

VERITAS NetBackup™ 5.1 for NDMP

System Administrator's Guide

for UNIX and Windows

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Preface

This guide explains how to install, configure, and use VERITAS NetBackup for NDMP (Network Data Management Protocol). In this guide, VERITAS NetBackup is referred to as NetBackup.

This guide is intended for the system administrator responsible for installing, configuring, and using NetBackup for NDMP, and assumes a thorough working knowledge of how to administer both NetBackup and the NDMP host platform.

What is In This Manual?

Chapters in This Manual

Chapter	Description
“Introduction to NetBackup for NDMP”	An overview of the NetBackup for NDMP capabilities and includes an explanation of NDMP terminology.
“Installing NetBackup for NDMP”	Explains installation prerequisites and how to install NetBackup for NDMP.
“Configuring NetBackup for NDMP”	Explains how to configure your system to use NetBackup for NDMP. This chapter supplements the information in the <i>NetBackup System Administrator’s guides</i> .
“Remote NDMP”	Explains how to back up an NDMP host to a storage device locally attached to a NetBackup media server.
“Backup and Restore Procedures”	Explains how to back up and restore from NetBackup for NDMP policies.
“Troubleshooting”	Explains how to troubleshoot NetBackup for NDMP.



Chapters in This Manual

Chapter	Description
“Using Scripts”	Describes template scripts that can be used for execution of a wide variety of tasks during backup.

Getting Help

VERITAS offers you a variety of support options.

Accessing the VERITAS Technical Support Web Site

The VERITAS Support Web site allows you to:

- ◆ 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

The address for the VERITAS Technical Support Web site follows:

- ◆ <http://support.veritas.com>

Subscribing to VERITAS Email Notification Service

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

Go to <http://support.veritas.com>. Select a product and click “E-mail Notifications” on the right side of the page. Your customer profile ensures you receive the latest VERITAS technical information pertaining to your specific interests.



Accessing VERITAS Telephone Support

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.

▼ To locate the telephone support directory on the VERITAS web site

1. Open <http://support.veritas.com> in your web browser.
2. Click the **Phone Support** icon. A page that contains VERITAS support numbers from around the world appears.

Accessing VERITAS E-mail Support

▼ To contact support using E-mail on the VERITAS web site

1. Open <http://support.veritas.com> in your web browser.
2. Click the **E-mail Support** icon. A brief electronic form will appear and prompt you to:
 - ◆ Select a language of your preference
 - ◆ Select a product and a platform
 - ◆ Associate your message to an existing technical support case
 - ◆ Provide additional contact and product information, and your message
3. Click **Send Message**.

Contacting VERITAS Licensing

For license information call 1-800-634-4747 option 3, fax 1-650-527-0952, or e-mail amercustomer@veritas.com.

Related Manuals

See the following manuals if you are using NetBackup for NDMP on a UNIX host:

- ◆ *NetBackup Release Notes*
Provides other important information such as the platforms and operating systems that are supported and operating notes that are not in the manuals.
- ◆ *NetBackup Media Manager Device Configuration Guide*



Provides information about configuring storage devices on UNIX systems.

- ◆ *NetBackup System Administrator's Guide for UNIX, Volumes I and II*

Explains how to configure and manage NetBackup.

- ◆ *NetBackup Backup, Archive, and Restore Getting Started Guide*

Explains how to use the NetBackup Backup, Archive, and Restore interface to perform basic backup and restore operations for UNIX and Windows systems.

- ◆ *NetBackup Media Manager System Administrator's Guide for UNIX*

Explains how to configure and manage the storage devices and media that NetBackup servers use for backups.

- ◆ *NetBackup Troubleshooting Guide*

Provides NetBackup troubleshooting information.

See the following manuals if using NetBackup for NDMP on a Windows host:

- ◆ *NetBackup Release Notes*

Provides important information about platforms and operating systems that are supported and operating notes that are not in the manuals.

- ◆ *NetBackup System Administrator's Guide for Windows, Volumes I and II*

Explains how to configure and manage NetBackup.

- ◆ *NetBackup Media Manager System Administrator's Guide for Windows*

Explains how to configure and manage the storage devices and media that NetBackup servers use for backups.

- ◆ *NetBackup Troubleshooting Guide*

Provides NetBackup troubleshooting information.

For more information about NDMP, go to: <http://www.ndmp.org>

Glossary

If you encounter unfamiliar terminology, consult the NetBackup online glossary. The glossary contains terms and definitions for NetBackup and all additional NetBackup options and agents.

The NetBackup online glossary is included in the NetBackup help file.



▼ 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.

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 more information, see the *NetBackup System Administrator's Guide for Windows, Volume I* or the *NetBackup System Administrator's Guide for UNIX, Volume I*.

Conventions

The following conventions apply throughout the documentation set.

Product-Specific Conventions

The following term is used in the NetBackup 5.1 documentation to increase readability while maintaining technical accuracy.

- ◆ Microsoft Windows, Windows

Terms used to describe a specific product or operating system developed by Microsoft, Inc. Some examples you may encounter in NetBackup documentation are, Windows servers, Windows 2000, Windows Server 2003, Windows clients, Windows platforms, or Windows GUI.

When Windows or Windows servers is used in the documentation, it refers to all of the currently supported Windows operating systems. When a specific Windows product is identified in the documentation, only that particular product is valid in that instance.



For a complete list of Windows operating systems and platforms that NetBackup supports, refer to the *NetBackup Release Notes for UNIX and Windows* or go to the VERITAS support web site at <http://www.support.veritas.com>.

Typographical Conventions

Here are the typographical conventions used throughout the manuals:

Conventions

Convention	Description
GUI Font	Used to depict graphical user interface (GUI) objects, such as fields, listboxes, menu commands, and so on. For example: Enter your password in the Password field.
<i>Italics</i>	Used for placeholder text, book titles, new terms, or emphasis. Replace placeholder text with your specific text. For example: Replace <i>filename</i> with the name of your file. Do <i>not</i> use file names that contain spaces. This font is also used to highlight NetBackup server-specific or operating system-specific differences. For example: <i>This step is only applicable for NetBackup Enterprise Server.</i>
Code	Used to show what commands you need to type, to identify pathnames where files are located, and to distinguish system or application text that is displayed to you or that is part of a code example.
Key+Key	Used to show that you must hold down the first key while pressing the second key. For example: Ctrl+S means hold down the Ctrl key while you press S.

You should use the appropriate conventions for your platform. For example, when specifying a path, use backslashes on Microsoft Windows and slashes on UNIX. Significant differences between the platforms are noted in the text.

Tips, notes, and cautions are used to emphasize information. The following samples describe when each is used.

Tip Used for nice-to-know information, like a shortcut.

Note Used for important information that you should know, but that shouldn't cause any damage to your data or your system if you choose to ignore it.



Caution Used for information that will prevent a problem. Ignore a caution at your own risk.

Command Usage

The following conventions are frequently used in the synopsis of command usage.

brackets []

The enclosed command line component is optional.

Vertical bar or pipe (|)

Separates optional arguments from which the user can choose. For example, when a command has the following format:

```
command arg1|arg2
```

In this example, the user can use either the *arg1* or *arg2* variable.

Navigating Multiple Menu Levels

When navigating multiple menu levels, a greater-than sign (>) is used to indicate a continued action.

The following example shows how the > is used to condense a series of menu selections into one step:

- ❖ Select **Start > Programs > VERITAS NetBackup > NetBackup Administration Console**.

The corresponding actions could be described in more steps as follows:

1. Click **Start** in the task bar.
2. Move your cursor to **Programs**.
3. Move your cursor to the right and highlight **VERITAS NetBackup**.
4. Move your cursor to the right. First highlight and then click **NetBackup Administration Console**.

NDMP Information on the Web

The VERITAS support web site has up-to-date information on NDMP supported operating systems and NAS vendors. It also contains configuration and troubleshooting help for particular NAS systems. To locate this information, do the following:



1. Go to www.support.veritas.com.
2. In the **Knowledge Base Search** field, enter the following:
NAS Appliance
The full title of the document is:
NetBackup for NDMP Supported OS and NAS Appliance Information



Introduction to NetBackup for NDMP

1

NetBackup for NDMP is an optional application that enables NetBackup to use the Network Data Management Protocol (NDMP) to initialize and control backups and restores of Network Attached Storage (NAS) systems.

NetBackup for NDMP Features

NetBackup for NDMP includes the following features:

- ◆ Support for NDMP protocol versions V2, V3, and V4.
- ◆ Centralized backup-policy management

Scheduling, catalog management, and other backup tasks are managed from a NetBackup master server. NetBackup for NDMP may be installed on a NetBackup master or media server.

