follows:

   ```
   pfs_mount -o xlat=unix device_path mount_point
   ```

   To find the device path, you can run `ioscan -fn`.

   For example, the following command mounts the CD using `/cdrom` as the mount point and `/dev/rdsk/c3t2d0` as the device path:

   ```
   pfs_mount -o xlat=unix /dev/rdsk/c3t2d0 /cdrom
   ```

▼ **To unmount the CD on HP-UX operating systems earlier than 11.23**

1. Unmount the CD, as follows:

   ```
   pfs_umount mount_point
   ```

   For example, the following command unmounts a CD that used `/cdrom` as the mount point:

   ```
   pfs_umount /cdrom
   ```

2. Stop the following processes using the `kill` command:

   ```
   pfs_mountd
   pfsd
   pfs_mountd.rpc
   pfsd.rpc
   ```

IRIX

1. Log in as root.
2. You can use the `mediad` command to auto-mount the CD.
3. If `mediad` does not work, perform the following steps:

   a. Create the mount point (for example, `mkdir /cdrom`).

   b. Mount the CD, as follows:

      ```
      mount -o ro -t iso9660 device_path mount_point
      ```

      You can determine the *device_path* by running a hardware inventory using the `hinv` command.

      For example, the following command mounts the CD using `/cdrom` as the mount point and `/dev/rdsk/dks0d6vol` as the device path:

      ```
      mount -o ro -t iso9660 /dev/rdsk/dks0d6vol /cdrom
      ```

Linux

1. Log in as root.
2. Create the mount point (for example, `mkdir /cdrom`).
3. Mount the CD, as follows:

   `mount device_path mount_point`

   For example, the following command mounts the CD using `/cdrom` as the mount point and `/dev/cdrom` as the device path:

   ```
   mount /dev/cdrom /cdrom
   ```

Installing NetBackup Server Software

Before running the NetBackup installation script, first review "What Does the Installation Script Do?" below and "NetBackup Server Installation Requirements" on page 5. If you are performing an upgrade, refer to "Performing an Upgrade Installation" on page 33.

Caution Before installing NetBackup, make sure you have the most current operating system patches and updates applied to your system. If you are not certain of your operating system level, contact your vendor and request the latest patches and upgrades.

What Does the Installation Script Do?

In addition to installing NetBackup on the server, the installation script does the following:

- Places the name of the host in the `/usr/openv/netbackup/bp.conf` file on the server.

  For clustered environments:

  The script places the virtual host name in the `/usr/openv/netbackup/bp.conf` file on the server.

- Adds entries to the `/etc/services` file for NetBackup and Media Manager services (for example, robotic daemons). The `/etc/services` file contains UNIX system information.
- Checks to see if your server is running Network Information System (NIS). NIS is the UNIX directory service utility. If it is running, you are instructed to add entries to your NIS services map.

- Adds automatic startup and shutdown scripts to the appropriate directories on the various supported platforms.

  Note These scripts are removed in clustered environments.

- Adds entries to the following server file or directory to facilitate networking:

  `/etc/inetd.conf` file

  OR

  `/etc/xinetd.d` directory

  Entries are added for `bpcd`, `vnetd`, `vopied`, and `bpjava-msvc`. After they are added, the script signals `inetd` (or `xinetd`), causing it to read the updated file.

  Note Before you install or use NetBackup on a Linux (Red Hat/SuSE) client, verify that the `inetd` (or `xinetd`) service is started on that machine. This ensures proper communication between the NetBackup master server and the Linux client.

  Note *For Solaris 10*: The `inetd.conf` entries are also converted into `smf` service manifests and imported into the `smf` repository via the `inetconv` command.

- *For Solaris systems*:

  The installation procedure prompts you for the name of an alternate root path. An alternate boot environment lets you install NetBackup on a different server.

  For example, suppose that Host B's `root`, `usr`, and `var` file systems are mounted on Host A as `/alt`, `/alt/usr`, and `/alt/var`. You can, when logged in to Host A, specify `/alt` as the alternate root environment and install NetBackup on Host B. This feature applies to NetBackup server only, and not add-ons, clients, or database agents.

Installing NetBackup Server

Note After installing a NetBackup master or media server, you must enter a NetBackup product license key. On the master server, you must also enter license keys for any additional NetBackup product options or agents used on the server or its clients.

▼ To install NetBackup server software

1. Ensure that you have license keys for all the NetBackup servers, number of clients, options, and agents that you ordered.

   For more information on administering NetBackup licenses, see the *NetBackup System Administration Guide, Volume I.*

Note After making and saving any license key updates (including adding and deleting license keys) in the NetBackup-Java Administration Console, you must restart the console.

Note Installing the EMM Server on a media server is a supported configuration, although it is not recommended. See for steps to follow for such a configuration.

2. Log in to the server as root.

3. Insert the appropriate NetBackup CD in the drive and mount it, if necessary.

   Note For instructions on mounting the CD on your operating system, refer to the appropriate section of "Mounting the Software CD" on page 13. For information on CD contents and exact names, refer to the table "NetBackup Software CD Contents" on page 3.

4. Run the installation script, which installs both Media Manager and NetBackup server software:

   ```
   cd_directory/install
   ```

   The *cd_directory* is the path to the directory where you can access the CD.

   Note *For media servers*: The EMM server must be running when you install media servers.

   Note *For clustered environments*: During the installation, enter the *virtual* name for the NetBackup server and not the actual local host name.

5. *The following step applies only if you do* **not** *have VERITAS Private Branch Exchange (PBX) currently installed on your system.*

   NetBackup 6.0 contains features that are dependent on a new Infrastructure Core Services (ICS) product called VERITAS Private Branch Exchange (PBX).

PBX helps limit the number of TCP/IP ports used by many new features in NetBackup. In addition, it allows all socket communication to take place while connecting through a single port. The PBX port number is 1556. For more information about PBX and configuring NetBackup ports, refer to the *NetBackup System Administration Guide, Volume I.*

Note *For clustered environments*: PBX has a known issue that prevents it from being installed in the cluster using the push installation method you can usually employ with `installics`. To install PBX in a cluster, you must run the `installics` command on every node.

Because PBX is required for all NetBackup products, its installation is part of the NetBackup installation procedure unless it is already present on the system. When you begin installing NetBackup on a server, the NetBackup installation procedure determines if a version of PBX is already installed. Whether PBX is currently installed causes one of the following to happen:

- If a version of PBX already exists, the installation procedure uses that version of PBX and continues.
- If PBX does not exist, you see a message similar to the following:

  ```
  The following package(s) are missing and must be installed
  before NetBackup can be installed:

  VRTSpbx
  ```

  The missing package(s) are located on the VERITAS Infrastructure Core Services (ICS) CD, which is included in the NetBackup media kit.

  a. In a different window, unmount/eject the NetBackup Server software installation CD.

  b. Mount the CD that contains the PBX software.

  c. From the original window where you began installing NetBackup, enter the CD pathname (the directory where the `installics` script is located).

  d. The NetBackup install script attempts to install PBX automatically.

6. Follow the prompts in the installation script.

During the installation, the correct NetBackup client software is automatically installed on the server. To install additional client software on your current server, continue with Steps 7a and 7b.

7. *Complete this step only if you want to install clients.*

   a. Mount the client CD.

      A menu appears that displays the available client types.

   b. Select the client type that you want to install and follow the prompts to install that client type.

   Note For each UNIX client type, the installation script enables you to load the client software onto the server. You can then "push" this client software from the server to the clients.

   (Make sure you load the software for all the UNIX client types you intend to back up onto the server. Otherwise, you cannot add these client types to the NetBackup policy configuration.)

   c. Repeat step 7b as necessary until all your client types have been installed.

   d. Unmount the client CD.

8. *For clustered environments*:

   a. Repeat this installation process on every node that you want run NetBackup. (For a TruCluster cluster, you only have to perform the installation once because `/usr/openv` is shared.)

   b. Run `/usr/openv/netbackup/bin/cluster/cluster_config` on the active node.

Caution When prompted by the `cluster_config` script, you must provide the *same* virtual cluster name that you provided during the installation. This name is also case-sensitive. If applicable, provide the fully qualified name. For example, if you indicate the name "clusternbu.domain.com" during installation, but "clusternbu" or "CLUSTERNBU.DOMAIN.COM" for the `cluster_config` script, the configuration process will fail.

Installing Access Control

To use access control, you must also install the VERITAS Security Services (VxSS) component onto your NetBackup system.

▼ **To install access control**

Note For initial installations, install access control *after* you have successfully installed NetBackup.

1. Install the VERITAS Security Services components on your system.

   The VxSS components reside on an ICS CD. The following table contains the minimum installation requirements as they apply to each NetBackup system where you have successfully installed NetBackup.

NetBackup System	Required VERITAS Security Services (VxSS) Components
NetBackup master server	Authentication client and server components Authorization client and server components
NetBackup media server	Authentication client components Authorization client components
NetBackup client	Authentication client components
NetBackup Remote Administration Console	Authentication client components Authorization client components

   Note If you want to perform cross-platform authentication with Windows platforms, you must install an authentication broker on a Windows system. For instructions on how to install an authentication broker, refer to the *VERITAS Security Services Administrator's Guide*.

2. After you have finished installing NetBackup and the VxSS components, you can configure the access control features. For detailed information on how to configure access control, refer to the *NetBackup System Administration Guide, Volume II*.

Configuring the Window Manager for Java Interface (NetBackup-Java Compatible Platforms)

Always set your window manager so windows become active only when you click inside the windows. Do not enable auto focus (in which windows become active if you move the mouse pointer over them). The NetBackup-Java interfaces do not run properly with auto focus enabled.

CDE (Common Desktop Environment)

The CDE (Common Desktop Environment) window manager is the preferred window manager for NetBackup-Java applications.

▼ **To set up a CDE window manager**

1. On the front panel in the CDE window, click the Style Manager control icon.

   The Style Manager toolbar appears.

2. On the Style Manager toolbar, click the Window control icon.

   The Style Manager - Window dialog box appears.

3. In the Style Manager - Window dialog box, choose **Click In Window To Make Active**.

   Click **OK**.

4. When you see the Restart the Workspace Manager prompt, click **OK**.

Installing Alternative Administration Interfaces

You can install a NetBackup user interface on a different computer. (This is necessary if your server computer has no graphics display capabilities.)

System	Install this user interface
Windows	NetBackup Remote Administration Console or NetBackup-Java Administration Console for Windows
UNIX	NetBackup-Java Administration Console Multiple versions of the NetBackup-Java Administration Console

NetBackup Remote Administration Console for Windows

You can skip this section if you do not want to administer a NetBackup server remotely from a Windows NetBackup client.

The NetBackup Remote Administration Console is a version of NetBackup for Windows that can be used to remotely administer one or more UNIX or Windows NetBackup servers. It provides all of the standard NetBackup Server for Windows interfaces and can be used on a remote server to create backup policies, manage volumes, view status, monitor tape drives, and so on. It cannot be used as a NetBackup master or media server itself—only for the remote administration of other NetBackup UNIX or Windows servers.

Note The NetBackup Remote Administration Console is supported on Windows 2000, Windows XP, and Windows 2003 server. For information about the supported platforms for this NetBackup release, refer to the Supported Platforms and Peripherals chapter in the *NetBackup Release Notes*.

Although the NetBackup Remote Administration Console cannot be used as a master or media server, in order for it to remotely administer a NetBackup server, it must be added to the server list on that server in the same way that other NetBackup servers are added to the server list to give them access to that server.

The NetBackup manuals and online help do not, in most cases, specifically refer to the NetBackup Remote Administration Console because, for all practical purposes, using the NetBackup Server for Windows interfaces on the NetBackup Remote Administration Console is identical to using them locally on the server that is being administered. The server shown in the interface is the name of the server that is being administered rather than a local host name.

▼ To install the NetBackup Remote Administration Console

1. On the computer on which you want to install the NetBackup Remote Administration Console, insert the CD that contains the NetBackup server software for Windows.
   - On Windows systems with Autorun enabled, the installation browser starts automatically.
   - On Windows systems that have Autorun disabled, navigate to the CD drive and run `Launch.exe`.
2. On the initial screen, click **NetBackup Installation**.
3. On the installation screen, click **Install Server Software**.
4. On the Welcome screen, click **Next**.
5. On the License Agreement screen, accept the terms of the license agreement and click **Next**.
6. On the Installation Type screen, select **Install to this computer only** and **Typical**.

   Click **Next**.
7. On the NetBackup License Key and Server Type screen, select **NetBackup Remote Administration Console**. You do not need a license key to install the Remote Administration Console.

8. On the NetBackup System Names screen, provide the name of the master server you want to administer and any other servers that you may want to administer (such as media servers).

Note The name of the NetBackup Remote Administration Console should be in the first entry field. In the **Master Server** field, enter the name of the remote NetBackup you want to administer.

9. On the Ready to Install the Program Screen, click **Install**.

10. After the installation completes, you can either add license keys (click **Add Keys**) or click **Finish**.

    If you left the box checked next to **Launch NetBackup Administration Console now**, the Remote Administration Console appears. If you removed the check, start the console by choosing **Start > Programs > VERITAS NetBackup > NetBackup Administration Console**.

▼ To add the NetBackup Remote Administration Console host to the server list of the remote server

Note On a UNIX system, there are two procedures that you can use to add the host to the server list: you can use the NetBackup Administration Console for UNIX (if your system is Java-compatible) or you can edit the `bp.conf` file. Step 1 describes this process using the NetBackup Administration Console for UNIX and Step 2 describes how to edit the `bp.conf` file.

1. Use the NetBackup Administration Console for UNIX to specify and add the remote server to the server list.

   a. In the left pane of the NetBackup Administration Console for UNIX, select **Host Properties > Master Servers**. The host server appears in the main window.

   b. Right-click the name of the host server in the master servers window in the right pane.

   c. Select **Properties**. The Master Server Properties window appears.

   d. In the Master Server Properties window, select the **Servers** icon from the tree in the left window pane.

   e. In the Servers window, click **Add**.

f. Type the name of the host that is to run the NetBackup Remote Administration Console.

Click **Add**. The name of the host appears in the Additional Servers list.

Click **Close** and **OK**.

If you perform this step, you can proceed to step 3.

2. *For editing the `bp.conf` file only:*

a. Log in to the UNIX master server as root.

b. Edit `/usr/openv/netbackup/bp.conf`.

At the end of the `SERVER =` lines, add the following line:

`SERVER = Remote-Administration-Console-machine-name`

The *Remote-Administration-Console-machine-name* is the name of the machine where the NetBackup Remote Administration Console resides.

3. If you have an existing NetBackup Remote Administration Console installed and you want to add a remote master server to administer, perform the following steps.

a. On the remote NetBackup Windows Server, start the NetBackup Remote Administration Console.

Note For new installations, you can add the masters that you want to administer as additional servers during the installation.

b. In the left pane of the NetBackup Remote Administration Console, select **Host Properties > Master Server**. The host server appears in the main window.

c. Right-click the name of the host server in the master servers window in the right pane.

d. Select **Properties (Read/Write)**. The Master Server Properties window appears.

e. In the Master Server Properties window, click the **Servers** tab.

f. In the **Global Operations** box, in the field labeled **Add to all lists**, type the name of the host that is to run the NetBackup Remote Administration Console. Then click the "+" button. (The name of the host appears in the Additional Servers list.)

Click **OK**.

NetBackup-Java Administration Console

The NetBackup-Java Administration Console can be used to administer one or more UNIX or Windows NetBackup servers. It provides all of the standard NetBackup Server interfaces, and it can be used on a remote NetBackup server to create backup policies, manage volumes, view status, monitor tape drives, and so on.

On Java-capable hosts (servers and clients), the administration console is installed when you install NetBackup on the host. For remote administration of any NetBackup server, specify the server name in the Login dialog.

Installing or Removing Multiple Versions of the NetBackup-Java Administration Console on Windows

A NetBackup environment may contain servers of various NetBackup versions. There are a number of methods to administer servers in a mixed-version environment.

One method is to install a relevant version of the NetBackup-Java Administration Console on a Windows desktop, then use that installation to administer all servers of the same version.

Installation Considerations

There are two things to keep in mind when installing multiple versions of the NetBackup-Java Administration Console in a mixed environment.

During installation:

- Provide a unique string for the host name when asked (pre-6.0 versions).
- Install each Java console version to a different folder.

▼ To install earlier versions of the NetBackup-Java Administration Console

1. The NetBackup-Java Administration Console for the Windows platform is not installed automatically.

   Insert the NetBackup Windows installation CD containing the version of the NetBackup-Java Administration Console you want to install.

2. If you are installing NetBackup 5.0, select **NetBackup Installation** and click **Install Java Administration Console**.

   If you are installing NetBackup 5.1, select **NetBackup Installation** and click **Java Windows Display Console**. Select whether you would like to install the 32-bit or 64-bit console.

3. If a different version of the Java console has already been installed, specify a different folder location. This prevents overwriting the earlier installation (for example, specify `C:\Program Files\VERITAS\nbjava50`).

4. The wizard asks you to enter the name of the host you want to manage. For ease of use, instead of entering a host name, enter a name that reflects the version of the console being installed (for example, **`5.0GA`**).

   After the installation, the host name you enter appears in the following locations:

   - As the default host name in the login screen of the NetBackup-Java Administration Console dialog.

     The descriptive host name displays here only the first time the console is opened. After you change the name to an actual host name in the login dialog, log in to the console, and then exit the console normally, that actual host name becomes the default and appears the next time the console is started.

   - On the VERITAS NetBackup menu (**Start** > **Programs** > **VERITAS NetBackup** > **NetBackup-Java on** ***host_name***).

   - As a desktop shortcut icon.

Notes

- Before installing mixed versions of the NetBackup Administration Console, consider that only the most recently installed version can be patched.
- Only the most recently installed version can be removed using the standard Windows Add/Remove Programs utility. See the following section for information on uninstalling versions installed prior to the most recently installed version.)
- The NetBackup-Java Capabilities Authorization configuration file, `auth.conf`, must always be located in *`install_path`*`\java` (for example, in `C:\Program Files\Veritas\java`). The file must exist there regardless of how many versions of the console are installed or in which directories they are installed.

  The file is only relevant for administering NetBackup on this Windows host, and there are defaults if the file is not present. The defaults are discussed in the *NetBackup System Administrator's Guide, Volume I* in the section on authorizing NetBackup-Java users.

▼ To uninstall earlier versions of the NetBackup-Java Administration Console

1. Remove the folder where the NetBackup-Java Administration Console was installed.

2. Remove the appropriate menu item from the **Start** > **Programs** > **VERITAS NetBackup** menu.

3. Remove any relevant desktop shortcuts.

Administering Backlevel NetBackup Servers

There are five general methods to accomplish backlevel administration tasks in NetBackup 6.0. The methods are listed below, though the ordering does not imply any preference.

Earlier Versions of the NetBackup-Java Administration Console on Supported UNIX Platforms

Use the earlier versions of the NetBackup-Java Administration Console installed on the supported UNIX GUI platforms. The earlier versions available in a release are all of those supported in a mixed version environment with the current release, (all those back to and including the last major release version). In the 6.0 release, the 5.0MP4 (or later) and 5.1 versions of the console are available.

Earlier Versions of the NetBackup-Java Administration Console on Windows Platforms

Use the earlier versions of the NetBackup-Java Administration Console installed on the supported Windows platforms. For details on how to install multiple versions of the NetBackup-Java console, see "Installing or Removing Multiple Versions of the NetBackup-Java Administration Console on Windows" on page 27.