- ◆ Device and media management

NetBackup Media Manager software provides complete management and control of the devices and media used for backups and restores of NDMP hosts. The NetBackup Device Configuration wizard can discover and configure storage devices that are attached to an NDMP host (requires NDMP protocol versions V3 or V4). Note that wizard-based discovery depends upon a number of device-specific features, such as SCSI inquiry and serialization, which may not be supported by all NAS vendors.

- ◆ High speed local backup of NDMP hosts

Backup data travels between disk and tape drives that are directly attached to the same NDMP host. This provides high-speed backup without impairing network throughput.

- ◆ Backup of network-attached NDMP hosts to a tape device on another NDMP host or to advanced tape libraries with embedded NDMP server.

Backup data travels across the network, from a disk on an NDMP host to tape on another NDMP host. This is referred to as *three-way backup*. This data movement option requires support from the NAS/NDMP host.



- ◆ Backup of a network-attached NDMP host to a tape device on a NetBackup media server (a form of three-way backup called “remote NDMP”). This feature supports NDMP version V2 on the NetBackup media server, and versions V2, V3, and V4 on the NDMP hosts. Remote NDMP does not support Shared Storage Option (SSO).
- ◆ Snapshots of data on NDMP hosts

NetBackup can make point-in-time snapshots of data on an NDMP (NAS) host without interrupting client access to the data, using the NDMP V4 snapshot extension. The snapshot is stored on the same device that contains the NDMP client data. From the snapshot, you can restore individual files or roll back a file system or volume, by means of Advanced Client Instant Recovery. A NetBackup Advanced Client license is required, in addition to the NetBackup for NDMP license. Refer to the *NetBackup Advanced Client System Administrator’s Guide* for configuration details.
- ◆ Direct Access Recovery (DAR)

For NDMP hosts that support DAR, this feature can greatly reduce the time it takes to restore a single file or small number of files.
- ◆ Shared tape libraries

Tape libraries can be shared between NDMP hosts and NetBackup servers, or between multiple NDMP hosts. Robotic control can be on an NDMP host or on a NetBackup server. Drives used for NDMP backup/restore cannot be shared with other NetBackup servers.
- ◆ Path-based file history

The NDMP server can send catalog information consisting of complete path names to NetBackup. This feature is not supported by all vendors. For up-to-date information on the vendors supporting path-based history, refer to “[NDMP Information on the Web](#)” on page xiii.
- ◆ NetBackup for NDMP servers are supported in a NetBackup clustered environment.
- ◆ The enhanced ability to execute customized scripts during a backup, especially for relational databases residing on NAS devices.

NetBackup for NDMP Terminology

This section introduces NetBackup for NDMP terminology. For explanations of other NetBackup terms, consult the NetBackup online glossary. For instructions, see the “[Glossary](#)” section in “[Preface](#).”

DAR (Direct Access Recovery)

The NDMP host positions the tape to the exact location of the requested file(s), reading only the data needed for those files. Restore times can be reduced from hours to minutes.



NDMP (Network Data Management Protocol)

NDMP is a widely used protocol through which an NDMP-conformant backup application can control the backups and restores for an NDMP host.

NDMP Host

A NAS system that serves files to clients using HTTP, FTP, CIFS, or NFS protocols. It also runs an NDMP server application that communicates with NDMP client backup software to configure and perform backup and restore tasks.

NAS systems are designed to provide fast, multi-protocol file access and cost effective data storage to workstations and servers in the network or across the Internet.

In a NetBackup configuration, the NDMP host is considered a client of NetBackup. However, NetBackup client software is never installed on an NDMP host.

NDMP Server Application

An NDMP server application runs on an NDMP host and executes backup, restore, and device control commands that it receives from an NDMP-conformant backup application. The backup application (NetBackup) is considered an NDMP client.

A separate instance of an NDMP server process exists for each connection to an NDMP client. That is, if two backups are in progress, an NDMP server process exists for each backup.

NDMP Client

An NDMP client is an NDMP-compliant backup application that is a client of an NDMP server application. An NDMP client sends commands to the NDMP server application to control the backups and restores on an NDMP host.

NetBackup for NDMP is an application that allows NetBackup to be an NDMP client.

NetBackup for NDMP Server

A NetBackup for NDMP server is a NetBackup master or media server that has NetBackup for NDMP software installed on it.

NDMP Storage Unit

An NDMP storage unit stores the backup data for an NDMP host. The tape drives in this storage unit attach directly to the NDMP host or to a NetBackup media server acting as an NDMP host (for remote NDMP). These drives cannot be used to store data for non-NDMP hosts. Note that disk storage units cannot be used for NDMP tasks.

Three-Way Backup/Restore

In a three-way backup or restore, data travels between an NDMP host and a storage device that is attached to another NDMP host or to a NetBackup media server. This contrasts with local NDMP backup/restore, where the data travels between an NDMP host's disk and a storage device directly attached to the same NDMP host.



Remote NDMP Backup/Restore

This is a form of three-way backup/restore, in which data travels from an NDMP host on the network to a tape storage unit attached to a NetBackup media server. The storage device on the NetBackup media server is used for NDMP data only. Data movement is controlled by an NDMP “mover agent” running on a supported NetBackup media server.

Remote NDMP is currently supported on Solaris and Windows NT/2000/2003 platforms. For the latest information on supported platforms, refer to “[NDMP Information on the Web](#)” on page xiii.

Redirected Restore (to a Different Client)

In a redirected restore, files are restored to a client other than the one from which they were originally backed up. In NetBackup for NDMP, this means the restore data travels from an NDMP host (or NetBackup media server) with a locally attached storage device to another NDMP host on the network.

Technical Overview

This section describes how NetBackup works with NDMP hosts.

- ◆ [NDMP \(Network Data Management Protocol\)](#)

An overview of NDMP in a NetBackup configuration.

- ◆ [NetBackup for NDMP](#)

An overview of NDMP policies, NDMP storage units, and NetBackup processes for backing up and restoring clients in an NDMP policy.

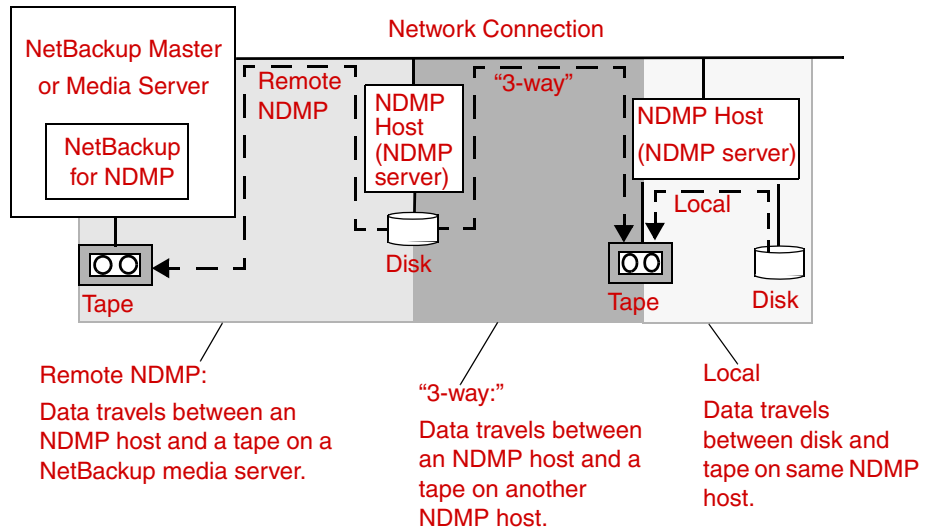


NDMP (Network Data Management Protocol)

NDMP is a widely used protocol through which an NDMP-conformant backup application can control the backups and restores of any NDMP host that is running an NDMP server application.

The following shows an example of NDMP architecture in a NetBackup configuration.

NDMP Architecture



NDMP architecture follows the client/server model.

- ◆ The NetBackup master or media server that has NetBackup for NDMP installed is called a *NetBackup for NDMP server*.
- ◆ The host where the NDMP server application resides is called an *NDMP host*.
- ◆ The NetBackup software is a client of the NDMP server application. NetBackup for NDMP is the application that allows NetBackup to be an NDMP client.

The NDMP server application on the NDMP host performs backups and restores of the NDMP host, directed by commands received from an NDMP client (NetBackup):

During a *local* backup or restore:

The data travels between the NDMP host's disk and its locally attached storage devices.

During a *three-way* backup or restore:

The data travels over the network, between an NDMP host and a storage device that is attached to another NDMP host configured on the network.



During a three-way backup called *remote NDMP*:

The data travels over the network between an NDMP host and a storage device that is attached to a NetBackup media server.

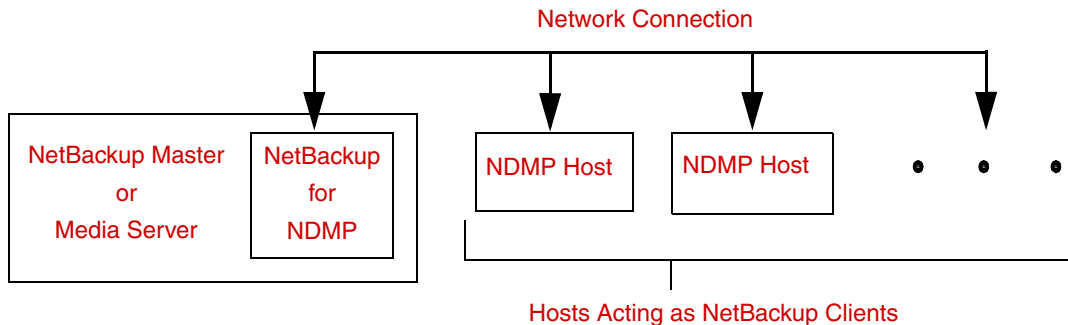
NetBackup for NDMP

NDMP Policies

After installing and configuring NetBackup for NDMP, you can schedule backups by creating an NDMP policy in NetBackup.

An NDMP policy can have one or more NetBackup clients. Each NetBackup client must be an NDMP host (see diagram). Note that you do not install any NetBackup software on the NDMP hosts.

NDMP Hosts as NetBackup Clients

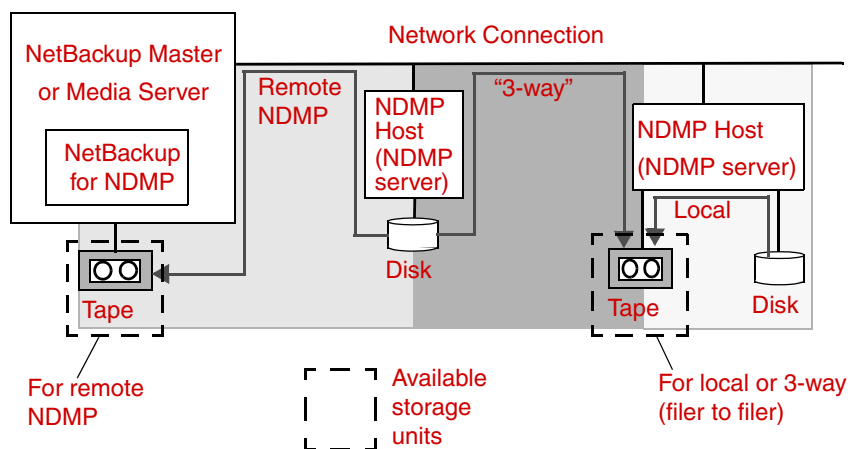


The allowable backup types for schedules in an NDMP policy are: Full, Cumulative Incremental, or Differential Incremental. User initiated backups and archives are not allowed, because the NDMP protocol does not permit these tasks.

Restores of NDMP host backups can be initiated from any NetBackup media server that is within the same overall NetBackup storage domain and uses the same NetBackup master server as used by the media server that performed the backup. The data can be restored to the NDMP host where it was backed up, or to another NDMP host.

NDMP policies use only NDMP storage units. NDMP storage units can store data from any networked NDMP host (local, “three-way,” or “remote”). Three-way means that an NDMP host on the network can send backup data to (or receive restore data from) a storage unit that is attached to a different NDMP host or to a NetBackup media server. See diagram titled “NDMP Storage Units (Tape Only).”

NDMP Storage Units (Tape Only)



NDMP Storage Units

An NDMP storage unit can contain standalone or robotic drives. Robotic controls can be in a TSD (Tape Stacker DLT), TLD (Tape Library DLT), TL8 (Tape Library 8MM), TLH (Tape Library Half Inch), or ACS robot type.

The NDMP supported tape drives can be split between NDMP hosts and NetBackup servers. For example, in the following diagram (“NDMP and Non-NDMP Storage Units”):

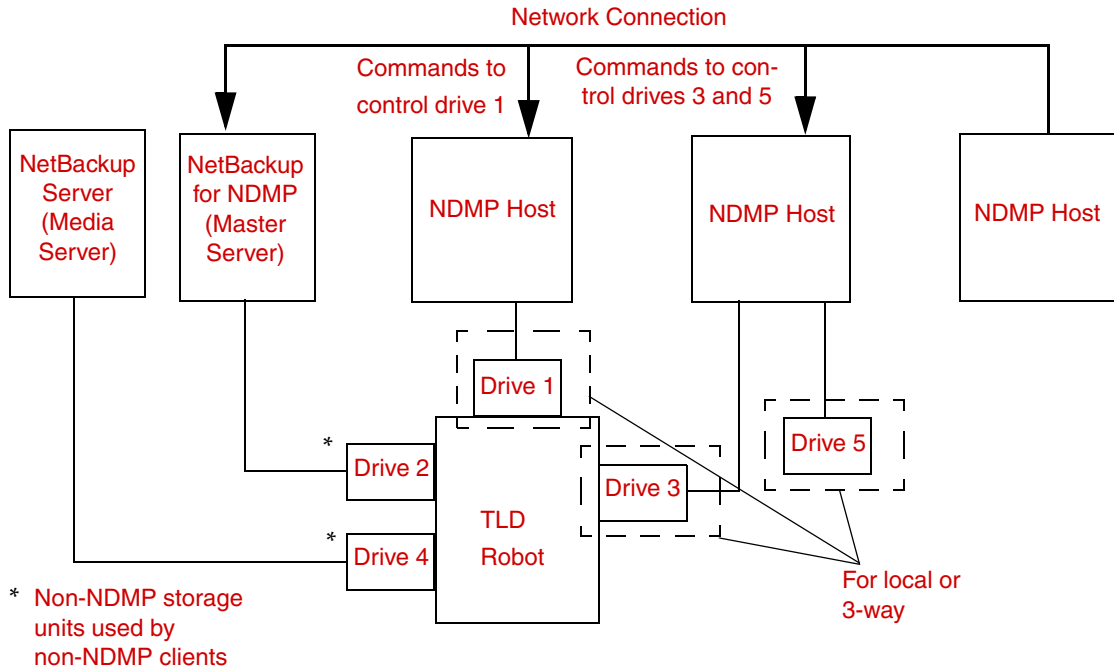
- ◆ Tape drives 1, 3, and 5 are attached to NDMP hosts and are in NDMP storage units that can be used for NDMP backup (local or three-way).

The commands that control these drives originate on the NetBackup for NDMP server and are sent through the NDMP connection on the network. The NDMP server application on each NDMP host translates the NDMP commands into SCSI commands for the local drives.

- ◆ Tape drives 2 and 4 are attached to NetBackup servers and are in non-NDMP storage units. These drives can be used only for non-NDMP clients of NetBackup and are controlled in the same way as other drives on NetBackup servers.



NDMP and Non-NDMP Storage Units



Note Another drive can be locally attached to a NetBackup media server, to be used as a dedicated NDMP storage unit for NDMP three-way backups (see diagram “[Remote NDMP Storage](#)” on page 10).

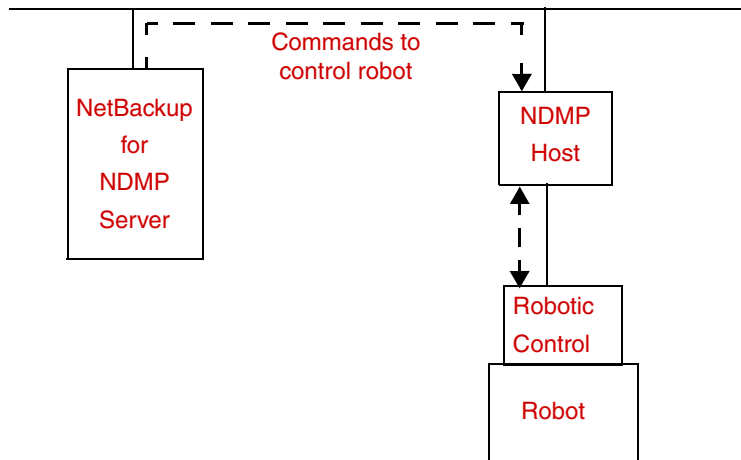


Robotics control can attach to an NDMP host or to a NetBackup server, as follows:

- ◆ NDMP host

Commands are sent by NetBackup over the network to the NDMP host, which in turn sends them to the robot.

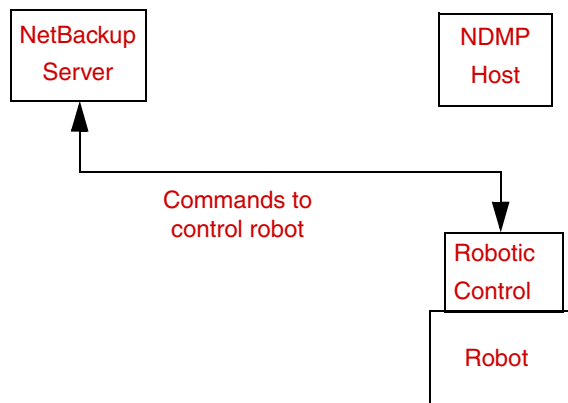
Robotics Control Attached to an NDMP Host



- ◆ NetBackup server. This can be a NetBackup for NDMP server.