Remote Display-back from UNIX Servers

Use the UNIX remote display-back capabilities for UNIX servers that can run NetBackup-Java, possibly in conjunction with tools such as Exceed or VNC.

Remote Display-back from Windows Servers

Use the NetBackup Administration Console for Windows with the remote display-back capabilities on Windows NetBackup servers with tools like Windows Terminal Services or Remote Desktop.

At the Console of the Backlevel Server

Use the relevant NetBackup-Java Administration Console from the backlevel server's console.

Java Windows Administration Console

The Java Windows Administration Console lets you run the NetBackup Java (UNIX) interfaces on supported Windows platforms. This interface provides the same capabilities as the NetBackup Administration Console for Windows or UNIX.

You can skip this section if you do not want to remotely administer your UNIX NetBackup servers using the Java Windows Administration Console on a Windows platform.

Note You can install the Java Windows Administration Console from the NetBackup CD for Windows.

Note If you are using NetBackup Access Control, the VxSS At client component must be installed on the Windows host before installing the Java Windows Administration Console. This ensures that the Windows Display Console uses the VxSS component correctly.

Installation Requirements

For the computer on which you want to run the Java Windows Administration Console, VERITAS recommends 512 MB of physical memory.

▼ To install the NetBackup-Java Windows Display Console

1. On the system where you are performing the installation, insert the CD that contains NetBackup server software for Windows.
   - On Windows systems with Autorun enabled, the installation starts automatically.
   - On Windows systems that to not have Autorun disabled, navigate to the CD directory and run `Launch.exe`.
2. On the initial screen, select **NetBackup Installation**.
3. On the installation screen, select **Install Java Windows Administration Console**.
4. On the Welcome screen, click **Next**.
5. On the License Agreement screen, accept the agreement and click **Next**.
6. On the NetBackup Installation Type screen, select **Install to this computer only** and **Typical**.
7. On the Ready to Install the Program screen, click **Install**.

8. On the System Validation Complete screen, click **Finish**.

9. You can open the NetBackup-Java Windows Display Console by choosing **Start > Programs > VERITAS NetBackup > NetBackup Java version 6.0**.

Installing NetBackup Agents and Options

After your initial installation is complete, you can install any other NetBackup agents and options (such as NetBackup for Oracle) by following the instructions in the administrator's guide that comes with that product.

Performing an Upgrade Installation 3

This chapter explains how to upgrade UNIX servers (which includes populating the EMM database) and clients to NetBackup 6.0.

Requirements

You should ensure that the NetBackup release level on each server is at least equal to that on the clients. Older versions of server software can encounter problems with newer clients.

Caution Back up your NetBackup databases before upgrading NetBackup software on the master server.

You can upgrade to this version of NetBackup only if you have installed NetBackup 5.0MP4 (or later) or 5.1. If you have an earlier version installed (for example NetBackup 4.5), you cannot upgrade directly to NetBackup 6.0. You must first upgrade to NetBackup 5.*x* and then upgrade.

Note If you have NetBackup 5.0 and earlier clients that are unsupported for NetBackup 6.0, and you encounter problems with using the new features of 6.0, move those earlier clients to a separate policy.

- Review the "NetBackup Server Installation Requirements" on page 5 before upgrading NetBackup. Many of these requirements apply to upgrading NetBackup.
- It is ***critical*** that you populate the Enterprise Media Manager Database ***after*** you have upgraded your master servers. See "Examples of Populating the NetBackup EMM Database" on page 36 for an overview of the new database and the procedure for populating it.
- Ensure that the `gzip` and `gunzip` commands are installed on the local system, and that the directories where the commands are installed are part of the root user's `PATH` environment variable setting.

- *NetBackup Operations Manager (NOM) considerations*.

  NOM is a new product based on a new architecture. It is not an incremental update to any existing VERITAS products. This means that current NetBackup Global Data Manager (GDM) and NetBackup Advanced Reporter (NBAR) installations cannot be upgraded to NOM installations in NetBackup 6.0. There are substantial differences and enhancements in the architecture, design, implementation, data model, and historical data from GDM or NBAR in previous versions of NetBackup.

  Note If you have any pre-NetBackup 6.0 releases installed on your server that have NBAR or GDM, you must uninstall GDM and NBAR from your server completely before you upgrade to NetBackup 6.0.

- *For Solaris systems*:

  The installation procedure prompts you for the name of an alternate root path. An alternate boot environment lets you install NetBackup on a different server.

  For example, if Host B's `root`, `usr`, and `var` file systems are mounted on Host A as `/alt`, `/alt/usr`, and `/alt/var`, you can, when logged in to Host A, specify `/alt` as the alternate root environment and install NetBackup on Host B. This feature applies to NetBackup only, and not add-ons or database agents.

- *For clustered environments*:

  Note Refer to the *NetBackup High Availability System Administrator's Guide* for installation prerequisites and notes.

  - Before you upgrade, you must have the cluster frameworks installed, configured, and started.
  - Cluster environments are only supported with NetBackup Enterprise Server.
  - The name you enter during the upgrade for the NetBackup server is the virtual server name, not the actual local host name.
  - Make sure that each node in the cluster where you install NetBackup can run the `rsh` command or its equivalent (on HP-UX, the command is `remsh`). As the root user you need to be able to perform a remote login to each node in the cluster without entering a password. This is only necessary for installation and configuration of the NetBackup server and any NetBackup agents and options. Once installation and configuration is complete, this is no longer required.
  - The virtual server name must be defined using DNS, NIS, or `/etc/hosts`. The IP address is defined at the same time. (The virtual name is a label for the IP address.)

- The `CLUSTER_NAME` must be exactly the same in each `bp.conf` configuration file. This is required to properly store the device configuration information for each cluster node in the EMM database. If this is not the case, the upgrade may not detect all of the nodes in the cluster.

Upgrading NetBackup on UNIX Servers and Clients

After you insert the appropriate NetBackup CD into your computer, the installation process begins searching to determine if an earlier NetBackup version exists on your system. The presence of an existing version of NetBackup dictates that you are about to perform an upgrade.

The procedures in this section describe how to upgrade NetBackup from previous versions, or from NetBackup Server to NetBackup Enterprise Server. It also describes how this version can handle media servers with different versions of NetBackup running.

Note For this release of NetBackup, you *must* complete two procedures to ensure that you have properly upgraded NetBackup.

You must first upgrade your NetBackup software by performing the same upgrade procedures as you have with previous versions of NetBackup.

Secondly, you must run a new `nbpushdata` command to gather previous NetBackup data and populate the new NetBackup EMM database on your server.

When installing or upgrading the NetBackup software, VERITAS has recommended the following order:

1. Master server
2. Media server
3. NetBackup Remote Administration Consoles
4. NetBackup clients
5. Any NetBackup add-on products

This order is valid in reference to clean installations and when installing the NetBackup server software as part of an upgrade. However, the order in which you run `nbpushdata` and populate the EMM database is ***not*** the same and is quite crucial. See "Examples of Populating the NetBackup EMM Database" on page 36 for an overview of the database and procedures for populating it.

Caution NetBackup processes must be running on the master server and its associated media servers before you upgrade and run the `nbpushdata -add` command. This is true no matter where you are running the command.

The EMM database creation process establishes that it can communicate with any additional servers in your configuration, and it does not include servers in the database if it cannot establish a connection and determine that NetBackup processes are running on the server.

However, you must ensure that *no NetBackup policies are active, no jobs are running, and that media servers do attempt to connect to the master server* until after all upgrades are complete and `nbpushdata` has been run on all servers. You can use the NetBackup Administration Console to deactive all policies and all media servers. Command-line equivalents are also available.

Allowing for Reinstallation of Earlier Versions of NetBackup

If you ever intend to reinstall a previous version of NetBackup after you have performed an upgrade, backups are essential. If you need to reinstall, these backups contain your most recent data.

Note *For clustered environments*: The reinstallation of an earlier version of NetBackup is not supported.

▼ To allow for reinstalling earlier versions of NetBackup

1. Back up all databases (media, volume, configuration, device) and catalogs on the master and remote media servers.
2. Back up all NetBackup patches, scripts, and `bp.conf` entries that are specific to the earlier version of NetBackup.
3. You do not have to upgrade your clients at this time, only the master and remote media servers.

Examples of Populating the NetBackup EMM Database

The `nbpushdata` command enables NetBackup to get copies of the existing database files (a subset of the NetBackup catalogs) from each host and places this data in a new EMM database.

Data is copied to the EMM database ***only*** when `nbpushdata` is run on a server that has been upgraded to NetBackup 6.0. No data is moved to the EMM database from any other server except the server where `nbpushdata` is being run. It is because of these requirements that an upgrade of NetBackup is not complete until you have successfully updated the EMM database.

This section contains various scenarios of NetBackup configurations. These scenarios are only guidelines on how to upgrade NetBackup and run `nbpushdata` in a NetBackup environment. Choose the scenario that closely resembles your configuration, and use it as a guide when you perform the actual procedure outlined in "Upgrading NetBackup Servers" on page 49.

Note You use `nbpushdata` to upgrade an existing supported NetBackup 5.*x* environment that contains a single Global Device Database host. It is *not* a tool for merging multiple NetBackup environments.

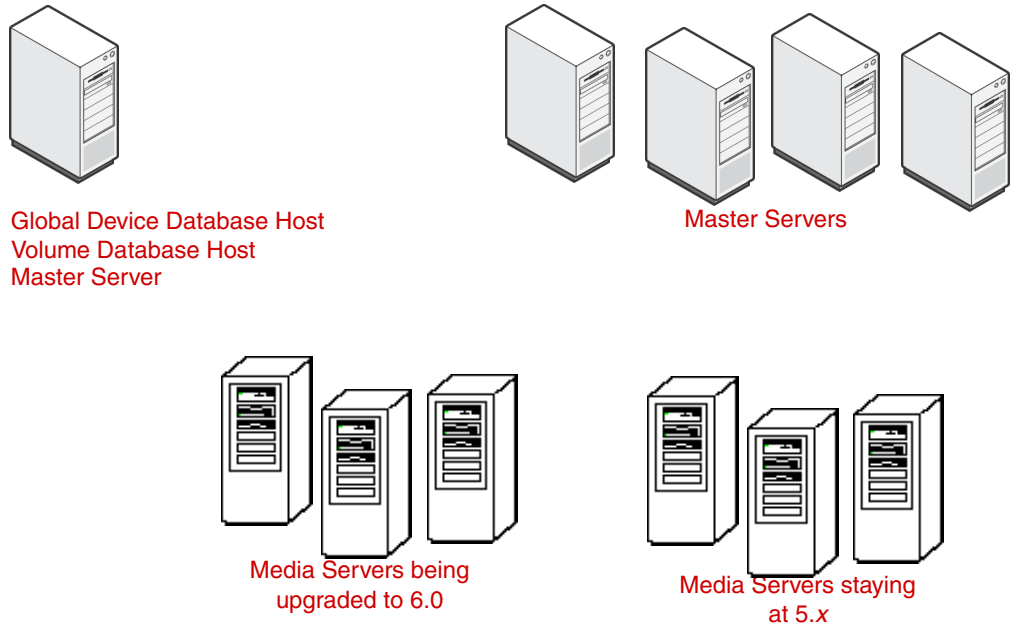
Scenario 1: Global Device Database Host and Volume Database Host on One Master Server

In many environments, a master server also is designated as the NetBackup 5.0MP4 (or later) or 5.1 Global Device Database Host and the Volume Database Host.

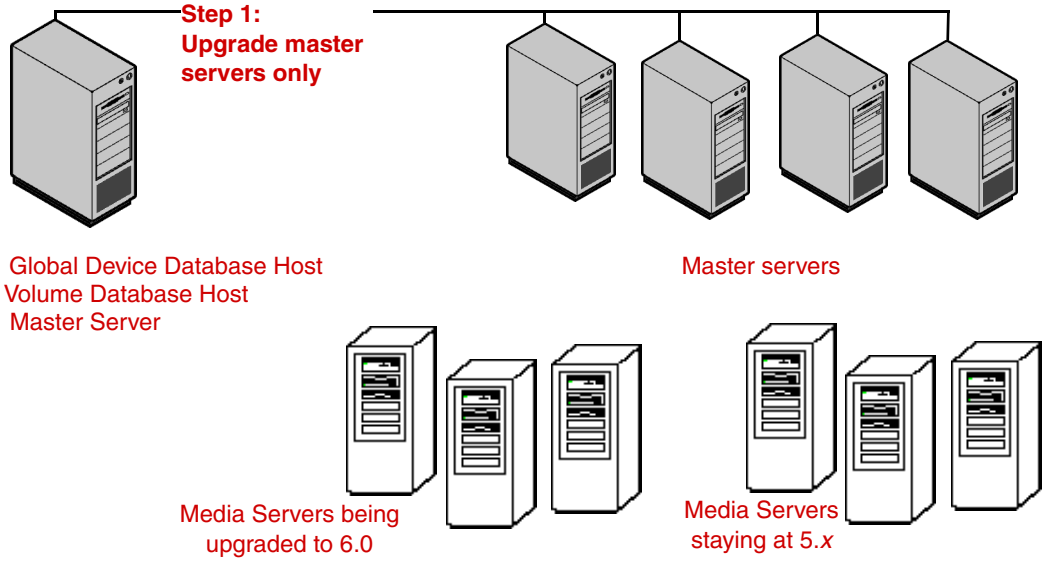
If this is true for you, upgrade your NetBackup software on all of your master servers first, making sure that you do *not* run the `nbpushdata -add` command on any of these servers until you complete the upgrade of *all* the master servers.

After the upgrade of the master servers is complete and `nbpushdata` is run on those servers, you can upgrade your media servers as you like. You can upgrade some of your media servers to NetBackup 6.0 and leave some at version 5.*x*.

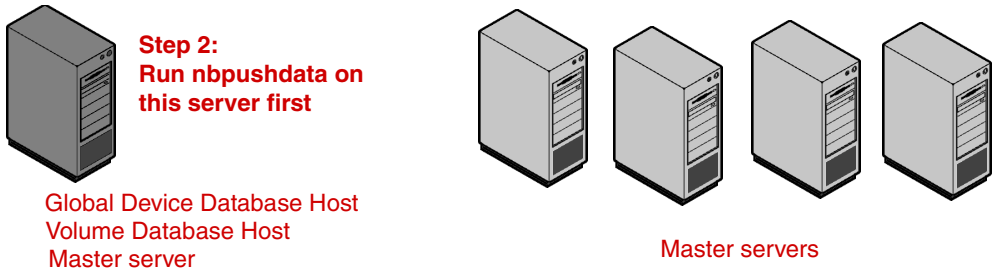
Your environment would look something like the following diagram.



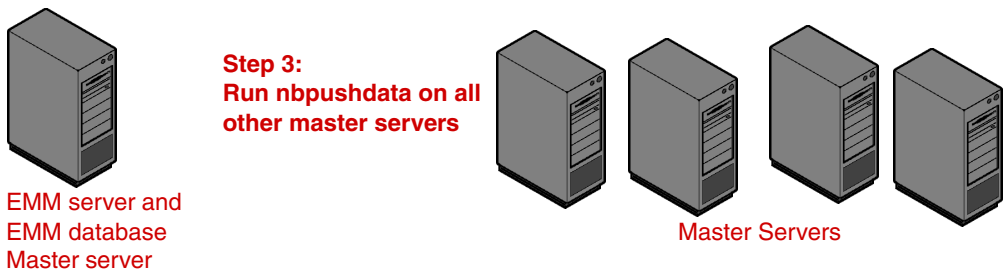
In such an environment, your first step is to upgrade all master servers from 5.0MP4 (or later) or 5.1 to 6.0. Do not upgrade the media servers in your environment at this time.



The next step is to ensure that the NetBackup and Media Manager daemons are running on the master server that is also the Global Device Database Host and the Volume Database Host. Then you run `nbpushdata -add`.

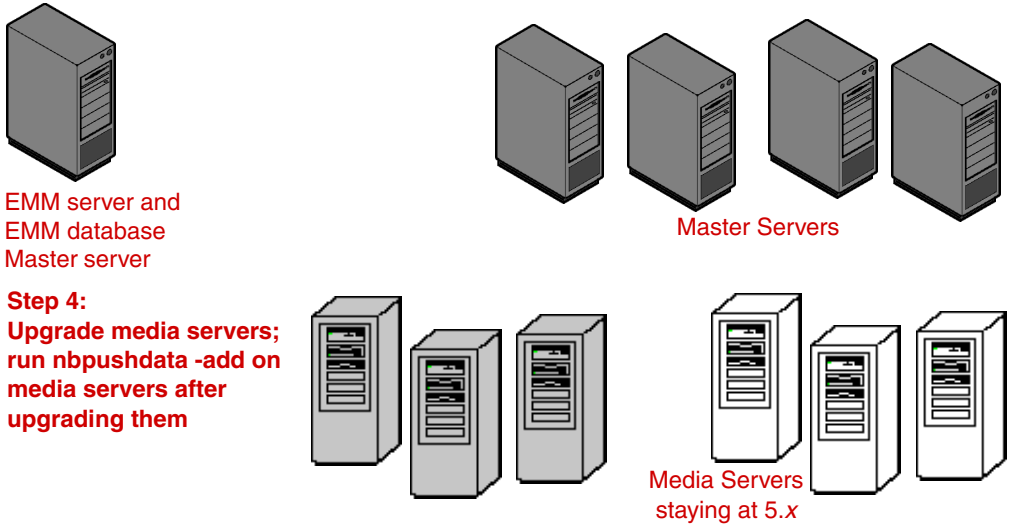


Next you ensure that the NetBackup and Media Manager daemons are running on all the other master servers. Then run `nbpushdata -add` on each server.

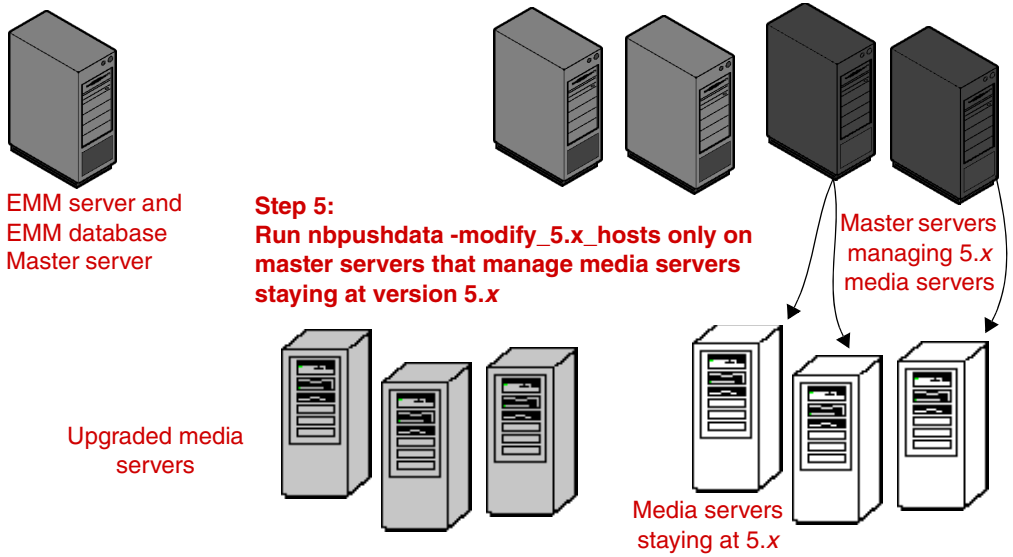


At this point, you can optionally upgrade media servers to NetBackup 6.0. You are not required to upgrade media servers. NetBackup version 5.*x* media servers run with NetBackup 6.0.