The robot is controlled in the same way as other robots on NetBackup servers.

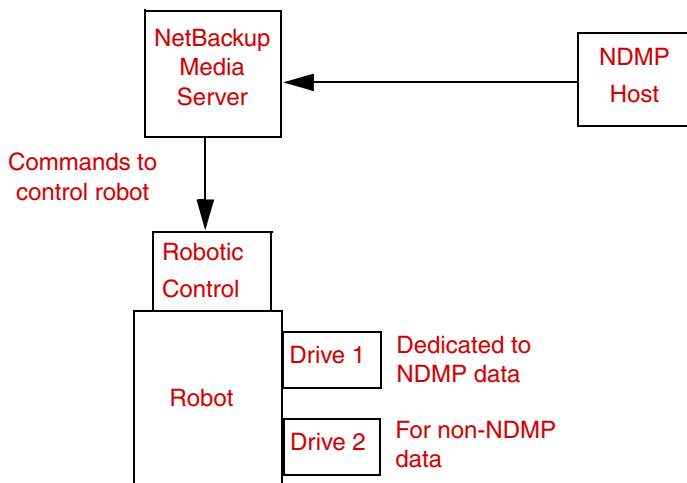
Robotics Control Attached to a NetBackup Server



In a variation called a remote NDMP configuration, a NetBackup media server uses a local drive to store backups as directed by the NDMP host (see following diagram).

The drive on the NetBackup media server must be used for NDMP backups only. The NDMP host runs “three-way” backups. Refer to the “[Remote NDMP](#)” chapter for more information.

Remote NDMP Storage



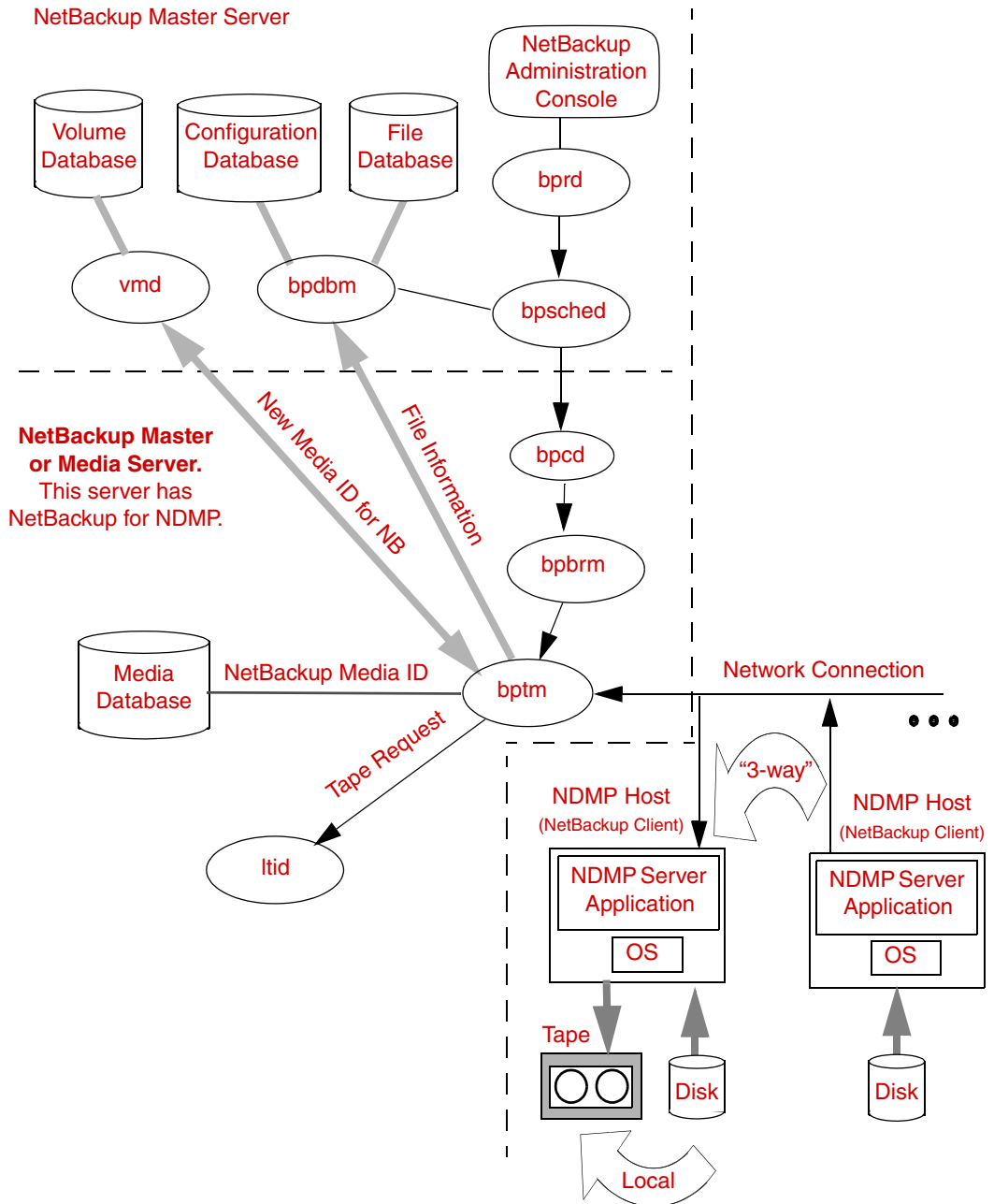
NDMP Backup Process

The following diagram (“[NetBackup Backup Processes](#)”) shows the NetBackup processes that are involved in NDMP backups. During a backup, the following events occur:

1. NetBackup obtains a media ID for the tape that will be used for the backup and sends a tape-mount request to `ltid`.
2. `ltid` on the NetBackup for NDMP server sends the NDMP (SCSI robotic) commands necessary to get the requested tape mounted on the storage device.
3. NetBackup sends the NDMP commands necessary to have the NDMP server application perform a backup to the tape. The backup data travels in one of two ways:
 - ◆ Between the local disk and tape drives on an NDMP host.
 - ◆ Over the network, from an NDMP host without its own storage device to a NDMP host (or NetBackup media server) with a locally attached storage device (three-way backup).
4. The NDMP server application sends information to the NetBackup for NDMP server about the files that were backed up. This information is stored in the NetBackup file database.
5. The NDMP server application sends status about the backup operation to the NetBackup for NDMP server.



NetBackup Backup Processes



NDMP Restore Processes

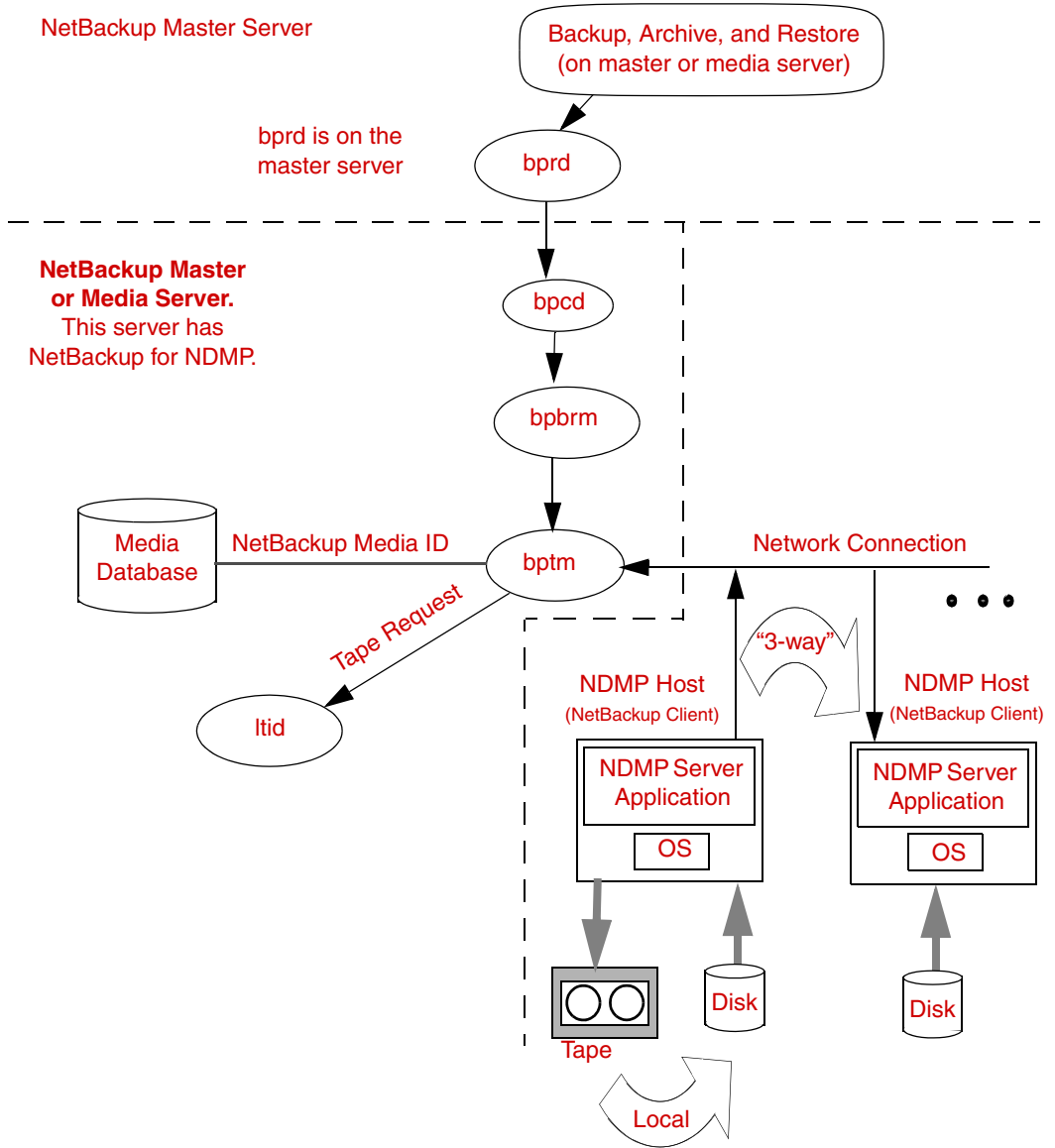
Because of the design of the NDMP protocol, only an administrator on a NetBackup server (master or media) can restore files from NDMP backups. During a restore, the administrator browses the file catalog and selects files from NDMP images in the same manner as for standard backup images.

“[NetBackup Restore Processes](#)” shows the NetBackup processes involved in NDMP restores. The following events occur during a restore:

1. The NetBackup for NDMP server looks in its media database for the tape that contains the backup, and requests `ltid` to mount that tape.
2. `ltid` on the NetBackup for NDMP server sends the NDMP commands necessary to get the requested tape loaded on the storage device.
3. NetBackup sends the NDMP commands necessary to have the NDMP server application perform a restore operation to the disk. The restore data travels in one of two ways:
 - ◆ From a tape drive to a local disk (tape drive and disk are on the same NDMP host)
 - ◆ Over the network, from an NDMP host (or NetBackup media server) with a locally attached storage device to another NDMP host (three-way backup/restore)
4. The NDMP server application sends status about the restore operation to the NetBackup for NDMP server.



NetBackup Restore Processes



Direct Access Recovery (DAR)

Quickly restoring a single file or group of files from a backup image created by NetBackup for NDMP can be accomplished automatically using Direct Access Recovery (DAR). DAR can greatly reduce the time it takes to restore files. DAR is enabled by default (no configuration required).

There are two prerequisites for using DAR with NetBackup for NDMP:

- ◆ DAR must be supported by the NDMP host where the NDMP server application resides.
- ◆ The backup must have been made by NetBackup 4.5 GA or later, with the catalog in binary format (binary format is the default).

Note File-level DAR is supported; directory-level DAR is *not* supported.

DAR enables the NDMP host to position the tape to the exact location of the requested file(s), reading only the data needed for those files. NetBackup automatically determines whether DAR will shorten the duration of the restore, and activates DAR only when it will result in a faster restore.

NetBackup DAR can be disabled for all NDMP policies (see [“Enabling/Disabling DAR”](#) on page 37).





Installing NetBackup for NDMP

2

This chapter explains how to install the NetBackup for NDMP application on NetBackup servers.

Installation Notes

- ◆ The NetBackup for NDMP master/media server must be running NetBackup 5.1 or later.
- ◆ The NetBackup for NDMP 5.1 software supports Solaris, HP-UX, Red Hat Linux, AIX, and Windows NT/2000/2003 master or media servers.

For a detailed list of NAS platforms supported by NetBackup for NDMP, refer to [“NDMP Information on the Web”](#) on page xiii.

- ◆ For making snapshots of NDMP (NAS) hosts, NetBackup Advanced Client software must be installed on the NetBackup master server and clients (refer to the *NetBackup Advanced Client System Administrator’s Guide*).
- ◆ Drives and robots attached to the NDMP host must be types supported by the NDMP host and NetBackup. See [“NDMP Storage Units”](#) on page 7 for a list of supported robot types. For more information on storage devices, see the *NetBackup Media Manager System Administrator’s guides* (UNIX or Windows).

Before Starting the Installation

For notes and tips on your particular NDMP host, refer to [“NDMP Information on the Web”](#) on page xiii.



Installing on UNIX Servers

Note If you are installing in a cluster environment, you must freeze the active node before you begin the installation process so that migrations do not occur during installation. For information about freezing a service group, see the clustering section in the *NetBackup High Availability System Administrator's Guide* for the cluster software you are running.

On the UNIX host that you want to be the NetBackup for NDMP server, do the following:

1. Log in as root.
2. Install NetBackup server and client software as explained in the *NetBackup Installation Guide for UNIX*.
3. Make sure a valid license key for NetBackup for NDMP has been registered by entering the following command to list and add keys:

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

4. Insert the CD-ROM containing NetBackup for NDMP software in the drive.
5. Change your working directory to the CD-ROM directory:

```
cd /cd_rom_directory
```

Where *cd_rom_directory* is the path to the directory where you can access the CD-ROM. On some platforms, it may be necessary to mount this directory.

6. To install NetBackup for NDMP, execute the following:

```
./install
```

Since other NetBackup products are included on the CD-ROM, a menu appears.

7. Select **NetBackup Add-On Product Software**.
 - a. Select the **NetBackup for NDMP** option.
 - b. Enter **q** to quit the menu.
 - c. When asked if the list is correct, answer **y**.
8. If this NetBackup for NDMP server is not your master server, also install your NDMP license key on the master.
9. In a clustered environment, the above steps must be done on each node in the cluster.




Note If you are installing in a cluster environment, unfreeze the active node after the installation completes. For information about unfreezing a service group, see the clustering section in the *NetBackup High Availability System Administrator's Guide* for the cluster software you are running

Installing on Windows NT/2000/2003 Servers

Note If you are installing in a cluster environment, you must first freeze the active node so that migrations do not occur during installation. For information about freezing a service group, see the clustering section in the *NetBackup High Availability System Administrator's Guide* for the cluster software you are running.

On the Windows NT/2000/2003 host that you want to be the NetBackup for NDMP server, perform the following:

1. Log in.
2. Install NetBackup server and client software as explained in the *NetBackup Installation Guide for Windows*.
3. NetBackup for NDMP is part of the core NetBackup product. Make sure a valid license key for NetBackup for NDMP has been registered by doing the following to list and add keys:
 - a. From the NetBackup Administration window, choose **Help**.
 - b. From the **Help** menu, select **License Keys ...**.

The NetBackup License Keys window appears. Existing keys are listed in the lower part of the window.
 - c. To register a new key, click the star icon  to open the Add a new License Key dialog. Type the new license key in the **New license key** field and click **Add**.

The new license key appears in the lower part of the dialog box.
4. If this NetBackup for NDMP server is not your master server, install your NDMP license key on the master.
5. In a clustered environment, the above steps must be done on each node in the cluster.



Note If you are installing in a cluster environment, unfreeze the active node after the installation completes. For information about unfreezing a service group, see the clustering section in the *NetBackup High Availability System Administrator's Guide* for the cluster software you are running

Uninstalling NetBackup for NDMP

On the master server where you initially loaded the NetBackup for NDMP software, do the following. This procedure results in total removal of the NetBackup for NDMP software.

Note In a cluster environment, you must first freeze the active node so that migrations do not occur during installation. For help freezing a service group, see the clustering section in the *NetBackup High Availability System Administrator's Guide* for the cluster software you are running.

1. Check Activity Monitor in the Administration Console to make sure no NetBackup for NDMP backups are active or running (the **State** field should read Done).
2. If `ltid` is running, stop it (use the **Activity Monitor > Daemons** tab).
3. Solaris only: if `ndmpmoveragent` is running (check the **Activity Monitor > Processes** tab), stop it by entering the following:

```
cd /usr/opensv/volmgr/bin
./ndmpmoveragent.stop
```

4. To remove the NetBackup for NDMP package, enter the following:

On Solaris:

```
pkgrm VRTSnbtmp
```

On other UNIX platforms:

```
rm -f /usr/opensv/lib/libndmp_bpfsmap.s?
rm -f /usr/opensv/lib/libndmpclient.s?
rm -f /usr/opensv/volmgr/bin/set_ndmp_attr
rm -f /usr/opensv/share/version_ndmp
```

where ? is a wildcard.