If you want to upgrade a 5.*x* media server to NetBackup 6.0, you must first install NetBackup 6.0 server software on the 5.*x* media server. Next, ensure that the Media Manager daemons are running on the media server, and then run the `nbpushdata -add` command on the media server.



For any media server that you wish to leave at the 5.*x* version level, log in to the master server(s) for the media server(s) that are staying at version 5.*x* and run `nbpushdata -modify_5x_hosts`.



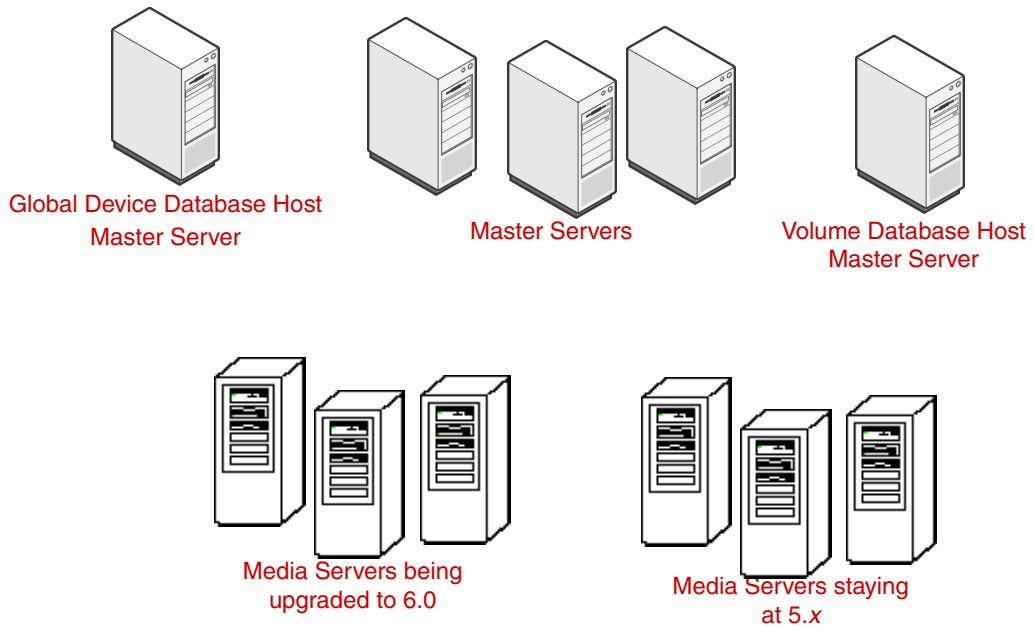
Scenario 2: Global Device Database Host and Volume Database Host on Different Master Servers

In some environments, a master server is designated as the NetBackup 5.0MP4 (or later) or 5.1 Global Device Database Host and a different master server is the Volume Database Host.

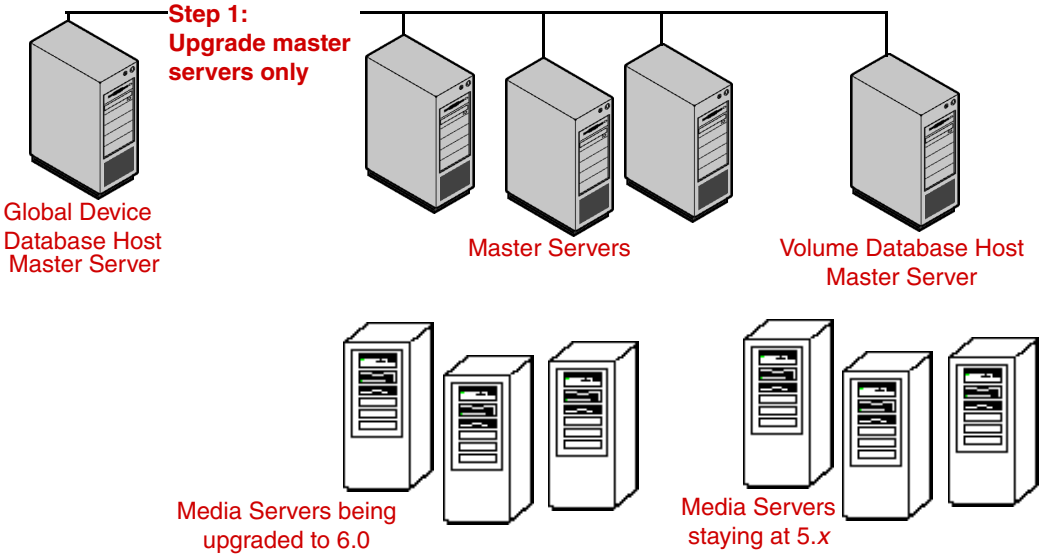
If this is true for you, upgrade your NetBackup software on all of your master servers first, making sure that you do *not* run the `nbpushdata -add` command on any of these servers until you complete the upgrade of *all* the master servers.

After the upgrade of the master servers is complete, you are ready to run the `nbpushdata -add` command on the master server that was designated as the 5.*x* Global Device Database Host. After successfully running `nbpushdata` on this server, you can run `nbpushdata` on the remaining master servers, then on the master server that is designated as the Volume Database Host server, followed by the media servers.

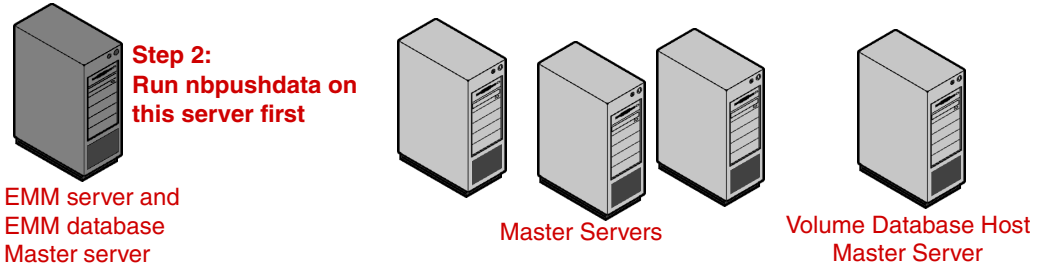
Your environment would look something like the following diagram.



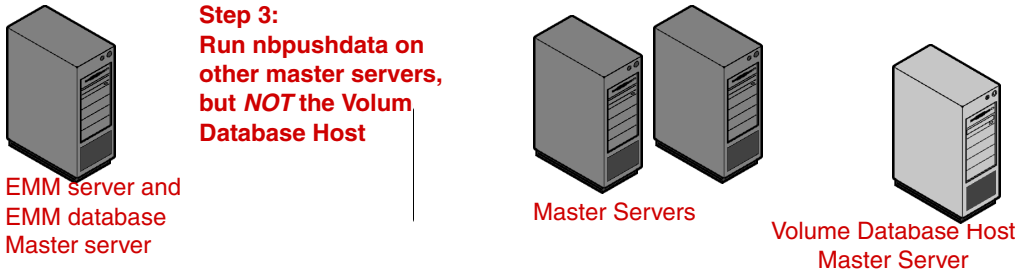
In this environment, the first step is to upgrade all master servers to NetBackup 6.0. Do not upgrade the media servers in your environment at this time.



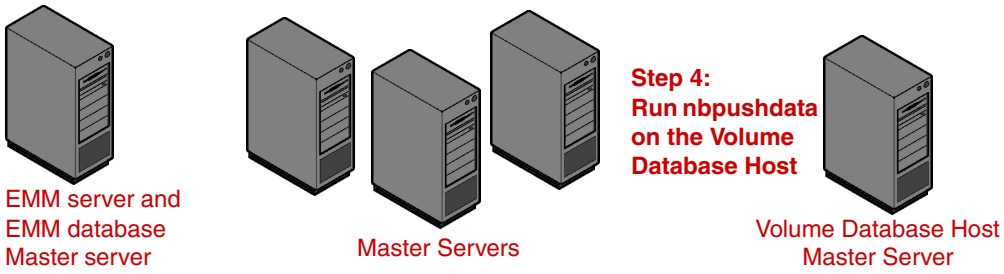
The next step is to ensure that the NetBackup and Media Manager daemons are running on the master server that is also the Global Device Database Host. Then run `nbpushdata -add` on that host.



Next, you should ensure that the NetBackup and Media Manager daemons are running on each master server. Then run `nbpushdata -add` on each master server *except* for the master server that is designated as the Volume Database Host.

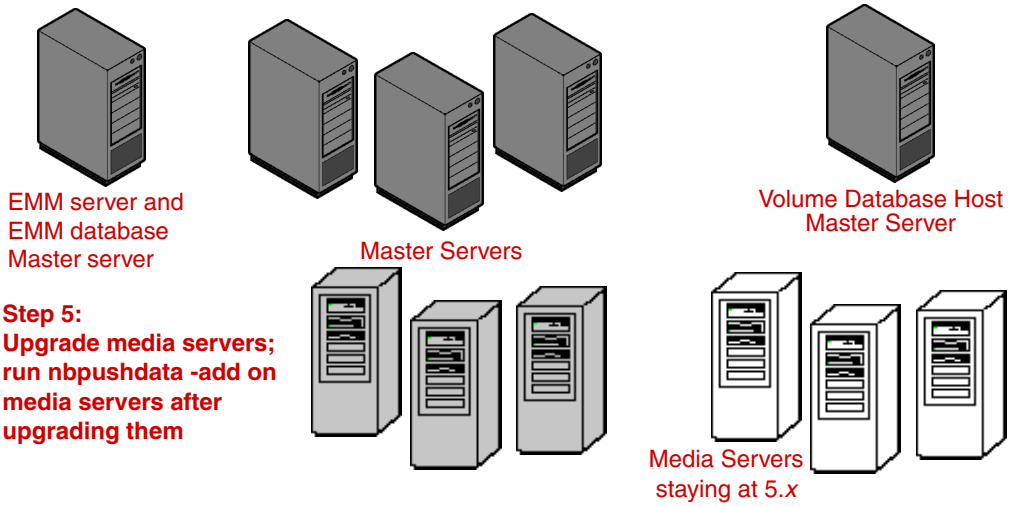


Next, ensure that the NetBackup and Media Manager daemons are running on the master server that is designated as the Volume Database Host. Then run `nbpushdata -add` on that server.

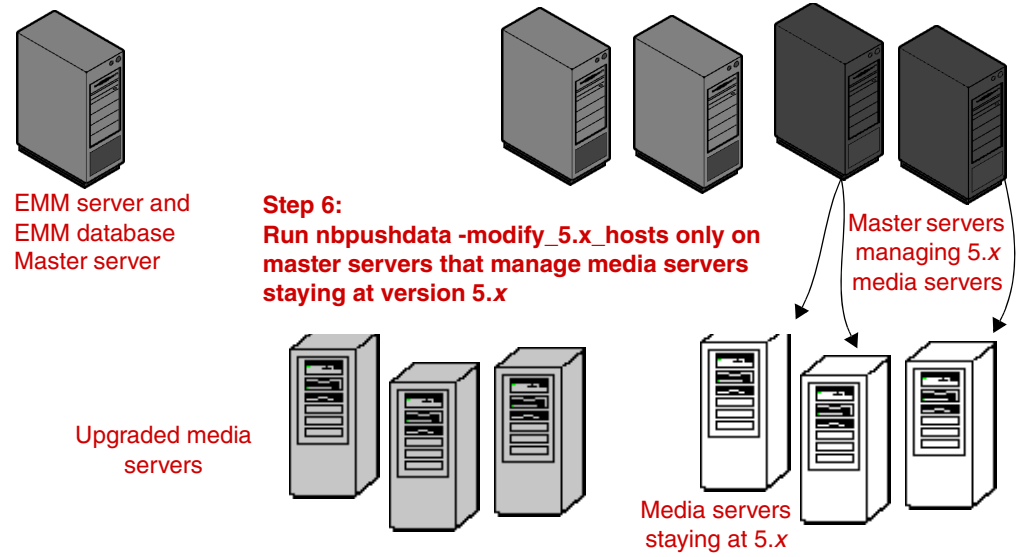


At this point, you can optionally upgrade media servers to NetBackup 6.0. You are not required to upgrade media servers. NetBackup version 5.*x* media servers run with NetBackup 6.0.

If you want to upgrade a 5.*x* media server to NetBackup 6.0, you must first upgrade the media server to NetBackup 6.0. Next, ensure that the Media Manager daemons are running on the media server, and then run the `nbpushdata -add` command on the media server



For any media server that you wish to leave at the 5.0MP4 (or later) or 5.1 version level, log in to the master server(s) for the media server(s) staying at version 5.*x* and run `nbpushdata -modify_5x_hosts`.



Scenario 3: Global Device Database Host Is on a Media Server

In some environments, a *media* server is designated as the NetBackup 5.0MP4 (or later) or 5.1 Global Device Database Host and a different master server is the Volume Database Host.

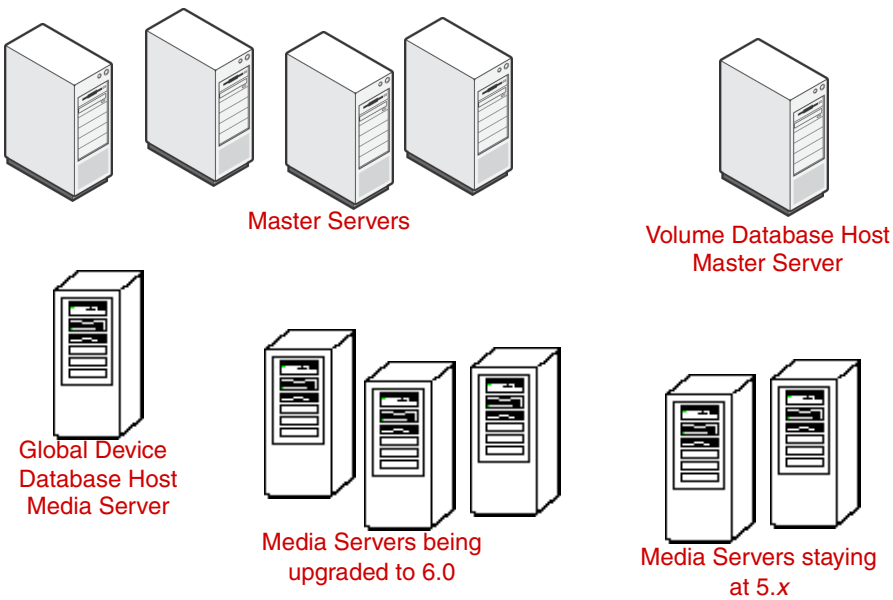
If this is true for you, the order in which you upgrade NetBackup and then run the `nbpushdata` command becomes more complicated.

First upgrade NetBackup on all of your master servers, making sure that you do *not* run the `nbpushdata -add` command on any of these servers.

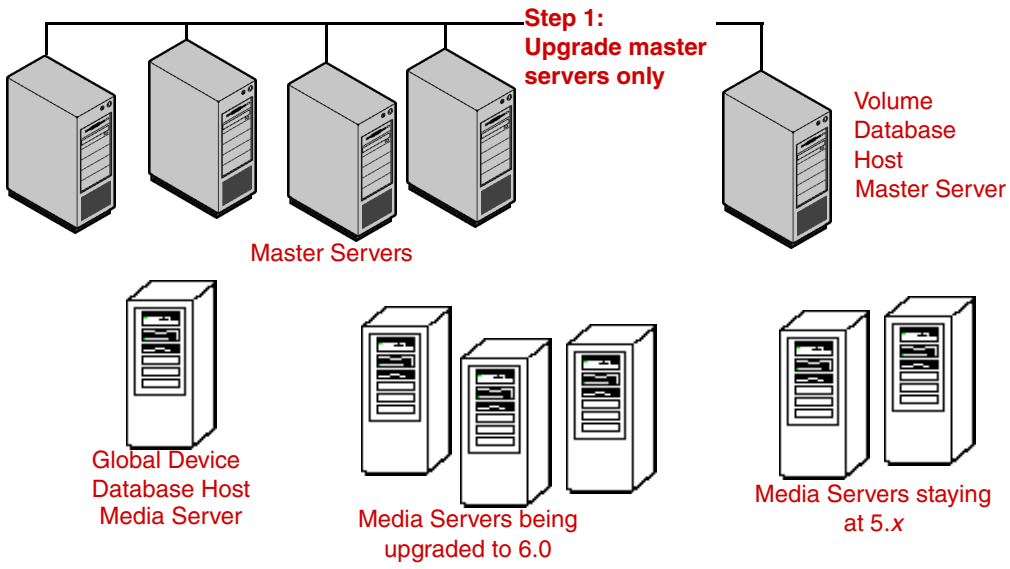
After the upgrade of the master servers is complete, upgrade the media server that is the Global Device Database Host. Next, you run the `nbpushdata -add` command on that media server. After successfully running `nbpushdata -add` on that media server, run it on the remaining master servers, making sure that you run this command *last* on the master server that is designated as the Volume Database Host.

After you have populated the EMM database with the server information from the Global Device Database Host, the master servers, and the Volume Database Host, you can upgrade your remaining media servers as you like. You might upgrade some of your media servers to NetBackup 6.0 and leave some at version 5.*x*.

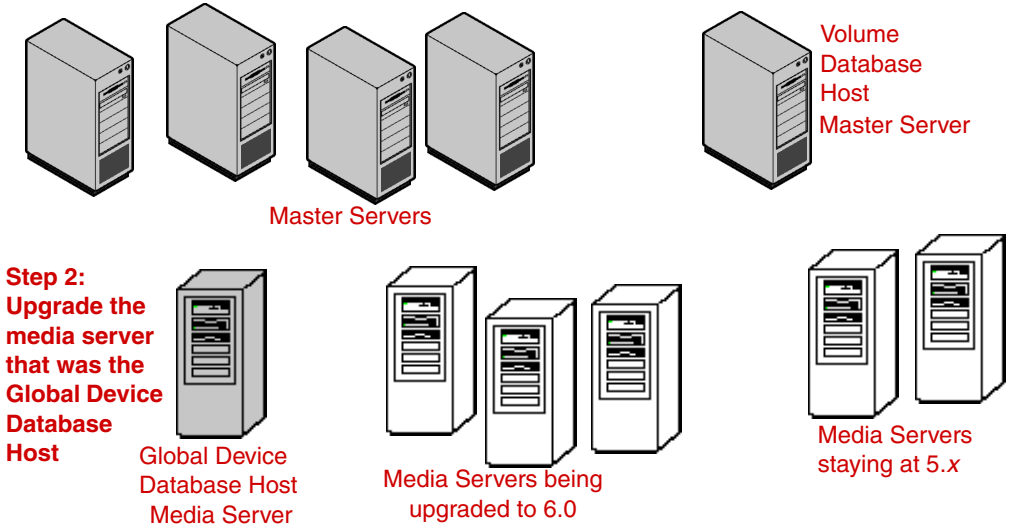
Your environment would look something like the following diagram.