5. Restart `ltid`.

Note If uninstalling in a cluster environment, unfreeze the active node after the uninstall.



Configuring NetBackup for NDMP

3

This chapter explains how to manually configure NetBackup for NDMP for use on supported NetBackup servers. Only NDMP-specific steps are described in this guide.

Note As an alternative to the device configuration procedures in this chapter, you can use the NetBackup Device Configuration wizard to discover and configure robots and drives that are attached to an NDMP host. This requires NDMP protocol versions V3 or V4.

For detailed information about configuring NetBackup and Media Manager, see the *NetBackup System Administrator's Guide* and the *NetBackup Media Manager System Administrator's Guide*. For information on configuring devices, see the *NetBackup Media Manager Device Configuration Guide*. To configure and use the NAS_Snapshot method, see the *NetBackup Advanced Client System Administrator's Guide*.

The following topics are covered in this chapter:

- ◆ [Authorizing Access to the NDMP Host](#)
- ◆ [Configuring NDMP Storage Devices](#)
- ◆ [Adding NDMP Storage Units and Policies](#)
- ◆ [Enabling/Disabling DAR](#)
- ◆ [Setting Up Clustering](#)
- ◆ [Testing an NDMP Configuration](#)



Authorizing Access to the NDMP Host

Before NetBackup can carry out backup operations, it must have access to the NDMP host. To authorize this access, execute the following command on your NetBackup for NDMP server. (As an alternative, you can use the NetBackup Device Configuration wizard to create this authorization.)

Note This command must be run on the master server if you are going to create snapshots using the Advanced Client NAS_Snapshot method.

```
set_ndmp_attr -auth ndmp-server-host username
```

Where:

- ◆ *ndmp-server-host* is the name of the NDMP host that NetBackup will be backing up.

Note This NDMP host name is case-sensitive. Whenever this host name is used (such as when configuring tape drives and storage units for this host), the name must be identical to the name entered here on the `set_ndmp_attr` command.

- ◆ *username* is the user name under which NetBackup will be accessing the NDMP host. This user must have permission to execute the NDMP commands.

Note To see if your NDMP host vendor requires a particular username or access level (such as root), refer to “[NDMP Information on the Web](#)” on page xiii.

- ◆ On Windows NT/2000/2003 systems, the `set_ndmp_attr` command is located in the `install_path\Volmgr\bin` directory. By default, the location is:

```
C:\Program Files\Veritas\Volmgr\bin\
```

- ◆ On UNIX, the command is located in the `/usr/opensv/volmgr/bin/` directory.
- ◆ Usage information for the command can be obtained using the `-help` option.

Refer to the *NetBackup Commands for UNIX* or *NetBackup Commands for Windows* guide for the man page on the `set_ndmp_attr` command.

Example

(The examples in this chapter use “stripes” as the `ndmp-server-host` name.)

On Windows NT/2000/2003:

```
install_path\Volmgr\bin\set_ndmp_attr -auth stripes root
Password: *****
Re-enter Password: *****
```

On UNIX:

```
/usr/opensv/volmgr/bin/set_ndmp_attr -auth stripes root
```



```
Password: *****  
Re-enter Password: *****
```

Access for Three-Way Backups

To perform three-way backups, the NetBackup for NDMP server must be able to access an NDMP host that has no attached tape drive. You must perform the `set_ndmp_attr` command on the NetBackup for NDMP server for this NDMP host.

```
set_ndmp_attr -auth ndmp-server-host username
```

where *ndmp-server-host* is the name of the NDMP host that has no attached tape drive.

Configuring NDMP Storage Devices

The drives and robots that attach to the NDMP host must be configured before NetBackup can use them.

To configure robots and drives for NDMP, perform the following two steps on the NetBackup server:

1. [System Device Configuration](#)

This involves completing the configuration necessary for the system to recognize the robot(s).

2. [Media Manager Device Configuration](#)

This involves specifying the information that Media Manager requires to recognize and control the devices.

Note As an alternative to the directions in this section, you can use the NetBackup Device Configuration wizard to configure NDMP-attached storage devices.

For more information on configuring storage devices for specific NDMP hosts, refer to [“NDMP Information on the Web”](#) on page xiii.

System Device Configuration

This involves configuring the robotic control.



Configuring Robotic Control

The method required to configure the robotic control depends on whether the robotic control attaches to the NDMP host or to the NetBackup for NDMP server.

For Robotic Control Attached to the NetBackup Server

If the robotic control attaches directly to the NetBackup for NDMP server or other NetBackup server, configure the robotic control as explained in the *Media Manager Device Configuration Guide*.

In this type of configuration, the NetBackup server controls the robot.

For Robotic Control Attached to the NDMP Host

If the robotic control attaches directly to the NDMP host, you must specify the following robotic control information:

- ◆ device name
- ◆ controller number
- ◆ SCSI ID
- ◆ LUN (logical unit number).

To specify this information, execute the following command on the NetBackup for NDMP server:

```
set_ndmp_attr -robot ndmp-server-host robot-device scsi-controller scsi-id scsi-lun
```

Where:

- ◆ *ndmp-server-host* is the name of the NDMP host where the robotic control is attached.
- ◆ *robot-device* is the device name for robotic control.
- ◆ *scsi-controller* is the controller number.
- ◆ *scsi-id* is the SCSI ID for the robotic control.
- ◆ *scsi-lun* is the LUN for the robotic control.

Note Some NDMP hosts require only the *ndmp-server-host* and *robot-device*. To obtain information on particular hosts, see [“NDMP Information on the Web”](#) on page xiii.

Example

In the following example, assume that `stripes` is the NDMP host and has a robot with robotic control information as follows:

NDMP server host name = stripes
robot device name = c2t3l0
SCSI controller number = 2
SCSI ID = 3
SCSI LUN = 0

On Windows NT/2000/2003, you would execute the following command:

```
install_path\Volmgr\bin\set_ndmp_attr -robot stripes c2t3l0 2 3 0
```

On UNIX, you would execute the following command:

```
/usr/openv/volmgr/bin/set_ndmp_attr -robot stripes c2t3l0 2 3 0
```

Displaying Configuration Settings

When your configuration is complete, you can display your configuration settings by entering the `-list` option with the `set_ndmp_attr` command, as follows:

On Windows NT/2000/2003:

```
install_path\Volmgr\bin\set_ndmp_attr -list
```

On UNIX:

```
/usr/openv/volmgr/bin/set_ndmp_attr -list
```

The following is sample output:

```
Record Type: Authentication  
NDMP Server: stripes  
Username:    root  
Password:   <registered>  
  
Record Type: Robotic Information  
NDMP Server: stripes  
Device:     c2t3l0  
Controller: 2  
SCSI Id:    3  
SCSI LUN:   0
```

Note If you change the robot configuration on the NDMP host, use `set_ndmp_attr -robot` to update the NetBackup for NDMP server with your changes.

Verifying NDMP Password and/or Robot Connection

Once you have created the authorization, you can verify the following:



- ◆ The NDMP server connection to the NetBackup host
- ◆ The robotic configuration on the NDMP host

For example:

```
set_ndmp_attr -verify stripes
```

Where `stripes` is the name of the NDMP host.

A successful verification would look like the following:

```
Verify Host name: stripes
Connecting to host "stripes" as user "root"...
Waiting for connect notification message...
Opening session with NDMP protocol version 2...
Host info is:
  host name "stripes"
  os type "SunOS"
  os version "5.8"
  host id "80dd14ba"
  host supports TEXT authentication
  host supports MD5 authentication
Getting MD5 challenge from host...
Logging in using MD5 method...
Login was successful
Opening SCSI device "c2t310"...
Setting SCSI target controller 2 id 3 lun 0...
Inquiry result is "HP          C5173-7000          3.04"
```

A failed verification (due to incorrect password) would look like this:

```
Connecting to host "stripes" as user "root"...
Waiting for connect notification message...
Opening session with NDMP protocol version 2...
Host info is:
  host name "stripes"
  os type "SunOS"
  os version "5.8"
  host id "80dd14ba"
  host supports TEXT authentication
Logging in using TEXT method...
ndmp_connect_client_auth failed
set_ndmp_attr: host "stripes" failed
set_ndmp_attr: unable to continue
```

In case of the above failure, the username or password specified on the `set_ndmp_attr -auth` command did not match the username/password stored on the NDMP host.

Media Manager Device Configuration

On the NetBackup for NDMP server, use **Media and Device Management** in the Administration Console to add drives and robots. As an alternative, you can use the NetBackup Device Configuration wizard for first-time setup.