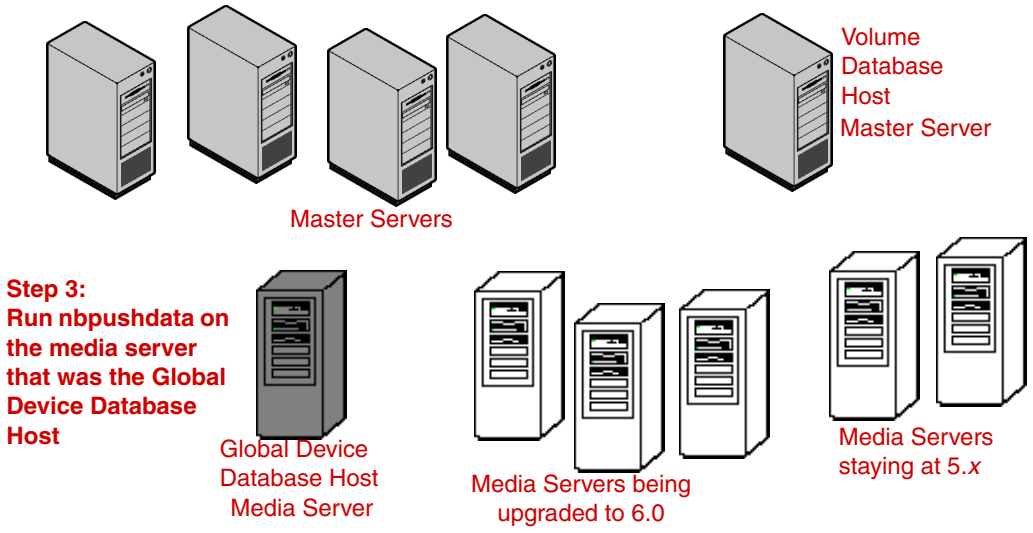
In this environment, the first step is to upgrade all master servers from 5.x to 6.0. The order in which you upgrade master servers is not significant. Do not upgrade any of the media servers, or run `nbpushdata` on any servers in your environment at this time.



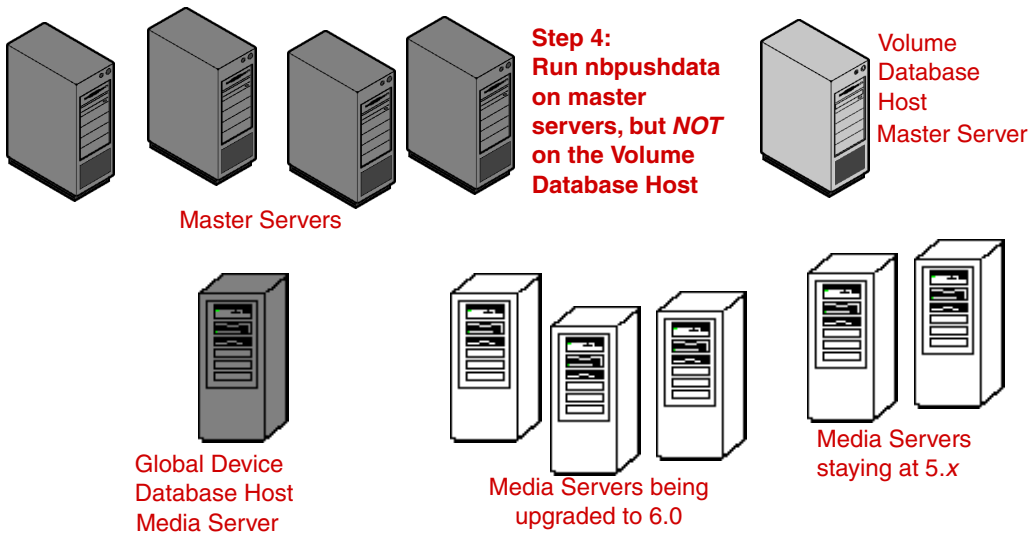
The next step is to upgrade the 5.*x* media server that was designated as the Global Device Database Host to NetBackup 6.0. You should not upgrade any of the *other* media servers in your environment at this time.



Next, ensure that the NetBackup and Media Manager daemons are running on the media server that is also the Global Device Database Host. Then run `nbpushdata -add`. You should *not* run the command on any of the master servers yet.



Next you must ensure that the NetBackup and Media Manager daemons are running on each master server. Then run `nbpushdata -add` on each master server *except* for the master server that is designated as the Volume Database Host.

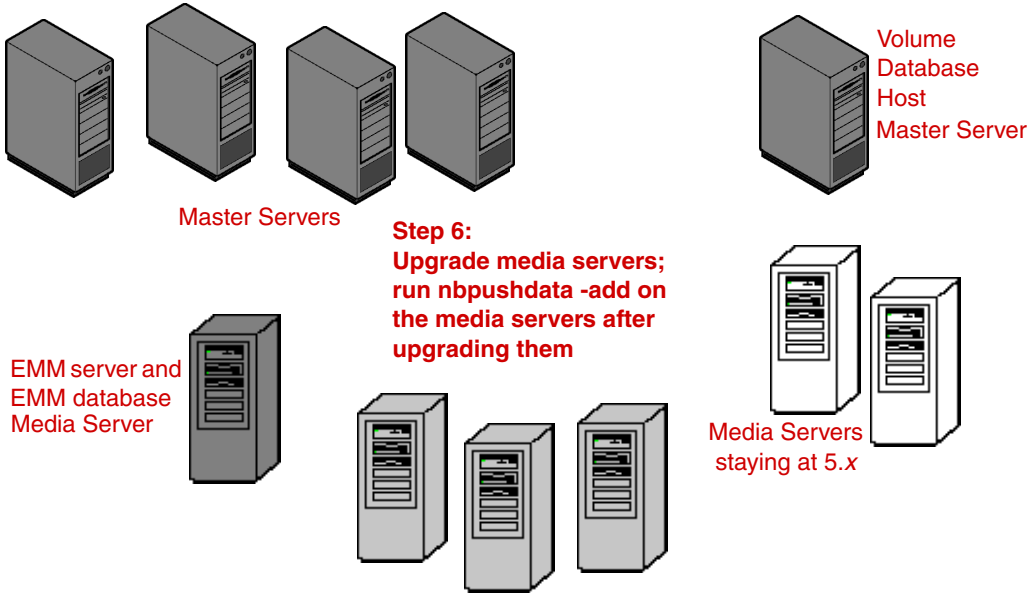


Next you must ensure that the NetBackup and Media Manager daemons are running on the master server that is designated as the Volume Database Host, and then run the `nbpushdata -add` command.

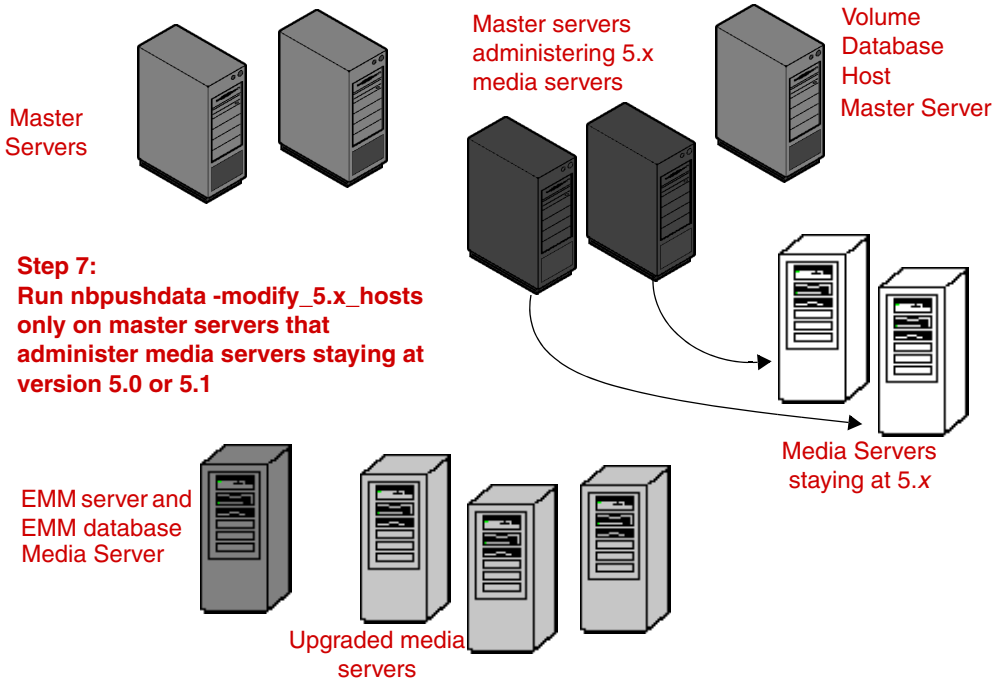
If you have media servers to upgrade, you do that next. You are not required to upgrade media servers. NetBackup version 5.*x* media servers run with NetBackup 6.0.

If you want to upgrade media servers to NetBackup 6.0, you must first upgrade NetBackup on the media servers.

Ensure that the Media Manager daemons are running on the media server. Run the `nbpushdata -add` command on the media server.



Finally, for any media server that you wish to leave at the 5.0MP4 (or later) or 5.1 version level, log in to the master server(s) for the media server(s) staying at version 5.*x* and run `nbpushdata -modify_5x_hosts`.



Upgrading NetBackup Servers

Note Upgrades are not supported from releases of NetBackup earlier than NetBackup 5.0MP4 (or later) or 5.1. You must upgrade earlier releases to NetBackup 5.0 MP4 or 5.1 and then upgrade to NetBackup 6.0.

Caution *For clustered environments*: If you are upgrading a clustered environment to NetBackup 6.0, refer to the *NetBackup High Availability System Administrator's Guide* for installation prerequisites and notes specific to your cluster environment.

Note *For clustered environments*: Converting an existing non-failover NetBackup server to a highly available failover NetBackup server is not supported.

Upgrading NetBackup Server Software

This section contains instructions on how to upgrade NetBackup. The following section describes how to populate the EMM database using the `nbpushdata` command. The order in which you run `nbpushdata` to populate the EMM database is crucial. For your convenience and understanding, examples of various NetBackup configurations and the order in which `nbpushdata` must be run are provided in "Examples of Populating the NetBackup EMM Database" on page 36.

Caution NetBackup processes must be running on the master server and its associated media servers before you upgrade and run the `nbpushdata -add` command. This is true no matter where you are running the command.

The EMM database creation process establishes that it can communicate with any additional servers in your configuration, and it does not include servers in the database if it cannot establish a connection and determine that NetBackup processes are running on the server.

However, you must ensure that *no NetBackup policies are active, no jobs are running, and that media servers do attempt to connect to the master server* until **after** all upgrades are complete and `nbpushdata` has been run on all servers. You can use the NetBackup Administration Console to deactivate all policies and all media servers. Command-line equivalents are also available.

Note For instructions on mounting the CD on your operating system, refer to the appropriate section of "Mounting the Software CD" on page 13. For information on CD contents and exact names, refer to the table "NetBackup Software CD Contents" on page 3.

Note If you have made changes to configuration files in `/usr/openv/java/`, the changes are not preserved in the upgrade. You need to make the changes again. The backups of the configuration files (called `nbj.conf.bak` and `auth.conf.bak`) are created in `/usr/openv/java/` during the upgrade, and you can reference them to make the changes again.

1. *The following step applies to those users who want to install and use NetBackup Access Control (NBAC).*

   a. Shut down all NetBackup services.

   b. Mount the ICS CD that corresponds to your system. It contains the VERITAS Security Services components (VxSS and PBX).

c. From the ICS CD, install PBX on your system.

d. Install the VERITAS Security Services components, which are located on the same ICS CD as PBX.

The following table contains the minimum installation requirements as they apply to each NetBackup system.

NetBackup System	Required VxSS Components
NetBackup master server	Authentication client and server components Authorization client and server components
NetBackup media server	Authentication client components Authorization client components
NetBackup client	Authentication client components
NetBackup Remote Administration Console	Authentication client components Authorization client components

Note If you want to perform cross-platform authentication with Windows platforms, you must install an authentication broker on a Windows system. For instructions on how to install an authentication broker, refer to the *VERITAS Security Services Administrator's Guide*.

2. Deactivate all Policies:

For NetBackup Administration Console users:

a. Open the NetBackup Administration Console on the master server

b. Select **Polices** from the tree on the left.

c. Select all of the policies that appear in the right pane.

d. Right-click the polices and select **Deactivate**.

For command-line users:

e. Enter the following command:

```
/usr/openv/netbackup/bin/admincmd/bpplinfo policy_name -modify -inactive
```


3. Deactivate all media servers:

   For NetBackup Administration Console users:

   a. Open the NetBackup Administration Console on the master server

   b. Select **Media and Device Management > Devices > Hosts** from the tree on the left.

   c. Select all of the media servers that appear in the right pane.

   d. Right-click the media servers and select **Deactivate**.

   For command-line users:

   e. Enter the following command:

   ```
   /usr/openv/volmgr/bin/vmoprcmd -deactivate_host -h device_host
   ```

4. *For Solaris systems:*

Caution All of the NetBackup scripts that you may have modified are removed when you complete step 4b. You may want to save any files that you have modified and want to keep, before you perform this step.

   a. If it exists, remove the following file:

   ```
   rm -f /usr/openv/netbackup/bin/driver/snapctl10_x
   ```

   b. Whether you are upgrading or reinstalling NetBackup, remove the current NetBackup server package.

   ```
   pkgrm VRTSnetbp
   ```

   c. You see the following prompt:

   ```
   Are you doing this pkgrm as a step in an upgrade process?
   ```

   Answer **`y`** (yes).

5. *For AIX systems:*

Caution This step deletes any robotic control paths. For more information about the robotic control paths, see the *NetBackup Media Manager Device Configuration Guide*.

   Uninstall the `ovpass` driver, as follows:

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

Note In an AIX clustered environment, you must run this step on all nodes in the cluster.

6. Ensure that you have license keys for all the NetBackup servers, clients, options, and agents that you ordered.

   Note *NetBackup Enterprise only*: When installing a master or media server, you must enter a NetBackup Enterprise server license key.

   For more information on administering NetBackup licenses, see the *NetBackup System Administration Guide, Volume I.*

7. Log on as the root user on the server.

8. Insert the appropriate NetBackup Server CD in the drive.

   Note

9. Run the installation script, as follows:

   cd_directory`/install`

   The *cd_directory* is the path to the directory where you can access the CD. On some platforms, it may be necessary to mount the directory.

10. *This step applies only if you do* **not** *have VERITAS Private Branch Exchange (PBX) currently installed on your system.*

    NetBackup 6.0 contains features that are dependent on a new Infrastructure Core Services (ICS) product called VERITAS Private Branch Exchange (PBX).

    PBX helps limit the number of TCP/IP ports used by many new features in NetBackup. In addition, it allows all socket communication to take place while connecting through a single port. The PBX port number is 1556. For more information about PBX and configuring NetBackup ports, refer to the *NetBackup System Administration Guide, Volume I.*

    Note *For clustered environments*: PBX has a known issue that prevents it from being installed in the cluster using the push installation method you can usually employ with `installics`. To install PBX in a cluster, you must run the `installics` command on every node.

Because PBX is required for all NetBackup products, its installation is part of the NetBackup installation procedure unless it is already present on the system. When you begin installing NetBackup on a server, the NetBackup installation procedure determines if a version of PBX is already installed. Whether PBX is currently installed causes one of the following to happen:

- If a version of PBX already exists, the installation procedure uses that version of PBX and continues.
- If PBX does not exist, you see a message similar to the following:

  ```
  The following package(s) are missing and must be installed
  before NetBackup can be installed:

  VRTSpbx
  ```

  The missing package(s) are located on the VERITAS Infrastructure Core Services (ICS) CD, which is included in the NetBackup media kit.

  To install PBX at this point in the upgrade process, do the following:

  a. In a different window, unmount/eject the NetBackup Server software installation CD.

  b. Mount the CD that contains the PBX software.

  c. From the original window in which you began installing NetBackup, enter the CD path name (the directory where the `installics` script is located).

  The NetBackup installation script attempts to install PBX automatically.

11. Follow the prompts in the installation script to install the NetBackup server binaries.

Note During the upgrade, you see the following prompt:

```
Do you want to start the NetBackup bprd process so backups and
restores can be initiated? [y , n] (y)
```

Accepting the default (typing **y** or pressing Return) means that backups and restores can be initiated after the upgrade is complete. It also means that, if you have any active policies from the previous version of NetBackup, it is possible that the new version of NetBackup could use one of those policies and start a backup or restore operation while you are trying to configure NetBackup.

It is best to schedule your upgrade and reconfiguration for a time that you know does not conflict with backups running, or perhaps to temporarily modify policies so that no jobs are running while you are reconfiguring.

If you type **n** in response, the daemons are not started, and you must start `bprd` and `ltid` before you can run NetBackup.

12. *Optional step to upgrade clients:*

    During the upgrade, the correct NetBackup client software is automatically installed on the server. To install additional client software on your current server, you can mount the client CD and run that installation script.

    The client CD installation script enables you to load the client software on the server for each of the UNIX client types that NetBackup supports. You can then "push" this client software from the server to your UNIX clients. For information on how to upgrade clients, refer to "Upgrading Clients After Servers Are Upgraded" on page 61.

13. *For clustered environments only.*

    Unfreeze the NetBackup group.

14. After you have finished upgrading NetBackup and the VxSS components applicable to the type of NetBackup system you are installing, you can configure the access control features. For detailed information on how to configure Access Control, refer to the *NetBackup System Administration Guide, Volume II*.

Populating the NetBackup EMM Database

Your upgrade of NetBackup is not complete until you have successfully populated the EMM database.

Note Use `nbpushdata` to upgrade an existing supported NetBackup 5.0MP4 (or later) or 5.1 environment that contains a single Global Device Database host. It is *not* a tool for merging multiple NetBackup environments.

The `nbpushdata` command enables NetBackup to get copies of the existing database files (a subset of the NetBackup catalogs) from each host and places this data in the EMM database.

Starting with NetBackup 6.0, the terms "Global Device Database Host" and "Volume Database Host" are obsolete. The EMM server takes over the function of the Global Device Database Host and the EMM database takes over the function of the Volume Database Host.

Caution It is *imperative* that you follow the prescribed sequence when running the `nbpushdata` command in your NetBackup environment.

Run the `nbpushdata` command on the following servers in the following order:

1. 5.0MP4 (or later) or 5.1 Global Device Database Host
2. Master servers
3. Volume Database Hosts
4. Any remaining media servers that have been upgraded to NetBackup 6.0

The Global Device Database Host, master server(s), and the Volume Database Host must be upgraded to NetBackup 6.0 and have `nbpushdata` run on them before the NetBackup environment is functional.

Media servers are not required to be upgraded at the same time as the other servers. They can be upgraded at a later time.

Caution NetBackup processes must be running on the master server and its associated media servers before you upgrade and run the `nbpushdata -add` command. This is true no matter where you are running the command.

The EMM database creation process establishes that it can communicate with any additional servers in your configuration, and it does not include servers in the database if it cannot establish a connection and determine that NetBackup processes are running on the server.

However, you must ensure that *no NetBackup policies are active, no jobs are running, and that media servers do attempt to connect to the master server* until **after** all upgrades are complete and `nbpushdata` has been run on all servers. You can use the NetBackup Administration Console to deactivate all policies and all media servers. Command-line equivalents are also available.

▼ To populate the EMM database on upgraded servers

Caution Do *not* perform this procedure if you have not already upgraded the master servers in your NetBackup 6.0 environment.

1. Deactivate all Policies.

   For NetBackup Administration Console users

   a. Open the NetBackup Administration Console on the master server

   b. Select **Polices** from the tree on the left.

   c. Select all of the policies that appear in the right pane.

   d. Right-click the polices and select **Deactivate**.

   For command-line users:

   e. Enter the following command:

   ```
   bpplinfo policy_name -modify -inactive
   ```

2. Deactivate all media servers.

   For NetBackup Administration Console users

   a. Open the NetBackup Administration Console on the master server

   b. Select **Media and Device Management > Devices > Hosts** from the tree on the left.

c. Select all of the media servers that appear in the right pane.

d. Right-click the media servers and select **Deactivate**.

For command-line users:

e. Enter the following command:

```
vmoprcmd -deactivate_host -h device_host
```

3. Populate the database with information from the server that was designated as the Global Device Database Host. This server may be a master or media server, depending on how you have configured your environment.

In a non-clustered environment, perform the following steps:

a. If this is a master server, start the NetBackup `bprd` daemon:

```
/usr/openv/netbackup/bin/initbprd
```

b. Run the `nbpushdata` command:

```
/usr/openv/netbackup/bin/nbpushdata -add
```

c. Stop the NetBackup and Media Manager daemons:

```
/usr/openv/netbackup/bin/bp.kill_all
```

d. Start the NetBackup and Media Manager daemons.

```
/usr/openv/netbackup/bin/goodies/netbackup start
```

In a clustered environment, perform the following on the active node:

a. Run the `nbpushdata` command.

```
/usr/openv/netbackup/bin/nbpushdata -add
```

b. Bring the NetBackup group offline and online.

Refer to the *NetBackup High Availability System Administrator's Guide* for instructions on how to bring your cluster offline and then online again after running the `nbpushdata` command.

4. Populate the EMM database with information from each of the remaining master server(s) in your NetBackup environment.

In a non-clustered environment, perform the following steps:

a. Start the NetBackup `bprd` daemon.

```
/usr/openv/netbackup/bin/initbprd
```

b. Run the `nbpushdata` command.

```
/usr/openv/netbackup/bin/nbpushdata -add
```

c. Stop the NetBackup and Media Manager daemons.

```
/usr/openv/netbackup/bin/bp.kill_all
```

d. Start the NetBackup and Media Manager daemons.

```
/usr/openv/netbackup/bin/goodies/netbackup start
```

In a clustered environment, perform the following on the active node:

a. Run the `nbpushdata` command.

```
/usr/openv/netbackup/bin/nbpushdata -add
```

b. Bring the NetBackup group offline and online.

Refer to the *NetBackup High Availability System Administrator's Guide* for instructions on how to bring your cluster offline and then online again after running the `nbpushdata` command.

5. Populate the EMM database with information from the Volume Database Host(s). (This step is only necessary if you have a Volume Database Host on a media server.)

In a non-clustered environment, perform the following:

a. Run the `nbpushdata` command.

```
/usr/openv/netbackup/bin/nbpushdata -add
```

b. Stop the NetBackup and Media Manager daemons.

```
/usr/openv/netbackup/bin/bp.kill_all
```

c. Start the NetBackup and Media Manager daemons.

```
/usr/openv/netbackup/bin/goodies/netbackup start
```

In a clustered environment, perform the following on the active node:

a. Run the `nbpushdata` command.

```
/usr/openv/netbackup/bin/nbpushdata -add
```

b. Bring the NetBackup group offline and online.

Refer to the *NetBackup High Availability System Administrator's Guide* for instructions on how to bring your cluster offline and then online again after running the `nbpushdata` command.

6. Populate the EMM database with information from each of the media server(s) in your NetBackup environment that you chose to upgrade to NetBackup 6.0.

   In a non-clustered environment, perform the following steps:

   a. Run the `nbpushdata` command on the upgraded media server.

   ```
   /usr/openv/netbackup/bin/nbpushdata -add
   ```

   b. Stop the NetBackup and Media Manager daemons.

   ```
   /usr/openv/netbackup/bin/bp.kill_all
   ```

   c. Start the NetBackup and Media Manager daemons.

   ```
   /usr/openv/netbackup/bin/goodies/netbackup start
   ```

   In a clustered environment, perform the following on the active node:

   a. Run the `nbpushdata` command.

   ```
   /usr/openv/netbackup/bin/nbpushdata -add
   ```

   b. Bring the NetBackup group offline and online.

   Refer to the *NetBackup High Availability System Administrator's Guide* for instructions on how to bring your cluster offline and then online again after running the `nbpushdata` command.

▼ To configure 5.x media servers for compatibility with 6.0 environments

NetBackup 6.0 provides backlevel support for media servers running NetBackup 5.0MP4 (or later) or 5.1. This enables you to upgrade some or all of your media servers to NetBackup 6.0 at a later time. However, you must modify the configuration slightly so version 5.*x* media servers work in the NetBackup 6.0 environment.

1. Run the `nbpushdata -modify_5x_hosts` command on the NetBackup 6.0 master servers that administer the media servers that you want to remain at version 5.*x*.

   Note The command option is literally `modify_5x_hosts`, and uses the character `x` rather than a version number. Do *not* type either modify_50_hosts or modify_51_hosts.

   ```
   /usr/openv/netbackup/bin/nbpushdata -modify_5x_hosts
   ```

2. Repeat step 1 on any additional master servers that administer media server(s) you are not upgrading to version 6.0. You only need to run this command once on each applicable master server.

Upgrading Clients After Servers Are Upgraded

The `update_clients` installation script enables you to push client software to clients. It does not enable you to 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 release/revision level on a single host.

When run on a master server, the `update_clients` installation script is able to 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 by using the hardware type and operating system parameters or by using the `-ClientList` parameter.

As of NetBackup 6.0, it is possible to run `update_clients` on 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 both master and media server so as not to inadvertently upgrade clients that you do not intend to upgrade.

▼ To upgrade clients after you have upgraded servers

Note *For clustered environments*: You can push client software only from the active node.

1. Mount the client CD.

   A menu appears that displays the available client types.

2. Change your working directory to the CD directory if you have a CD or to the directory that contains the downloaded files:

   `cd /cd_mount_point`

   The *cd_mount_point* is the path to the directory where you can access the CD.

3. Enter the following command to run the installation script:

   `./install`

Note The binaries provided for the client operating system levels represent the operating system levels on which the binaries were compiled. Often the binaries function perfectly on later versions of the operating system. For example, Solaris 9 binaries also are used on the Solaris 10 level of the operating system. The installation script attempts to load the appropriate binaries for your system. If the script does not recognize the local operating system, it presents choices.

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

Note Make sure you load the software for all the UNIX client types you intend to back up onto the server. Otherwise, you cannot add these client types to the NetBackup policy configuration.

5. After the installation is complete, unmount the client CD.

6. As a root user on the NetBackup master server, check whether `bprd` is running:

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

7. If only one `bprd` appears in the `bpps` output, there are no active backups or restores. Terminate the `bprd` daemon:

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

8. Update UNIX client software by running the `update_clients` script with one of the following commands:

Note Specify the host names of the individual nodes (not virtual names) in the list of clients.

Note The `update_clients` script does not enable you to push client software to remote media or master servers.

- If you are not using a `-ClientList` file, run the following command:

  ```
  /usr/openv/netbackup/bin/update_clients
  ```

- If you are using a `-ClientList` file run the following command:

  ```
  /usr/openv/netbackup/bin/update_clients -ClientList filename
  ```

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

Note 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:

a. Change to the NetBackup `admincmd` directory, as follows:

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

b. Use the `bpplclients`(1M) 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 are pushing from a master server or from a media server, as follows:

- If you are pushing from the master server, run the following command:

  `./bpplclients -allunique -noheader >` *`file`*

- If you are pushing from a media server, run the following command:

  `./bpplclients -allunique -noheader -M` *`m_server_name`* **`>`** *`file`*

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, *`file`* is empty. Create *`file`* using the same format as that generated by `bpplclients`.

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

hardware os client

hardware	The hardware name. For examples, run the `ls`(1) command in directory `/usr/openv/netbackup/client`.
os	The operating system name. For examples, run the `ls`(1) 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 Solaris8 curry
```


c. (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 correct value for the individual node names is returned by the `hostname`(1) and the `domainname`(1) commands. The format can be either *hostname* or *hostname*.*domainname*.

9. 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]
```

Answer either **y** or **n**.

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

Press Enter (or Return).

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

Answer either **y** or **n**.

10. After all of the servers and clients have been updated, start NetBackup and Media Manager daemons as the root user on the master server:

```
/usr/openv/volmgr/bin/ltid
/usr/openv/netbackup/bin/initbprd
```

11. After you have upgraded the NetBackup software, proceed to."Completing Your System Update After an Upgrade" on page 65.

Upgrading a NetBackup Server to NetBackup Enterprise Server

Note A NetBackup Server cannot be upgraded to a clustered NetBackup Enterprise Server. You must perform a new cluster installation of NetBackup Enterprise Server.

Note When you install NetBackup Enterprise master or media servers, you must enter a NetBackup Enterprise server product license key. On the master server, you must also enter license keys for any additional NetBackup software product options or agents used on the server or its clients.

1. Ensure that you have license keys for all the NetBackup servers, clients, options, and agents that you ordered.

   For more information on administering NetBackup licenses, see the *NetBackup System Administration Guide, Volume I.*

Note After making and saving any license key updates (including adding and deleting license keys) in the NetBackup Administration Console, you must restart the console.

2. Reinstall NetBackup, using the instructions from "Upgrading NetBackup on UNIX Servers and Clients" on page 35.

3. When prompted, enter the license key.

   NetBackup Enterprise software installs.

Completing Your System Update After an Upgrade

- Upgrade any separately-priced options (such as NetBackup for Oracle) on clients that have been upgraded. Separately-priced options should be at the same level as the NetBackup client.
- If you made changes to NetBackup scripts prior to the upgrade, apply those changes to the new, upgraded versions of the scripts.
- If this is a master server upgrade installation and you had previously allowed nonroot users to administer NetBackup, the default permissions and group on the newly installed files allow only a root user to perform NetBackup administration.
- During installation, NetBackup overwrites the following files. Before overwriting the files, it appends the version to the name and copies the renamed files to a file or directory.
  - All files in the `/usr/openv/netbackup/bin/goodies` directory and the `/usr/openv/netbackup/help` directory.
  - Some files and directories in `/usr/openv/volmgr`.

- The following scripts from the `/usr/openv/netbackup/bin` directory:

  `backup_notify`
  `backup_exit_notify`
  `bpend_notify` (present only if used)
  `bpend_notify_busy` (present only if used)
  `bpstart_notify` (present only if used)
  `dbbackup_notify`
  `diskfull_notify`
  `initbpdbm`
  `initbprd`
  `restore_notify`
  `session_notify`
  `session_start_notify`
  `userreq_notify`

  For example, an upgrade from NetBackup 5.1GA to NetBackup 6.0 would result in renaming the following directory:

  `/usr/openv/netbackup/bin/goodies`

  The directory's new name might be like the following:

  `/usr/openv/netbackup/bin/goodies.5.1GA`

- The following scripts from the `/usr/openv/volmgr/bin/goodies` directory:

  `drive_mount_notify` (present only if used)
  `drive_unmount_notify` (present only if used)

- The following scripts from the `/usr/openv/volmgr/bin` directory:

  `shared_drive_notify`

Installing NetBackup Agents and Options After an Upgrade

After your upgrade is complete, you can install any other NetBackup agents and options (such as NetBackup for Oracle) by following the instructions in the NetBackup System Administrator's Guide that comes with that product.

Uninstalling NetBackup Server Software 4

This chapter gives instructions for uninstalling NetBackup 6.0 software from your server system.

During each procedure, you have the opportunity to save any data that you want and uninstall add-on products before uninstalling NetBackup.

Caution When you complete the procedures in this chapter, you remove NetBackup, any add-on products, and any associated databases, including VERITAS Storage Migrator. VERITAS recommends that you save the data that you require and uninstall any add-on products *before* you uninstall NetBackup.

Uninstalling NetBackup on Solaris Servers

The information in this section explains how to remove NetBackup from a Solaris server. This procedure outlines the basic steps that you need to perform, and it may require that you reference other documents for procedures of specific tasks; for example, both volumes of the *NetBackup System Administrator's Guide* contain information on much of what you need to do to uninstall the software.

Note If you have moved the catalog database files in `/usr/openv/db/data` to another location, refer to the *NetBackup System Administration Guide, Volume I* for procedures on how to remove those files.

Note *For clustered environments*: Before you begin this procedure, you must remove NetBackup from the cluster application. Follow the instructions in your cluster documentation for removing a group, then continue with removing NetBackup.

You must uninstall NetBackup from each node in the cluster.

Note If you identified an alternate root path in your NetBackup 6.0 install or upgrade, the process prompts you with the alternate root path, enabling you to use the `pkgrm -R` command from the alternate root location. The `pkgrm -R` command was implemented starting with the NetBackup 5.0 `VRTSnetbp` (NetBackup server) package. You cannot use `pkgrm -R` with `VRTSnetbp` packages that were released prior to NetBackup 5.0. This feature applies to NetBackup server only, and not add-ons, clients, or database agents.

▼ To uninstall NetBackup from a Solaris server

1. Log on as the root user on the server.
2. Perform a catalog backup.
3. Remove add-on products.

   To find out which NetBackup packages are installed on your system, run `pkginfo`(1).

   a. **Important** - Save all important data from any add-on products you have installed. For instructions on how to migrate files to a secondary storage device, refer to the *VERITAS Storage Migrator Administrator's Guide*.

   b. Uninstall each add-on product.

   - For instructions on uninstalling VERITAS Storage Migrator, refer to the *VERITAS Storage Migrator Administrator's Guide*.
   - For instructions on uninstalling NetWare Media Server, refer to the *NetBackup NetWare Media Server Option System Administrator's Guide*.
   - For instructions on uninstalling NetBackup Encryption, refer to the *NetBackup Encryption System Administrator's Guide*.

4. Stop the NetBackup/Media Manager daemons:

   ```
   /usr/openv/netbackup/bin/goodies/bp.kill_all
   ```

5. Remove the NetBackup package.

   If it exists, remove the following file:

   ```
   rm -f /usr/openv/bin/driver/snapctl10_x
   ```

   Run `pkgrm`:

   ```
   pkgrm VRTSnetbp
   ```

6. You see the following prompts:

   ```
   Is this an upgrade?
   ```

   Answer **no**.

   ```
   Remove references to NetBackup/Media Manager from services and
   inetd config files?
   ```

   Answer **yes**.

   ```
   Remove non-empty directories?
   ```

   Answer **yes**.

Note When you remove NetBackup, PBX is *not* removed. If you would like to permanently clean your system, refer to the PBX documentation stored on your platform-specific ICS CD.

7. Remove the startup scripts, as follows:

   ```
   rm -f /etc/rc2.d/S77netbackup
   rm -f /etc/rc0.d/K01netbackup
   rm -f /etc/init.d/netbackup
   ```

8. Run the following commands to remove the NetBackup-Java application state data for the root account:

   Note There is no space between the slash character (`/`) and the period or dot character (`.`) of "`/.nbjava`". Adding a space between these characters removes all of your files starting from the root level.

   ```
   /bin/rm -rf /.nbjava
   /bin/rm -rf /.java/.userPrefs/vrts
   ```

9. Inform NetBackup-Java users that they can remove their `$HOME/.nbjava` and portions of `$HOME/.java` directories.

   The `$HOME/.nbjava` and `$HOME/.java` directories contain application state information (for example, table column order and size) that is saved when the user exits NetBackup-Java applications. The process removes this directory for the root user only.

   The `common` subdirectory in `$HOME/.java/.userPrefs/vrts` can be removed.

10. If you enabled NetBackup access control, NetBackup placed several files on clients and servers.

These files can be divided into two categories: individual user files, and NetBackup application temporary files. NetBackup application temporary files are removed with NetBackup. Users' cache files exist in a directory named `$HOME/.vxss`.

Inform users that they can remove `$HOME/.vxss` directory.

Note Files are generated in the `/.vxss` directory by a single sign-on operation of the NetBackup Administration Console on the host where the console runs. NetBackup Administration Console cleans these files when an exit function is performed. (It is common to have no temporary files in this directory.) If a system crash were to occur, these files may be left behind. With the console shutdown, you can delete these files safely with no data loss.

NetBackup also creates cached certificates for client and server NetBackup applications. These files reside within the `/.vxss` directory. These files typically have a name that is consistent with a DNS entry for a network interface, as in `machine.company.com`.

Example directory entries are as follows:

`/usr/openv/var/vxss/credentials/`*`machine.company.com`*
`/usr/openv/var/vxss/credentials/dhcp`

These files are created with the command `bpnbat -LoginMachine`. If you are considering a reinstallation of NetBackup at a later date on the machine in question, preserve the certificates in the `vxss/credentials` directory or be prepared to provide the machine identity password as originally set on the Root+AB broker. As an alternative, you can may reset the password on the Root+AB broker when you reinstall. For more information on Root+AB brokers, please see the *VERITAS Security Services Administrator's Guide*.

Note For more information on NetBackup access control, see the *NetBackup System Administration Guide, Volume II*. For information on the VERITAS Security Services, including how to properly remove it, see the *VERITAS Security Services Administrator's Guide*.

Uninstalling NetBackup on All Other UNIX Servers

Note If you have moved the catalog database files in `/usr/openv/db/data` to another location, refer to the *NetBackup System Administration Guide, Volume I* for procedures on how to remove those files.

Note *For clustered environments*: Before you begin this procedure, you must remove NetBackup from the cluster application. Follow the instructions in your cluster documentation for removing a group, then continue with removing NetBackup.

Note When uninstalling NetBackup from an HP-UX Service Guard Cluster in which NetBackup has been configured to run as a clustered package, you must also delete the `/etc/cmcluster/netbackup` directory.

▼ To uninstall NetBackup from a UNIX server other than Solaris

1. Log on as the root user on the server.
2. Perform a catalog backup.
3. Stop the NetBackup/Media Manager daemons:

   ```
   /usr/openv/netbackup/bin/goodies/bp.kill_all
   ```

4. Run the following command to unregister NetBackup from the VxUL master configuration stored in the `/etc/vx/vrtslog.conf` file.

   ```
   /usr/openv/netbackup/bin/vxlogcfg -r -p 51216
   ```

   The `-p` option specifies the product ID, which is `51216` for NetBackup.

5. Remove add-on products:

   a. **Important**: Save all important data from any add-on products installed. If you use VERITAS Storage Migrator, refer to the *VERITAS Storage Migrator Administrator's Guide* for instructions on how to migrate files to a secondary storage device.

   b. Uninstall each add-on product. For instructions on uninstalling VERITAS Storage Migrator, refer to the *VERITAS Storage Migrator Installation Guide*.

6. Remove the NetBackup databases by running the following command (this removes the databases even if they have been moved from their default locations):

   ```
   /usr/openv/db/bin/create_nbdb -drop_only
   ```

7. To remove references to NetBackup/Media Manager from `/etc/services` and the `[x]inetd` configuration files, run the `edit_services` script:

   ```
   /usr/openv/netbackup/bin/goodies/edit_services.
   ```


Note When you remove NetBackup, PBX is *not* removed. If you would like to permanently clean your system, refer to the PBX documentation stored on your platform-specific ICS CD.