The following procedures and examples treat NDMP configuration issues only. See the *NetBackup Media Manager System Administrator's Guide* for general information on configuring NetBackup media.

Adding a Robot Directly Attached to an NDMP Host

1. Start the NetBackup Administration Console on the NetBackup for NDMP server as follows:

On Windows NT/2000/2003: from the Windows **Start** menu, select **Programs, VERITAS NetBackup, NetBackup Administration Console**.

On UNIX servers, enter the following:

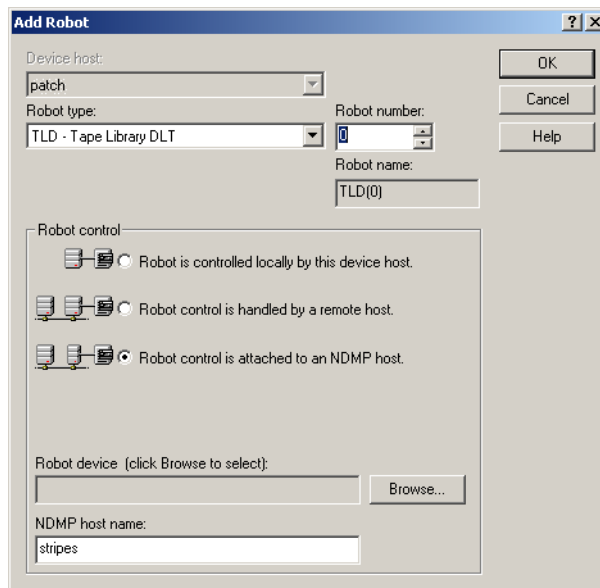
```
/usr/opensv/netbackup/bin/jnbSA &
```

2. Click on **Devices** under **Media and Device Management** in the left pane.
3. On the **Actions** menu, select **New**, then select **New Robot...** from the popup. The Add Robot dialog appears.



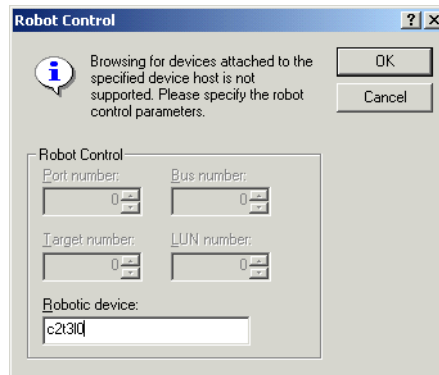
Explained in online help or in the *Media Manager System Administrator's Guide*.

Explained in the following steps.



4. For assistance with the Add Robot dialog, refer to the online help or to the *Media Manager System Administrator's Guide* (Windows or UNIX). The steps below explain the portions that are unique to configuring NetBackup for NDMP.
5. Under **Robot control**, click the button for **Robot control is attached to an NDMP host**.
6. In the field labeled **NDMP host name**, enter the name of the NDMP host to which the robot is attached.
7. Click the **Browse** button next to the field labeled **Robot device**.

The Robot Control dialog appears on Windows (Devices dialog on UNIX).



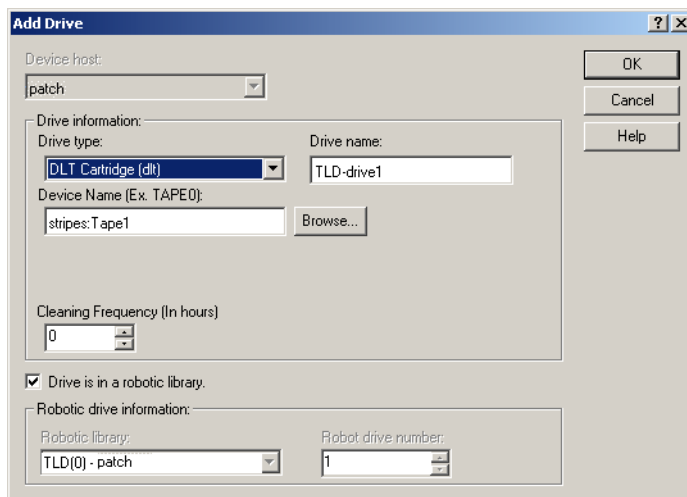
8. In the **Robotic device** field, enter the device name for the robot. To determine the name of the robot, refer to [“NDMP Information on the Web”](#) on page xiii to obtain information pertaining to your NDMP host.
9. Click **OK**, then click **OK** in the Add Robot dialog.

A popup message asks if you want to stop and restart the device manager service (or daemon). Click **Yes**.

Adding a Drive

1. Click **Devices** under **Media and Device Management** in the NetBackup Administration Console.
2. On the Actions menu, select **New**, then select **New Drive...** from the popup. The Add Drive dialog appears.





3. With the exception of the **Device Name** field (on UNIX, this field is called **No Rewind Device**), complete the dialog box as explained in the online help or in the *Media Manager System Administrator's Guide*.

Device Name

- ◆ If the drive is not attached directly to the NDMP host, follow the instructions in the *Media Manager System Administrator's Guide* for this entry.
- ◆ If the drive is attached directly to the NDMP host, use the following notation for this field. First refer to the vendor documentation for your drive for the correct format of the device file.

ndmp_host_name:device_file

Where:

ndmp_host_name is the name of the NDMP host where the drive is attached.

device_file is the name of the file for the drive.

For example: `stripes:c2t310`

Note From the **Browse** button next to the **Device Name** field, you cannot browse for devices attached to an NDMP host. The devices shown on the resulting **Devices** display are those attached to the NetBackup media server.

4. When the dialog box is complete, click **OK**.

A message should appear, asking whether or not you want to restart the Media Manager device daemon and all robotic daemons. Click **Yes**.

Checking a Media Manager Configuration

On the NetBackup for NDMP server, do the following:

- ◆ On UNIX, execute `/usr/opensv/volmgr/bin/vmps` and verify that `ltid`, `vmd`, `avrd`, and any required robotic daemons are active. On Windows NT/2000/2003, go to the NetBackup Administration Console and use the Activity Monitor (Processes tab) to verify that the above processes are active.
- ◆ From the NetBackup Administration Console, use the Device Monitor to ensure that the drive is in the UP state.

Adding Volumes to a Media Manager Configuration

Use the NetBackup **Media and Device Management** utility to add the volumes that you will be using for the NDMP host backups. See the *Media Manager System Administrator's Guide* for instructions.

Note When specifying the Robot Control Host for a volume that will be in a robot, specify the host name for the NetBackup for NDMP server, not the NDMP host.

Adding NDMP Storage Units and Policies

After ensuring that access to the NDMP host is authorized and NDMP storage devices are configured, use one of the available NetBackup administrative interfaces to add a storage unit and policy. Both of these tasks are performed on the NetBackup master server.

Note You can use the Backup Policy Configuration wizard to create NDMP policies.

Adding an NDMP Storage Unit

On the NetBackup master server, add a NetBackup storage unit for the devices that will contain the backup data.

Most of the requirements are the same as for adding a Media Manager storage unit. The following topics explain the differences when adding an NDMP storage unit. See the *NetBackup System Administrator's Guide* (Windows or UNIX) for more information.



Specify the following as indicated:

- ◆ NetBackup media server

The name of the NetBackup for NDMP server that will be backing up the NDMP host.

- ◆ Storage unit type

The type of storage that this storage unit supports. Click the **Storage Unit Type** box and select **NDMP** from the list.

- ◆ On demand only

Specifies whether the storage unit is available only on demand (that is, only when a policy or schedule requests it). If this option is not used, the storage unit is available to any NDMP policy or schedule.

- ◆ NDMP host

The NDMP host where the tape drive is physically attached.

The following is an example New Storage Unit dialog:

The screenshot shows a 'New storage unit' dialog box with the following fields and values:

- Storage unit name: stripes_tld
- NetBackup media server: patch (with a 'Browse...' button)
- Storage unit type: NDMP (selected in a dropdown menu)
- On demand only:
- Properties section:
 - NDMP host: stripes (with a 'Browse...' button)
 - Storage device: tld(30) - dlt (selected in a dropdown menu)
 - Robot type: TLD - Tape Library DLT
 - Density: dlt - DLT Cartridge
 - Robot number: 30
 - Maximum concurrent drives used for backup: 1

Buttons at the bottom: OK, Cancel, Help.

Creating an NDMP Policy

On the NetBackup master server, create an NDMP policy to configure backups of the NDMP host.

Creating an NDMP policy is very similar to creating other NetBackup policy types. The following topics explain the differences when creating NDMP policies.

See the *NetBackup System Administrator's Guide* for more information on NetBackup policies and the Policy utility.

Note To configure a policy for the NAS_Snapshot method, see the *NetBackup Advanced Client System Administrator's Guide*.