8. Remove the `/usr/openv` directory.

   - If `/usr/openv` is a physical directory, run the following command:

     ```
     rm -rf /usr/openv
     ```

   - If `/usr/openv` is a link, run the following commands:

     ```
     cd /usr/openv
     pwd
     ls
     ```

Caution Make sure you are at the proper location and verify that the subdirectories are what you would expect them to be before continuing. You do not want to remove the wrong directories. This is why the first commands verify your current location and the files in that directory before removing files.

```
rm -rf *
cd /
rm -f /usr/openv
```

Caution The `rm -f /usr/openv` command also removes any add-on products installed on this machine.

9. *For Linux systems only*:

   If you modified the startup and shutdown scripts as described in "Configuring System Startup and Shutdown of NetBackup" on page 101, run the following command:

   ```
   /sbin/chkconfig --del netbackup
   ```

10. Remove the following links and files:

System	Additional Files
AIX	`/etc/rc.veritas.aix`

Alpha Tru64	`/sbin/rc3.d/S77netbackup`
	`/sbin/rc0.d/K01netbackup`
	`/sbin/init.d/netbackup`

System	Additional Files
HP-UX	/sbin/rc2.d/S777netbackup (note three 7s) /sbin/rc1.d/K001netbackup /sbin/init.d/netbackup
Linux Red Hat	/etc/rc.d/rc2.d/S77netbackup /etc/rc.d/rc3.d/S77netbackup /etc/rc.d/rc5.d/S77netbackup /etc/rc.d/rc6.d/K01netbackup /etc/rc.d/rc0.d/K01netbackup /etc/rc.d/init.d/netbackup
Linux SuSE	/etc/init.d/rc2.d/S77netbackup /etc/init.d/rc3.d/S77netbackup /etc/init.d/rc5.d/S77netbackup /etc/init.d/rc6.d/K01netbackup /etc/init.d/rc0.d/K01netbackup /etc/init.d/netbackup
Other servers	/etc/rc2.d/S77netbackup /etc/rc0.d/K01netbackup /etc/init.d/netbackup

11. *For AIX systems only*:

Remove the NetBackup `/etc/rc.veritas.aix` entry from `/etc/inittab` file.

Remove the line `/etc/rc.veritas.aix stop` in the `/etc/rc.shutdown` file.

12. Run the following commands to remove the NetBackup-Java application state data for the root account:

```
/bin/rm -rf /.nbjava
/bin/rm -rf /.java/.userPrefs/vrts
```

13. Inform NetBackup-Java users that they can remove their `$HOME/.nbjava` directory.

The `$HOME/.nbjava` directory contains application state information (for example, table column order and size) that is saved when the user exits NetBackup-Java applications. The process removes this directory for the root user only.

The `common` subdirectory in `$HOME/.java/.userPrefs/vrts` can be removed.

NetBackup License Keys 5

This chapter contains basic information for entering license keys and provides answers to some frequent asked questions.

For detailed information and procedures on how to administer license keys, refer to the both volumes of the *NetBackup System Administrator's Guide, Volume 1*.

NetBackup License Compatibility

NetBackup 6.0 enables all existing permanent license keys to remain valid.

Before NetBackup release 5.0, NetBackup had separate licenses for NetBackup DataCenter, NetBackup BusinesServer, servers, database agents, and options.

The NetBackup Enterprise Server is the next generation of the DataCenter product and the NetBackup Server is the next generation of the BusinesServer product. The DataCenter and BusinesServer keys work for NetBackup Enterprise Server and NetBackup Server, respectively.

Database agents or options do not have separate license keys or separate pricing. For example, there is one Oracle Agent available for purchase to use with either NetBackup Enterprise Server or NetBackup Server.

Entering License Keys

During the installation of NetBackup on a master server, it is easiest for you enter all of your license keys when you are prompted by the installation script.

If you did not enter all of your license keys, you can open the NetBackup Administration Console (Windows or UNIX) and select **Help > License Keys...**

On UNIX servers, you can also run the following command:

```
/usr/openv/netbackup/bin/admincmd/get_license_key
```

Note All product license keys must be entered on the master server.

Some features and products also require the keys to be installed on the media server. The following features require keys to be installed on media servers *and* master servers:

- NetBackup Shared Storage Option (SSO)
- Library-based Tape Drives Feature
- NDMP

You can log in to a NetBackup server from almost any server within a system to view, enter, and administer licenses. Because of this, if you are attempting to administer license keys remotely, you must be sure you are viewing the licenses of the system you intend to change to avoid adding or changing a license on the wrong server.

Frequently Asked Questions

VERITAS customers have asked the following questions about managing license keys.

Is NetBackup's licensing the same as the licensing in other VERITAS products?

NetBackup is implementing the common licensing system used by other VERITAS products. This licensing system was developed in-house; it is not from a third party. However, please note that different VERITAS products have different requirements and our common licensing system provides considerable flexibility in what licensing features are implemented in each product. For example, NetBackup does not have a node-locked licensing system, but some other VERITAS products may.

Can I use NetBackup if all I have is a media/doc kit?

No. The media/doc kit by itself does not allow any access to NetBackup. You always need a license key (either permanent or evaluation). License keys should always be delivered with the media/doc kit, so you should never find yourself with a media/doc kit and no key.

What does the license key look like? What information does it contain?

The key is a multi-digit alphanumeric string (for example: `8EPP-ABCD-9XYZ-XYZ9-8881-VCF4-OIUF-AJDC`). It contains information on whether the key is for NetBackup Server or NetBackup Enterprise Server, whether it is for a server, client, agent, or option (and which one), whether it is a permanent or evaluation, and information about how and where the key was generated.

Is the license key serialized?

Yes, there is serialization information embedded in the key.

Can I see reports on what keys I have?

Yes. Information about the keys is stored on the master server.

To access the information, open the NetBackup Administration Console (Windows or UNIX) and select **Help > License Keys...**.

On UNIX servers, you can also run the following command:

```
/usr/openv/netbackup/bin/admincmd/get_license_key
```

If you are currently on a media server, you must enter the master server name when prompted for the host name. For more information on how to view reports, refer to both volumes of the *NetBackup System Administrator's Guide*.

How do I enable options and agents?

When you install NetBackup, you are prompted to enter all keys for options and agents.

If you purchase an agent or option at a later date, open the NetBackup Administration Console (Windows or UNIX) and select **Help > License Keys...**.

On UNIX servers, you can also run the following command:

```
/usr/openv/netbackup/bin/admincmd/get_license_key
```

If you are running the NetBackup Administration Console on a media server, you must enter the master server name when prompted for the host name in the Login screen.

Many options and agents require you to have your original NetBackup distribution CDs, because additional binaries need to be installed. You should always keep your NetBackup CDs in a safe and accessible place.

Should I save keys after they have been entered?

Yes. Always store copies of the keys in a secure place.

What should I do if I have lost my license key(s)?

VERITAS has a record of all keys issued to VERITAS customers. Customers who lose their license key(s) can call Order Management to get copies of their keys.

For Americas, Japan, PacRim, Australia:
Tel: 650.318.4265 FAX: 650.335.8428

For Europe, Middle East and Africa:
Tel: 00.353.61.365232 FAX: 00.353.61.365223

If you have purchased NetBackup from a VERITAS partner, you need to contact that partner for information on your key.

How are large volume orders handled?

VERITAS recognizes that many NetBackup installations are very large, and entering long license keys multiple times can be tedious and time-consuming. You can request a single key for each type of NetBackup component purchased. For example, a customer who is

ordering 50 Lotus Notes agents can obtain a single key with a certificate stating that the key may be used for 50 Lotus Notes licenses. Site licenses, that enable unrestricted use for specific NetBackup agents or options can be handled in this manner.

Note You still need a unique key for each type of NetBackup component purchased - NetBackup server, Lotus Notes agent, NDMP option, UNIX client, and so on.

What about license keys for customers with site licenses?

Site licenses are handled the same way that large volume orders are; however, instead of the certificate stating that the license key is good for a specific number of copies, the certificate states that the license key is good for unlimited copies of the NetBackup component.

Do I need a license key to enable NetBackup Remote Administration Consoles?

No. There are no special license keys for NetBackup Remote Administration Consoles. You can install them on any computer with access to the master server.

Can a key be used multiple times?

Yes. The keys may be used multiple times; however, you are legally bound to install and use only the number of NetBackup servers, clients, agents, and options for which you have purchased licenses.

How do existing customers get keys?

All NetBackup customers who have current maintenance contracts with VERITAS automatically receive the latest version of NetBackup. You receive the NetBackup Enterprise Server or NetBackup Server media/doc kit and license keys for every NetBackup component for which VERITAS records indicate you have purchased licenses.

If your maintenance is through a VERITAS partner, you upgrade through the partner. Contact the partner for more details.

What if I do not get the right keys?

If you believe you are entitled to a key that you did not receive, you should contact the Order Management number provided on your license key certificate.

Note VERITAS Technical Support does *not* issue permanent keys. This can only be done through VERITAS Order Management. However, Technical Support is prepared to provide temporary one-month keys to you while issues regarding permanent license keys are resolved.

What does an evaluation key enable?

The evaluation key enables unrestricted use of NetBackup Server or NetBackup Enterprise Server, as well as any of their options and agents, for a predetermined period of time.

Am I notified when an evaluation is about to expire?

You can find information about when a key expires by opening the **About** box in the NetBackup Administration Console (Windows or UNIX), or you can find it on your system logs.

On UNIX servers, you can also run the following command:

```
/usr/openv/netbackup/bin/admincmd/get_license_key
```

If you are running the NetBackup Administration Console on a media server, you must enter the master server name when prompted for the host name in the Login screen.

What happens when an evaluation key expires?

The NetBackup daemons are shut down. When you attempt to use the product you are informed that its evaluation period has expired.

Is backup configuration and catalog information saved when evaluation keys expire?

Yes. Customers who add a permanent license key to an evaluation version of NetBackup have immediate access to their catalog and configuration information.

How do I upgrade from an evaluation license to a permanent license?

It is easy. When you purchase a permanent license, you add that license to NetBackup. All the configuration information and catalog data from your evaluation version is retained.

To enter your permanent key, open the NetBackup Administration Console (Windows or UNIX) and select **Help > License Keys...**.

On UNIX servers, you can also run the following command:

```
/usr/openv/netbackup/bin/admincmd/get_license_key
```

If you are running the NetBackup Administration Console on a media server, you must enter the master server name when prompted for the host name in the Login screen.

Installing NetBackup Client Software 6

This chapter discusses how to install NetBackup client software for the following NetBackup clients:

- Microsoft Windows clients
- UNIX clients (including MacOS X 10.3.x)

For the NetBackup's Novell NetWare Client: See the *NetBackup Novell NetWare Client System Administrator's Guide* for formation on how to install, configure, and use NetBackup's Novell NetWare Client to back up and restore data that resides on a NetWare file server.

Note *For clustered environments*: During the installation, enter the virtual name for the NetBackup server and not the actual local host name.

You can push client software only from the active node.

Note *For Macintosh OS X 10.3.x clients*: Macintosh clients are considered UNIX-based clients. The instructions for installation are provided in "Installing NetBackup Clients on UNIX Systems" on page 89.

Installing NetBackup on Microsoft Windows Clients

By definition, your NetBackup server is also a NetBackup client. When you installed the NetBackup server software, you installed both the NetBackup *server* and NetBackup *client* software on the server.

Windows Client Installation Overview

The NetBackup client setup program for Microsoft Windows allows you to select appropriate setup and installation options from a series of wizard screens. Once the options have been selected, the NetBackup client setup program displays a window that enables you to verify your selections before continuing with the actual installation.

While the installation is in progress, a dialog provides details of the installation and setup progress. When complete, a final window indicates the results of the installation.

Note You cannot install NetBackup client software on PCs that currently have NetBackup server software installed. In these cases, you must first uninstall the NetBackup server software, as described in the *NetBackup Installation Guide for Windows*.

VERITAS Volume Snapshot Provider on Windows

If you install the software on a Windows client, during the installation process you have the option of installing VERITAS Volume Snapshot Provider (VSP). VSP establishes a point-in-time view, or snapshot, of the data that is selected for backup on the volumes (that is, drives). NetBackup then backs up the selected files as they existed at the time of the snapshot, regardless of file system activity. VSP uses a file system cache to store changes that occur during the backup. Each volume for which a snapshot is created will have a corresponding VSP cache file.

For information on the VSP parameters, please refer to the *NetBackup Backup, Archive, and Restore Getting Started Guide*. In addition, refer to the both volumes of the *NetBackup System Administrator's Guide, Volume 1*.

User-Directed Operations for Windows Systems

By default on Windows 2000, Windows XP, or Windows 2003 Server systems, the `Program Files` folder is not writable by users other than the administrator.

By default NetBackup writes log files and progress files to the folder `Program Files\VERITAS\NetBackup\Logs`. Users without write permission to the `Logs` folder receive an error message when they attempt a backup or restore and the operation is aborted.

If users other than the administrator use the Backup, Archive, and Restore interface to perform backups and restores, make sure they have write permission to the `Logs` directory.

Local and Remote Installations for Windows Systems

The NetBackup client setup program can be used in either of the following ways:

- Local installations: The setup program installs the client software only on the machine where you start the installation.
- Remote installations: The setup program scans the network for available clients on which you can install the client software. The source machine (in cluster environments, primary node) must have Windows 2000, Windows XP, or Windows

2003 server installed. In addition, a remote installation requires system administrator privileges and is only available for Windows 2000, 32-bit Windows XP, and 32-bit Windows 2003 machines.

Note You cannot remotely install from UNIX systems to Windows 2000, Windows XP, or Windows 2003 machines.

Local and remote installations can be either new or upgrade installations, depending on whether there is any existing NetBackup client software installed on the client PCs.

Silent Installations for Windows Systems

A silent installation is one in which the installation process does not require interactive input. It does, however, require that the `silentclient.cmd` file be edited before executing the file.

New and Upgrade Installations for Windows Clients

The NetBackup client setup program recognizes two types of installations:

- New installations: The setup program does not detect an existing version of NetBackup client software.
- Upgrade installations: Using Windows registry information, the setup program detects an existing version of NetBackup client software.

New Installations

NetBackup setup enables you to specify one set of configuration options to be used for all new installations. These options include the following:

- For typical and custom installations, specifying master and media server names
- For custom installations only, you have the following options:
  - Specifying an installation directory (local install only)
  - Entering `bpcd` and `bprd` port numbers
  - Starting the NetBackup Client Service automatically or manually
  - Starting the NetBackup Client Service on the client after installation is complete
  - Starting the NetBackup Client Job Tracker automatically
  - Installing VSP
  - Installing debug symbols
  - Installing the NetBackup documentation

Note *For upgrading existing installations*: The setup program lets you specify the same options as you specify for new installations, except that you cannot change the location of the installation.

Windows Client System Requirements

This section describes the hardware and software that is required for successful installation of NetBackup client software.

Windows Client Installation Requirements

To install NetBackup client software, the system must meet the following configuration requirements.

- Microsoft Windows (2000, XP (32- and 64-bit), and 2003 Server (32- and 64-bit))
  - Windows 2000 (service pack 2) installed.
- An Intel Pentium or Itanium processor
- Internet Explorer 5.5 or later
- Any TCP/IP transport that is Windows Sockets Compliant. (Use of the TCP/IP transport that comes with the server or operating system is recommended.)
- A network adapter supported by your TCP/IP transport.

Remote Windows Client Installation Requirements

In addition to the previous requirements:

- The source system must have Windows 2000, Windows XP, or Windows 2003 Server installed.
- The destination system must have Windows 2000, 32-bit Windows XP, or 32-bit Windows 2003 client installed.
- The person performing the remote installation must have administrator privileges on all of the client systems.

NetBackup Server Requirements

The version of the NetBackup server software must be the same or newer than the version you install on the client.

Windows Client Local Installation Instructions

Follow these instructions to install the NetBackup client software on your Windows system. You can stop the installation process at any time by clicking **Cancel** or clicking **Back** to return to the previous window.

▼ To install NetBackup client software on Windows systems

1. Log in as Administrator on the Windows server.
2. Insert the NetBackup installation CD in the drive. On systems with Autorun enabled, the installation starts automatically. If Autorun is not enabled, navigate to the CD drive and double-click `Launch.exe`.
3. On the initial screen, select **NetBackup Installation**.
4. On the installation screen, select **Install Client Software.**

   The Welcome screen appears. Click **Next**.
5. On the License Agreement screen, accept the terms of the agreement.
6. On the Installation Type screen, do the following:

   a. Select **Install to this computer only**.

   b. Select either a typical or custom installation.

   If you choose a typical installation, NetBackup uses the default port numbers and default service startup settings.

   If you choose a custom installation, you can select your service startup settings, change port numbers, specify the installation location, and choose whether or not to install NetBackup documentation, debug symbols, and VSP.

   Click **Next**.
7. On the NetBackup System Names screen, provide the name of the client and the master server, and any media servers with which this client should communicate. Provide the media servers in the Additional servers box.
8. On the Ready to Install screen, click **Install**.

   NetBackup installs the client on the local machine.
9. On the System Validation Complete screen, click **Finish**.

Note You may need to reboot the system for the changes to take effect.

Windows Client Remote Installation Instructions

Note Review the installation "Windows Client System Requirements" on page 84 for remote installations before starting this procedure.

Follow these instructions to install the NetBackup client software on selected Windows 2000, 32-bit Windows XP, or 32-bit Windows 2003 Server clients on your network (one of these clients can be your local PC). You may stop the installation process at any time by clicking **Cancel**.

Notes on Windows Client Remote Installations

- During installation, the client name is written to the registry in lower case. If the policies on the NetBackup server do not specify the client names in lower case, backups will fail because the names do not match.
- You must have administrator privileges on the remote client for the NetBackup install to complete successfully.
- The NetBackup client setup program cannot clean an aborted install. Therefore, if you stop `Setup` while it is copying files to a client, the files that have been successfully installed are not uninstalled.

▼ To install the Windows NetBackup client software on remote computers

1. Log in as Administrator on the Windows server.
2. Insert the NetBackup installation CD in the drive. On systems with Autorun enabled, the installation starts automatically. If Autorun is not enabled, navigate to the CD drive and double-click `Launch.exe`.
3. On the initial screen, select **NetBackup Installation**.
4. On the installation screen, select **Install Client Software.**

   The Welcome screen appears. Click **Next**.
5. On the License Agreement screen, accept the terms of the agreement.
6. On the Installation Type screen, do the following:

a. Select **Select from available computers on the network**.

Note The client is installed on the local machine unless you add it to the list of systems to which you are going to install.

b. Select either a typical or custom installation.

If you choose a typical installation, NetBackup uses the default port numbers and default service startup settings.

If you choose a custom installation, you can choose not to install debug symbols or VSP, and you can change the port numbers.

Click **Next**.

7. On the NetBackup System Names screen, provide the name of the client and the master server, and any media servers with which this client should communicate. Provide the media servers in the Additional servers box.

8. On the Ready to Install screen, click **Install**.

   NetBackup installs the client on the specified machines.

Note Clicking the **Cancel** button anytime after you have clicked the **Install** button and started the remote install process will *not* cancel the installation on the remote system that is in progress at the time **Cancel** is clicked. The installation continues until it is finished. Any remote installations that remain are not performed, and any remote installs that were successful to that point will continue to be successful.

9. On the System Validation Complete screen, click **Finish**.

Note You may need to reboot your PC or the remote systems for the changes to take effect.

Silent Installation Instructions for Windows Clients

Note Silent installations of NetBackup clients are not supported if you want to run the NetBackup services as a user rather than as a local administrator. If you want to install NetBackup under this circumstance, use the procedures either in "To install NetBackup client software on Windows systems" on page 85 or "To install the Windows NetBackup client software on remote computers" on page 86.

In a silent installation, the installation process does not require interactive input. It does, however, require that the `silentclient.cmd` file be edited before running the script.

Follow these instructions to perform a silent installation of the NetBackup client software on selected Windows clients on your network (one of these clients can be the system running the `silentclient.cmd` script).

▼ To perform a silent installation on Windows

1. Insert the NetBackup installation CD in the drive. On systems with AutoPlay enabled, the VERITAS NetBackup installation browser starts automatically.

   Note Do not run `instmsiw.exe` on Windows 2000, Windows XP, or Windows 2003 Server systems.

2. Using Microsoft Windows Explorer, navigate to the CD drive.

3. Copy the contents of the `PC_Clnt\` directory to a temp folder on your hard drive (for example, `C:\temp`).

4. The files contained on the CD are read-only. Change the permissions for these files on the hard drive to allow the update.

5. In the temporary directory, use a text editor to edit the `silentclient.cmd` file so the script installs the client software as you want installed.

   Note Be sure to update the client, master server, and additional servers to the minimum required version level of NetBackup.

6. Run the `silentclient.cmd` script.

7. Check the `NetBackup Install.log` log file in the following directory to verify that the installation was successful:

   `C:\Documents and Settings\`*`userid`*`\Local Settings\temp`

You can configure NetBackup clients by performing one of the following actions:

- To add servers or media servers, start the Backup, Archive, and Restore interface and from the **File** menu choose **Specify NetBackup Machines**.
- To display and change the client properties, start the Backup, Archive, and Restore interface and from the **File** menu, choose **NetBackup Client Properties**.
- To display and change the server properties, start the NetBackup Administration Console. Expand **Host Properties** and click on **Clients**. In the right pane, right-click on the client, and choose **Properties**.

All NetBackup servers that require access to your Windows client must be listed on the **Servers** tab in the resulting dialog.

For more information, refer to the *NetBackup Backup, Archive, and Restore Getting Started Guide*.

Uninstalling Windows Client Software

▼ **To uninstall the NetBackup client software on Microsoft Windows clients**

1. Open the Windows Control Panel (select **Start**, **Settings**, and then **Control Panel**).
2. Select **Add/Remove Programs**.
3. Select **VERITAS NetBackup Client**.
4. Click the **Remove** button.

Installing NetBackup Clients on UNIX Systems

Note Macintosh OS X10.3.x clients are UNIX-based clients. Follow the UNIX client installation procedures in this section.

You can install UNIX clients either locally at the client computer or remotely from your UNIX NetBackup server. To have the ability to include a client in a policy, the software for the client type must first be loaded on the UNIX server.

- Ensure that the `gzip` and `gunzip` commands are installed on each system, and that the directories where the commands are installed are part of the root user's `PATH` environment variable setting.
- *For local installations*: You must install the client software locally if remote installation is not possible. Remote installation is not possible if your NetBackup server is a Windows 2000 or Windows 2003 computer or if there is a firewall that prevents remote installation.

  To install NetBackup locally on IBM zSeries Linux clients, you must transfer the contents of the NetBackup CD image to a location that is readable by the virtual Linux environment. This can be done by using FTP or NFS mounting commands.
- *For remote installations*: You can *push* the client software from your UNIX NetBackup server to your UNIX client computers. This is the preferred method of installing. To push a UNIX client, you must first load the software for that type of UNIX computer

onto your UNIX server, and the UNIX client must be a true client and not a media or master server. For instructions on loading the software and the remote client installation, see "Adding a UNIX Client after Initial Server Installation" on page 95.

Clients such as the IBM zSeries Linux may not have a locally mounted CD device, making it impossible to perform a standard local install. To install NetBackup to clients with no local CD drive, you must push the NetBackup installation from a UNIX master or media server.

- For instructions on how to install NetBackup on a secure client, refer to "To install NetBackup software on secure (non-trusting) UNIX clients from a master server" on page 94.
- For instructions on how to install NetBackup on a trusting client, refer to "To install NetBackup software on trusting UNIX clients from a master server" on page 91.

To initiate a backup or a restore from a UNIX client, the following graphical interfaces are available:

- Clients that are compatible with NetBackup-Java may use the NetBackup-Java interface (`jbpSA`). Refer to the *NetBackup Release Notes* for a list of NetBackup-Java capable hosts.
- Clients that are not compatible with NetBackup-Java (Macintosh OS X 10.3.x, IBM zseries Linux, IRIX, and FreeBSD) may use the `bp` interface or they can login from any NetBackup 6.0 UNIX server's NetBackup client console using the `jbpSA` command.

Installing UNIX Clients Locally

The following procedure will install the NetBackup client software on a local machine.

▼ To install UNIX client software locally

Note The only way to install client software to a different location on the client is to create the directory where you want the software to reside and then create `/usr/openv` as a link to that directory before you install the software.

1. Insert the NetBackup client CD into the drive on the client computer and mount it.

   Note For instructions on mounting the CD on your operating system, refer to the appropriate section of "Mounting the Software CD" on page 13. For information on CD contents and exact names, refer to the table "NetBackup Software CD Contents" on page 3.

2. Change your working directory to the CD directory if you have a CD or to the directory that contains the downloaded files:

   ```
   cd /cd_mount_point
   ```

   The *cd_mount_point* is the path to the directory where you can access the CD.

   For Macintosh OS X 10.3.x systems only: You can access the CD from the following location:

   ```
   cd /volumes/cd name
   ```

3. Enter the following command to execute the installation script:

   ```
   ./install
   ```

   Note The binaries provided for the client operating system levels represent the operating system levels on which the binaries were compiled. Often the binaries function perfectly on later versions of the operating system. For example, Solaris 9 binaries also are used on the Solaris 10 level of the operating system. The installation script attempts to load the appropriate binaries for your system. If the script does not recognize the local operating system, it presents choices.

4. Follow the prompts to complete the installation.

5. After the installation is complete, unmount the client CD.

Installing UNIX Client Software Remotely

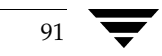
You can push the client software from a UNIX master server to either a trusting client or a secure client.

A *trusting* UNIX client is one that has an entry for the server in its `/.rhosts` file. The `/.rhosts` entries enable software installation, but are not necessary for correct operation of NetBackup software.

Note *For clustered environments*: During the installation, enter the virtual name for the NetBackup server and not the actual local host name. In addition, you can only push client software from the active node.

▼ To install NetBackup software on trusting UNIX clients from a master server

Note The only way to install client software to a different location on the client is to create the directory where you want the software to reside and then create `/usr/openv` as a link to that directory before you install the software.



Note *For Macintosh OS X 10.3.x users*: By default, Macintosh OS X 10.3.x does not enable the remote shell daemon (`rshd`). You must enable this daemon to perform the following procedure successfully. You can enable `rshd` by executing the following command: `/sbin/service shell start`.

1. Start the NetBackup Administration Console.

   On the Login dialog, provide the name of the NetBackup server that contains the policy configuration with the clients.

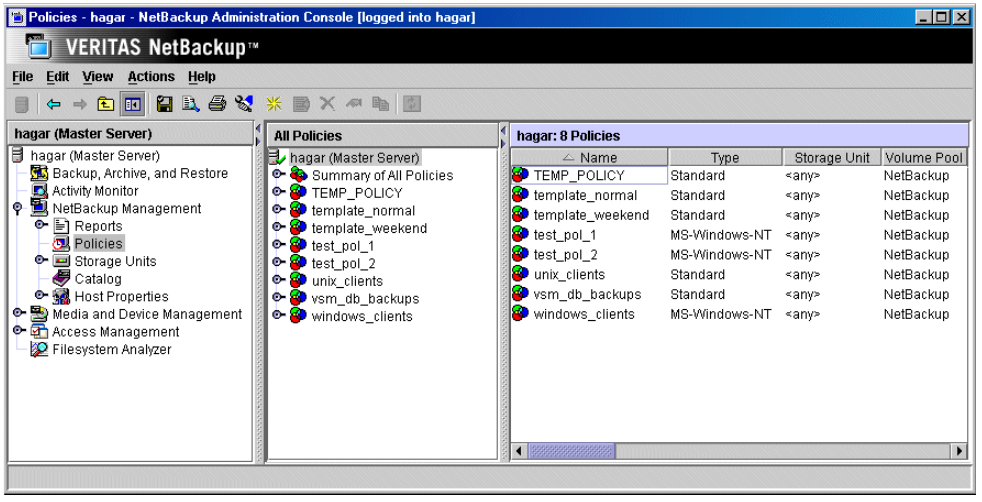
   You can install the client software only from the NetBackup server that you specify in the Login dialog when starting the interface. The clients must be defined in a policy on this NetBackup server.

Note Add the trusting clients to a backup policy, if this has not already been done.

2. In the NetBackup Administration Console window, click on the **NetBackup Management** icon to show the available options.

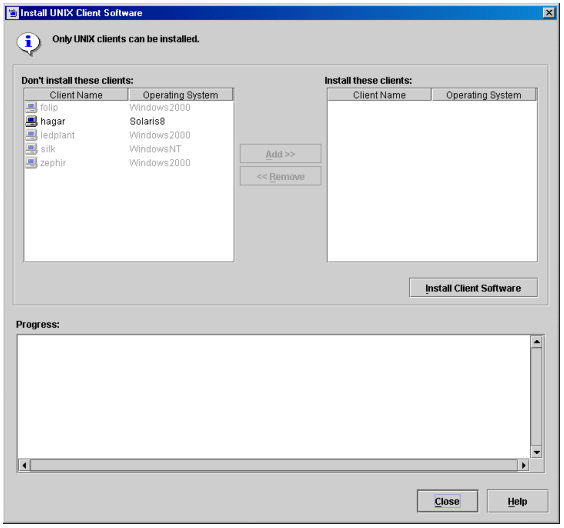
3. Click **Policies** in the left pane. The **All Policies** pane populates with a list of available policies.

4. Select the master server in the **All Policies** pane.



5. Choose **Actions > Install UNIX Client Software**.

   The Install UNIX Client Software dialog appears.



6. In the **Don't install these clients** list, select the clients you want to install and click **Add >>**.

   The clients are moved to the **Install these clients** list.

7. To start the installation, click **Install Client Software**.

   Client software installation can take a minute or more per client. NetBackup writes messages in the **Progress** box as the installation proceeds.

   If the installation fails on a client, NetBackup notifies you but keeps the client in the policy.

   You cannot stop the installation after it has started.

   During installation, NetBackup does the following:

   - Copies the client software from the `/usr/openv/netbackup/client` directory on the server to the `/usr/openv/netbackup` directory on the client, as long as the client is not a media or master server.
   - Adds the appropriate entries to the client's `/etc/services` and `inetd.conf` files or `xinetd.d` directory.

8. After the installation is complete, click **Close**.

▼ To install NetBackup software on secure (non-trusting) UNIX clients from a master server

Note The only way to install client software to a different location on the client is to create the directory where you want the software to reside and then create `/usr/openv` as a link to that directory before you install the software.

A *secure* UNIX client is one that does not have an entry for the NetBackup server in its `/.rhosts` file.

Note Add the secure clients to a backup policy, if this has not already been done.

Note *For Macintosh OS X 10.3.x users*: By default, Macintosh OS X 10.3.x does not enable the FTP daemon (`ftpd`). You must enable this daemon to perform the following procedure successfully. You can enable `ftpd` by checking **Allow FTP access** in the sharing pane of the **System Preferences** application.

1. Move the client software from the server to temporary space in the `/tmp` directory on the client by running the `install_client_files` script from the NetBackup server. To run this script, you must have a login ID and password that you can use to access the clients through FTP.

   To move software to only one client at a time, run the following command:

   `/usr/openv/netbackup/bin/install_client_files ftp` *`client user`*

   To move software to all clients at once, run the following command:

   `/usr/openv/netbackup/bin/install_client_files ftp ALL` *`user`*

   The options are defined as follows:

   - The *client* argument is the host name of the client.
   - The *user* argument is the login id required by FTP on the client.
   - The `ALL` option specifies that you want to install all clients that are configured in any backup policy on the server.

   The `install_client_files` script prompts you for a password for each client if you do not have a `.netrc` file set up.

2. After the `install_client_files` script is complete, the root user on each of the clients must run the `client_config` script to complete the installation:

   `sh /tmp/bp.`*`pid`*`/client_config`

   The *pid* is the process ID. The `client_config` script installs the binaries and updates the `/etc/services` and `inetd.conf` files or the `xinetd.d` directory, as appropriate.

Adding a UNIX Client after Initial Server Installation

If you add a new UNIX client type to your backup environment or forgot to select a UNIX client platform during your NetBackup installation, you must first load the NetBackup client software onto the NetBackup server.

▼ To add UNIX client types to servers after initial installation

The client CD's installation script enables you to load the client software on the server for each of the UNIX client types that NetBackup supports. You can then "push" this client software from the server to your UNIX clients.

1. Mount the client CD.

   A menu appears that displays the available client types.

   Note For instructions on mounting the CD on your operating system, refer to the appropriate section of "Mounting the Software CD" on page 13. For information on CD contents and exact names, refer to the table "NetBackup Software CD Contents" on page 3.

2. Change your working directory to the CD directory if you have a CD or to the directory that contains the downloaded files:

   `cd /cd_mount_point`

   The *cd_mount_point* is the path to the directory where you can access the CD.

3. Enter the following command to execute the installation script:

   `./install`

Note The binaries provided for the client operating system levels represent the operating system levels on which the binaries were compiled. Often the binaries function perfectly on later versions of the operating system. For example, Solaris 9 binaries also are used on the Solaris 10 level of the operating system. The installation script attempts to load the appropriate binaries for your system. If the script does not recognize the local operating system, it presents choices.

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

Note Make sure you load the software for all the UNIX client types you intend to back up onto the server. Otherwise, you cannot add these client types to the NetBackup policy configuration.

5. After the installation is complete, unmount the client CD.

6. Install the NetBackup client on the clients you specified, as described in "Installing UNIX Client Software Remotely" on page 91.

Removing UNIX NetBackup Client Software

Note If you remove NetBackup from a machine on which you have installed the NetBackup-Java Display Console, the console is also removed.

▼ To remove UNIX NetBackup client software

1. Log in to the client system as the root user.

2. Remove the `/usr/openv` directory.
   - If `/usr/openv` is a physical directory, run the following command:

     ```
     rm -rf /usr/openv
     ```

   - If `/usr/openv` is a link, run the following commands:

     ```
     cd /usr/openv
     pwd
     ls
     ```

Caution Make sure you are at the proper location and verify that the subdirectories are what you would expect them to be before continuing. You do not want to remove the wrong directories. This is why the first commands verify your current location and the files in that directory before removing files.

```
rm -rf *
cd /
rm -f /usr/openv
```

Caution The `rm -f /usr/openv` command also removes any add-on products installed on this machine.

3. Remove NetBackup entries in the client's `/etc/services` file by locating the lines marked by the following strings and deleting them:

```
# NetBackup services#
.....
# End NetBackup services #

# Media Manager services #
....
# End Media Manager services #
```

If you do not see these strings, it may be because you upgraded from an earlier release of NetBackup. You can also remove `bpcd`, `bpjava-msvc`, `bprd`, `vnetd`, and `vopied` without searching for the `#End...#` strings. It is not required that you remove the strings from `/etc/services`. Any operations that access the file will function with or without the services being listed.

Note *For Macintosh OS X 10.3.x systems*: The NetBackup installation updates the `/etc/services` file with these entries. However, earlier NetBackup releases may have updated the `/services` directory of the NetInfo database. To uninstall NetBackup and its services from one of these clients, you must use the NetManager utility to remove `bpcd`, `bpjava-msvc`, `bprd`, `vnetd`, and `vopied` from the `/services` directory in the Netinfo database.

4. Remove the NetBackup entries in the `/etc/inetd.conf` file by deleting the lines for `bpcd`, `vnetd`, `vopied`, and `bpjava-msvc`.

5. Ensure that the `inetd` daemon reads the updated `inetd.conf` (or `inetd.local`) file.

a. Determine the process ID of `inetd`. The `ps` command options vary from one UNIX operating system to another. Following are two examples.

For most UNIX clients, run the following command:

```
ps -ea | grep inetd
```

For MacOS X 10.3.x and FreeBSD, run the following command:

```
ps -ax | grep inetd
```

The process ID is the first number displayed in the `ps` command output.

b. HUP the `inetd` daemon, as follows.

```
kill -1 process_ID
```

The `kill` command option may vary from one client platform to another.

6. For NetBackup-Java capable clients running the NetBackup Administration Console for UNIX, remove the NetBackup-Java state data, as follows:

```
/bin/rm -rf /.nbjava
/bin/rm -rf /.java/.userPrefs/vrts
```

Caution There should be no space between the slash "/" and the period "." of "/.nbjava". Adding a space between these characters removes all of your files starting from the root level.

7. Inform NetBackup-Java users that they can remove their `$HOME/.nbjava` and portions of `$HOME/.java` directories.

The `$HOME/.nbjava` and `$HOME/.java` directories contain application state information (for example, table column order and size) that is saved when the user exits NetBackup-Java applications. The process removes this directory for the root user only.

The `common` subdirectory in `$HOME/.java/.userPrefs/vrts` can be removed.

8. If you enabled NetBackup Access Control, NetBackup created new files on clients and servers.

These files can be divided into two categories: individual user files, and NetBackup application temporary files. NetBackup temporary files are removed with NetBackup. Users' cache files exist in their home directories (for example, in `$HOME/.vxss`).

Inform those users that they can remove their `$HOME/.vxss` directory.

For more information on NetBackup Access Control, please see the *NetBackup System Administrator's Guide, Volume II*. For more information on VERITAS Security Services, including how to properly uninstall, please see the *VERITAS Security Services Administrator's Guide*.

Initial NetBackup Configuration 7

This chapter describes initial configuration steps that you may want to complete after the NetBackup installation.

Configuring System Startup and Shutdown of NetBackup

You can use system startup scripts to automatically start the Media Manager and NetBackup daemons when the system boots and use shutdown scripts to terminate them at system shutdown.

Note *For non-cluster upgrades*: Any pre-existing `S77[7]netbackup`, `K01netbackup`, or `K001netbackup` startup/shutdown scripts are saved, and the newly released versions of that script are installed.

The installation process copies the appropriate startup/shutdown script from the `/usr/openv/netbackup/bin/goodies` directory to the `init.d` directory and creates links to it from the appropriate `rc` directory.

Note *For clustered environments*: All of the startup and shutdown scripts are removed from the `rc` directories. Clustered NetBackup environments do not use these scripts.

The installation process installs the links to the startup/shutdown scripts on the various platforms as shown in the following table.

Links to Startup and Shutdown Scripts by Platform

Platform	Links

AIX	`/etc/rc.veritas.aix`
	• You must edit `/etc/inittab` and add the following entry to ensure the script is called during a level-two boot:
	`veritas:2:wait:/etc/rc.veritas.aix`
	• To shut down, add the following line to `/etc/rc.shutdown`:
	`/etc/rc.veritas.aix stop`

ALPHA Tru64	`/sbin/rc3.d/S77netbackup ->/sbin/init.d/netbackup` `/sbin/rc0.d/K01netbackup ->/sbin/init.d/netbackup`
HP-UX	`/sbin/rc2.d/S777netbackup ->/sbin/init.d/netbackup` `/sbin/rc1.d/K001netbackup ->/sbin/init.d/netbackup`

Red Hat Linux	`/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`
	`/etc/rc.d/rc0.d/K01netbackup ->/etc/rc.d/init.d/netbackup`

SuSe Linux	`/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`
	`/etc/init.d/rc0.d/K01netbackup ->/etc/init.d/netbackup`

Default (all other UNIX systems)	`/etc/rc2.d/S77netbackup ->/etc/init.d/netbackup` `/etc/rc0.d/K01netbackup ->/etc/init.d/netbackup`

Configuring Storage Devices for the Operating System

Reliable use of NetBackup depends on the configuration of your storage devices. To ensure reliable backups and restores, you must configure devices for your operating system according to the instructions provided by the device and operating system vendors. This should be completed *before* you configure NetBackup itself.

Caution An improperly configured device may lead to backup failures and/or data loss.

For clustered environments:

- Begin configuring all storage devices from the active node. Refer to "Configuring NetBackup Server Software" on page 104 for guidelines on configuring storage devices to work with NetBackup.
- For a NetBackup failover server, attach all of the devices to each node in the cluster on which NetBackup is installed. Refer to the clustering vendor's documentation for information on how to migrate to another node.

Note To connect a device to the operating system, you should read the chapter appropriate for your operating system in the *NetBackup Media Manager Device Configuration Guide*. The guide is available on the NetBackup Documentation CD.

▼ To prepare a newly connected storage device

1. Consult your storage device's operating manual or front panel to learn how to set the SCSI ID (target). Ensure it is set it to an available SCSI ID.

2. Physically attach your device to a compatible host bus adapter where that SCSI ID is available. "Compatible" means that both the device and host bus adapter are of the same type (such as single-ended, high voltage differential, low voltage differential, or fibre channel).

3. *For clustered environments*:

   Robotic devices and NetBackup add-on products can be configured to failover NetBackup if the robot or add-on product fails. Before you configure this failover, you must configure the robots (see "Configuring Storage Devices for the Operating System" on page 102) or install and configure the add-on product. Refer to the *NetBackup High Availability System Administrator's Guide* for instructions on configuring devices or add-on products to fail over NetBackup.

   Note Robots must be configured before performing the following steps.

   a. Configure NetBackup to fail over if a robotic daemon fails.

   - Configure your robots on each node in the cluster.
   - Run the following script:

     ```
     /usr/openv/netbackup/bin/cluster/cluster_config -r
     ```

   - Add the daemon by choosing **a** (Add).
   - Specify the name of the robotic daemon you want to monitor. (Multiple robots can be added.)

b. To remove a robotic daemon from monitoring, do the following:

- Run the following script:

  ```
  /usr/openv/netbackup/bin/cluster/cluster_config -r
  ```

- Remove the daemon by choosing **d** (Delete).
- Specify the robot daemon type that you would like to remove.

Configuring NetBackup Server Software

After the server software and storage devices have been installed, use the Getting Started wizard on the NetBackup Administration Console to configure your product.

For more information on configuring NetBackup, refer to the *NetBackup System Administration Guide, Volume I*.

Note Before configuring NetBackup, you must have the storage devices attached to the server and perform all configuration steps specified by the device and operating system vendor (including installation of any required device drivers).

Note *For clustered environments*: Configure devices on *every* node in the cluster.

The *NetBackup System Administration Guide, Volume I* describes the group of NetBackup configuration wizards that appear in the right pane of the NetBackup Administration Console when you open it.

This section steps you through procedures that should allow you to configure a test system.

Note If you are configuring NetBackup for the first time, it is best if you click the **Getting Started** icon and use the wizards to guide you through the process. If you have already configured NetBackup, and you wish to make a change to particular area, you can click any of the remaining options.

Before Configuring Media Servers

For NetBackup Enterprise Server.

The procedures for configuring master or media servers are very similar, and you can complete an initial installation of either server first. However, VERITAS recommends that you install and configure the master servers before you install and configure media

servers. You can then configure media server information (such as storage devices and volumes) on the master server to ensure the master server properly administers the media server. The following list contains some helpful tips for configuring media servers.

Note *For clustered environments*: Unless otherwise noted, if a master or media server is part of a cluster, its host name should be the virtual name used to configure NetBackup. Refer to the *NetBackup High Availability System Administrator's Guide* for information on configuring an add-on product to fail over.

If a master server has already been installed, its name appears as the **Host server** name in the left pane of the NetBackup Administration Console of the media server.

The name of the media server appears as the Host server name in the left window pane of the NetBackup Administration Console if any of the following conditions exist:

- The master server has not been installed.
- The media server does not have the correct permissions set on the master server.
- A network problem is blocking the media server from communicating with the master server.

Caution If anything is preventing proper communication between the master server and the media server, you are still presented with the opportunity to run the configuration wizards. Do not run the wizards on the media server until the problems have been corrected. If you do, the master server will not recognize the information that you enter. VERITAS recommends that you correct the problem (such as installing the master server, correcting the permission settings, or solving the network problem) and run the configuration wizards from the master server.

Starting the NetBackup Administration Console

You use the NetBackup Administration Console to configure NetBackup.

▼ To start the NetBackup Administration Console on UNIX

1. Log in to the NetBackup server machine as root.

   For clustered environments: Log on to the active node as root.

   If you need to run the user interface on a computer other than the NetBackup server, log on to that computer as root for a UNIX system, or as the Administrator for a Windows system.

2. On UNIX systems, run the following command:

   ```
   /usr/openv/netbackup/bin/jnbSA &
   ```

   The login box appears.

3. Enter the password for root.

   Note *For clustered environments*: When logging in to the NetBackup Administration Console, specify the virtual host name in the **Host** text box.

4. Click **Login**. The Login dialog closes and the NetBackup Administration Console appears.

5. To begin configuring your product, click **Getting Started**. The Welcome to NetBackup screen appears as the beginning of the configuration wizards.

   Click **Next**.

   The Device Configuration screen appears and prompts you to begin the Device Configuration wizard.

Note There are two wizards available from the initial NetBackup Administration Console window that are not part of the Getting Started wizard. They are for help in specific processes: creating a snapshot backup and recovering the NetBackup catalog should you need to do so for disaster recovery. See the *NetBackup System Administration Guide, Volume I* for information about those wizards.

Configuring Storage Devices

Before you can run backups, you must define your storage devices for NetBackup. The Device Configuration wizard steps you through this process. However, you must be certain that you have correctly configured your storage devices for your UNIX system. NetBackup cannot function reliably unless devices are correctly installed and configured.

Note *For clustered environments*: Begin configuring all storage devices from the active node. It is important that you refer to the *NetBackup High Availability System Administrator's Guide* for step-by-step instructions.

For a NetBackup failover server, it is usually best to attach all of the devices to every node on which NetBackup is installed.

The Device Configuration wizard takes you through the following processes:

- Scanning hosts for backup devices

- Verifying the devices that were automatically detected
- Verifying and correcting the drive configuration
- Updating the device configuration

Device Configuration Tips

- You must specify the hosts on which to auto-discover and configure devices.
- From the Backup Devices screen, confirm that the list of devices displayed is complete and accurate. If a known backup device does not appear in this list, you can do the following:
  - Verify that the backup device is physically attached to the host.
  - Verify that all installation procedures specified by the device and operating system vendor have been performed successfully.
- Verify that all drives correspond to the proper device. If you need to move a drive, select the drive and drag it to the correct location.
- Updating the device configurations can take a few minutes to complete.

Defining Storage Units

- You define storage units from the Configure Storage Units screen. If your system does not have a tape device, you can store data on a disk by defining disk storage units.
- When entering a path for a storage unit, the following rules apply:
  - Use the correct path separators (forward slash (/) for UNIX and backward slash (\) for Windows).
  - Use a colon (:) to specify a drive separation on Windows platforms.
  - Use the following characters only:
    - Alphabetic characters (ASCII A-Z, a-z)
    - Numeric characters (0-9)
    - Miscellaneous characters: plus (+), minus (-), underscore (_), or period (.)

Configuring Volumes

After you have configured your storage devices, the Getting Started wizard begins the Volume Configuration wizard.

Note *For clustered environments*: Configure volumes from the active node.

Note If you only have disk storage capability, NetBackup skips this wizard.

The Volume Configuration wizard lets you do the following:

- Select a device for volume configuration
- Perform an inventory of the robot
- Create new volumes
- Create new volume groups

Tips for the Inventory of a Standalone Drive

- The Volume Configuration wizard does not enable you to configure cleaning tapes for standalone drives.
- You can select the number of volumes for your device.

Tips for the Inventory of a Robot

- NetBackup conducts an inventory of the robot or device that you selected. Check the **Results:** field after the inventory completes to view what the inventory discovered.
- After the inventory process of your device completes, the wizard prompts you to identify which slots in it contain cleaning media.

  If you have just upgraded NetBackup and have pre-existing barcode rules, the barcode reader automatically detects slots designated for cleaning media. If you do not designate cleaning slots, NetBackup considers all media (including cleaning media) as typical media and tries to overwrite it.
- If you identified one or more tapes as cleaning tapes in the Identify Cleaning Media screen, you see the Robot Inventory (Cleaning Media) screen. It displays the results after the software updates the EMM database.

Configuring the Catalog Backup

The NetBackup Catalog contains information about your configuration and about the files and directories that have been backed up. If a disk fails and your catalog is lost, a backup of your catalog makes it easy to restore your backed-up data and resume your backup schedule.

It is imperative that you configure a catalog backup before backing up any other data.

Note *For clustered environments*: Instructions on how to configure a catalog backup are provided in the *NetBackup High Availability System Administrator's Guide*.

The Catalog Backup wizard lets you do the following:

- Create a policy for catalog backup, if one does not exist.
- Specify destinations for the catalog backup. A backup destination can be either removable media or a location on a hard drive.
- Specify when a backup of the NetBackup Catalog occurs.
- *For NetBackup Enterprise Server environments:* You can specify a media server to perform the backup.

Basic Tips for Configuring a Catalog Backup

- VERITAS recommends that you back up the catalog to tape, if possible.
- The Catalog Backup wizard allows you to configure either an online, hot catalog backup or an offline, cold catalog backup.

  The online, hot catalog backup is new with NetBackup 6.0. It is designed for use in very active NetBackup environments that usually have backup activity taking place, and for which the catalog itself is large. Online, hot catalog backups can back up the catalog while continual client backups are in progress.

  The offline, cold catalog backup works well for less active environments that have smaller catalogs. This type of backup cannot span tapes. It also requires that NetBackup be quiesced before backups can be run: it cannot back up the catalog while any job or catalog operation is running.

  For details on which type of catalog will work best for your environment, refer to the chapter on NetBackup catalogs in the *NetBackup System Administration Guide, Volume I*.

Tips for Configuring a Catalog Backup if You Have Media Servers

- You must first select a media server. If you want to back up the catalog to removable media, select the media server that has the drive(s) you want to use to write the backup to the media. If you want to back up the catalog to a hard drive (which is not the recommended method), specify the computer that contains the hard drive.
- From the NetBackup Catalog Files screen, you verify that the master server's and each media server's catalogs are included in the list. Verify that the absolute path names are correct and are in the correct format. Follow the instructions on the screen for specifying the entire list.

The path names of the catalogs on the master server are automatically added during installation and generally require no action on your part other than to verify that they are listed. However, if you have moved the location of your catalog on your master server, the new location must be specified. Path names to the NetBackup catalog on the media servers are *not* automatically added during installation. You must add them to the file list. For more information on specifying the path names, see *NetBackup System Administration Guide, Volume I*.

Creating a Backup Policy

When you create a backup policy, you specify when a backup takes place, the files you want to back up, the clients you want to back up, and other general attributes that define how the backup is performed. This wizard lets you define a backup policy for a group of one or more clients.

Note *For clustered environments*: Configure the policy from the active node.

The Backup Policy wizard steps you through specifying the following:

- Policy names and types
- Clients
- Files and directories to back up
- Backup types
- Backup rotations
- Starting times of backups

Types of Backups

The Backup Policy wizard prompts you to choose the type of backup that you want a policy to perform. The following list summarizes your choices:

- A Full Backup backs up all files specified in the file list.
- An Incremental Backup backs up all changed files specified in the file list.
  - A Differential Backup is often called a differential incremental backup. It backs up files that have changed since the last successful incremental or full backup. All files are backed up if no prior backup has been done.
  - A Cumulative Backup is often called a cumulative incremental backup. It backs up files that have changed since the last successful full backup. All files are backed up if no prior backup has been done.
- A User Backup is initiated by an end-user to back up specific files.

Tips on Creating Backup Policies

- The list that appears on the Client List screen of the Backup Policy wizard is a list of clients that are backed up. You can add, change, or delete clients from this list by selecting a name and clicking the appropriate button.
- You can select how often you want a backup policy to run for full or incremental backups. In addition, you can select the retention period for the backups.

Note After you have completed the Backup Policy wizard, you are asked if you want to perform an installation verification test. If you choose to do this step, you can click the Activity Monitor in the left pane of the NetBackup Administration Console and monitor the backup job's progress.

Accessibility A

The NetBackup interface can be used by people who are vision impaired and by people who have limited dexterity. Accessibility features include the following:

Note Text that appears in the NetBackup interface is accessible through an application programmer's interface (API) to assistive technologies such as voice or assistive device input products and to speech output products.

Using the Keyboard to Navigate in NetBackup

You can use your keyboard to navigate in the NetBackup interface:

- Press window navigation keys to move from one window element to another. For example, press **Tab** to move from one pane to another.
- Perform common actions quickly using accelerator keys. Accelerator keys let you initiate actions without first accessing a menu. For example, press **Ctrl+n** to create a new policy.
- Press mnemonic keys to select items using only the keyboard. Mnemonic keys are indicated by an underlined letter. For example, press **Alt+h** to access the **Help** menu.
- You can also use the keyboard to select control options in a dialog.

Navigating in a NetBackup Tree View

Use the following keys or key combinations to navigate through the NetBackup Console window.

Keyboard Input	Result
Tab or **F6**	Moves to the next (right or down) pane in the active NetBackup window.
Shift+Tab or **Shift+F6**	Moves to the previous (left or up) pane in the active NetBackup window.

Keyboard Input	Result
Ctrl+Tab or **Ctrl+F6**	Moves to the next (right or down) NetBackup window.
Ctrl+Shift+Tab or **Ctrl+Shift+F6**	Moves to the previous (left or up) NetBackup window.
Plus Sign (+) on the numeric keypad	Expands the highlighted item.
Minus Sign (–) on the numeric keypad	Collapses the highlighted item.
Asterisk (*) on the numeric keypad	Expands the entire tree below the first item in the active NetBackup window.
Up Arrow	Gives focus to the next item up in the pane.
Down Arrow	Gives focus to the next item down in the pane.
Shift+Up Arrow	Selects the next item up in the pane.
Shift+Down Arrow	Selects the next item down in the pane.
Page Up	Moves to the top item visible in a pane.
Page Down	Moves to the bottom item visible in a pane.
Home	Moves to the first item (whether visible or not) in a pane.
End	Moves to the last item (whether visible or not) in a pane.
Right Arrow	Expands the highlighted item. If the highlighted item does not contain hidden items, using the **Right Arrow** has the same effect as using the **Down Arrow**.
Left Arrow	Collapses the highlighted item. If the highlighted item does not contain expanded items, using the **Left Arrow** has the same effect as using the **Up Arrow**.
Alt+Right Arrow	Moves to the next (right or down) option control in the interface.
Alt+Left Arrow	Moves to the previous (left or up) option control in the interface.
Alt+Spacebar	Displays the NetBackup window menu.

Using Accelerator Keys

Accelerator keys let you use NetBackup from the keyboard, rather than using the mouse. Accelerator keys are either a single keystroke or two or more keystrokes that can be pressed in succession (rather than holding them simultaneously). If available, accelerator keys are shown to the right of the menu item they perform.

For example, to refresh the information in the window, press **F5**.

Using Mnemonic Keys

A mnemonic key is a keyboard equivalent for a mouse click that is used to activate a component such as a menu item. To select a menu item, press the **Alt** key to initiate menu pull-down mode, then press a mnemonic key to open a menu, and another mnemonic key to select a menu item.

Mnemonics are case-insensitive. Keys can be pressed either sequentially or simultaneously.

For example, to change the Master Server, press and hold the **Alt** key then press the **f** key to pull down the File menu, and press the **c** key to invoke the **Change Server** menu option.

Using the Keyboard in Dialogs

To select or choose controls that have an underlined letter in their titles, type **Alt+***underlined_letter* at any time when the dialog is active. For example, typing **Alt+O** is the same as clicking the OK button in a dialog.

To move forward (right or down) from one control to the next, press **Tab**. To reverse the direction (for example, from moving right to moving left), press **Tab** and **Shift**.

To move within a list box, groups of option controls, or groups of page tabs, press the arrow key that points the direction you want to move.

Options that are unavailable appear dimmed and cannot be selected.

The following conventions are typically used in NetBackup dialogs:

- Command buttons (also known as push buttons)

  Command buttons initiate an immediate action. One command button in each dialog carries out the command you have chosen, using the information supplied in the dialog. This button is generally labeled **OK**. Other command buttons let you cancel the command or choose from additional options.

- Command buttons containing an ellipsis (...)

Command buttons containing an ellipsis (...) open another dialog so you can provide more information or confirm an action. Command buttons marked with an arrow display a menu.

- Command buttons outlined by a dark border

  A dark border around a button initially indicates the default button. Press **Enter** or the **Spacebar** at any time to choose the button with a dark border. Press **Tab** to move the keyboard focus to the next control. When you change focus to a command button, it temporarily has the dark border. If the focus is not on a control, the dark border returns to the default command button in the pane.

- Check boxes

  Check boxes may be selected or cleared to turn an option on or off. Check boxes can have two states (checked and unchecked) or three states (checked, unchecked, and indeterminate).

  Press **Tab** to move from one checkbox to another and the **Spacebar** to change the check box to the next state. Typing the mnemonic key for a check box also moves the focus to the box and changes its state.

- Option controls (also known as radio buttons)

  Option controls are used to select only one option from a group of options. (Option buttons may represent two or three states, as checkboxes do.) Press **Tab** to move to an option button and press the **Spacebar** to initiate the option. Type the mnemonic key for an option control to move the focus to the control and select it.

- Page series

  A series of pages are used to fit many options into a single dialog. Each page contains separate groups of controls such as check boxes or option controls. Press **Tab** to move to the name of the page, then use right and left arrows to highlight a different page name. Press **Return**.

Accessing Online Documentation

In addition to online help, NetBackup provides copies of related NetBackup manuals in Adobe Portable Document Format (PDF) on the NetBackup documentation CD (or as an option for downloading if the release is available from the Web). For a complete list of NetBackup documents, see the *NetBackup Release Notes*.

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