Attributes

Specify the following policy attributes:

- ◆ **Policy Type: NDMP**
- ◆ **Policy Storage Unit:**
 - ◆ If the NDMP host has more than one storage unit and you want to direct backups for this policy to a specific storage unit, then specify the name of that storage unit.
 - ◆ For a three-way backup (described in the Introduction), specify a storage unit that was defined for the target NDMP host with attached tape.
 - ◆ For remote NDMP backup, specify a storage unit that was defined for a storage device connected to a NetBackup media server.

Clients

In the client list, specify the following for each client in an NDMP policy:

- ◆ **Hostname**
Name of the NDMP host
- ◆ **Hardware and operating system**
NDMP NDMP

Files

The Backup Selections list must specify directories from the perspective of the NDMP host.



Two examples:

```
/home/dir1/  
/vol1
```

The following Backup Selections capabilities are NOT supported for an NDMP policy:

- ◆ Wildcards in pathnames. For example, `/home/*` is an invalid entry.
- ◆ Individual file names. Only directory or volume names are allowed.
- ◆ Exclude list (because client software is not installed on the NDMP host). You can, however, exclude files by using the `SET` keyword as shown under [“Using Environment Variables in Backup Selections list.”](#) The `SET` option allows you to exclude files on a backup. The format is vendor dependent; refer to the vendor’s documentation for more details on which variable can be passed and in what format.

Schedules

You can specify any of the following backup types in a schedule for an NDMP policy:

- ◆ Full
- ◆ Cumulative Incremental
- ◆ Differential Incremental

Specify **Override policy storage unit** only if this client of NetBackup (the NDMP host) has more than one storage unit and you want to use a specific storage unit for this schedule. In this case, the client must be the only client in this NDMP policy.

Using Environment Variables in Backup Selections list

NDMP allows you to use environment variables to pass configuration parameters to an NDMP host with each backup. NDMP environment variables can be one of the following types.

- ◆ Defined as optional by the NDMP protocol specification.
You can set these variables.
- ◆ Specific to an NDMP host vendor.
You can set these variables.
- ◆ Reserved for use by NetBackup:

FILESYSTEM

LEVEL

DIRECT

EXTRACT

ACL_START

In NetBackup, environment variables can be set within the Backup Selections list by specifying one or more `SET` directives. The syntax of a `SET` directive is as follows:

```
SET variable = value
```

Where *variable* is the name of the environment variable and *value* is the value that is assigned to it. The value can be enclosed in single or double quotes, and must be enclosed in quotes if it contains a space character. For example:

```
SET ABC = 22
SET DEF = "hello there"
SET type = tar
```

Setting a variable equal to no value unsets that variable. For example:

```
SET ABC =
```

Variables accumulate as the Backup Selections list is processed. For example, if Backup Selections contains the following entries:

```
/vol/vol1
SET HIST = N
/vol/vol2
SET DEF = 20
SET SAMPLE = all
/vol/vol3
```

Directory `/vol/vol1` will be backed up without any user-specified environment variables. The second directory (`/vol/vol2`) will be backed up with the variable `HIST` set to `N`. The third directory (`/vol/vol3`) will be backed up with all three of the environment variables set.

If an environment variable appears again later in the list, the value of this variable overrides the previous value of the variable.

The values used in each backup are saved and provided to subsequent restores of the directory.

The NDMP host may have environment variables that are set internally and these are also saved for restores.

Path-Based History

The NDMP server may send catalog information consisting of complete path names to NetBackup. This is called path-based history.

To set path-based history, enter an environment variable in the Backup Selections list.



For example:

```
SET type = tar
/vol/vol1
```

In this example, path-based history is set by `SET type = tar`. It applies to a backup or restore of `/vol/vol1`.

Note The path-based history entry must occur in the Backup Selections list *before* the directories and files it applies to.

Path-based history is not supported by all NDMP host vendors. To obtain up-to-date information on the NDMP vendors supporting path-based history, and for the particular syntax to use in setting it, refer to [“NDMP Information on the Web”](#) on page xiii.

Enabling/Disabling DAR

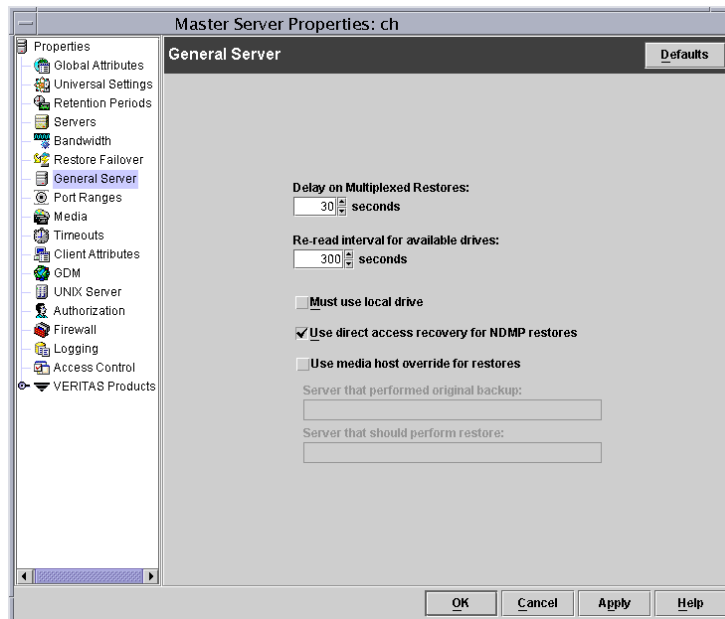
By default, NetBackup for NDMP is configured to use Direct Access Recovery (DAR). For each restore, NetBackup automatically determines if the use of DAR will speed up the restore. NetBackup uses DAR only when it will result in a faster restore.

Note NetBackup can use DAR only if the NDMP NAS host supports it (contact your NAS vendor for details).

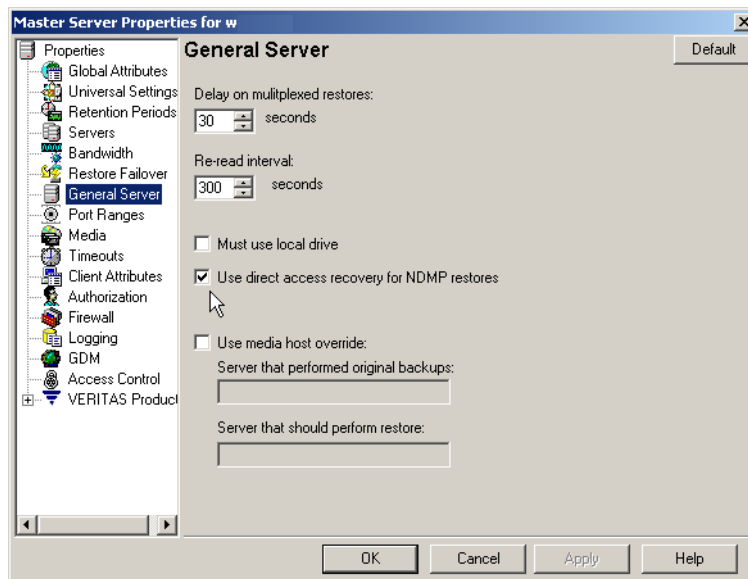
DAR can be turned off if desired. This may be necessary if you are having problems with DAR and your NDMP host is an older machine or is not running the latest NAS OS version.

1. In the NetBackup Administration Console, expand **Host Properties** and click on **Master Servers** or **Media Servers**.
2. Right-click on the name of the server and select **Properties**.
3. Click on **General Server**.

This is the UNIX version of the Properties dialog, **General Server**:



This is the Windows version of the Properties dialog, **General Server**:



4. Uncheck the **Use direct access recovery for NDMP restores** box, and click **Apply**.
This disables DAR on all NDMP restores.

Setting Up Clustering

Before configuring NetBackup for NDMP for clustering, the following must be installed on each node of the cluster:

- ◆ NetBackup server (see the *NetBackup Installation Guide*).
 - ◆ NetBackup for NDMP software (see “[Installing NetBackup for NDMP](#)” on page 17 of this manual). Note that for Windows servers, only the NetBackup for NDMP licence key has to be installed.
1. Configure NDMP-attached robots and drives, and then storage units and policies, just as you would in a normal, non-clustered environment:

Note For assistance configuring Remote NDMP in a clustered environment, see “[Configuring Remote NDMP](#)” on page 43.

- ◆ You can use the Device Configuration wizard, or configure devices manually as described under “[Authorizing Access to the NDMP Host](#)” on page 22 and following.
 - ◆ To use the same robotic libraries throughout a cluster, robot numbers must be consistent. The Device Configuration wizard attempts to ensure this configuration. If you are configuring robots manually as described in this guide, be sure to use the same robot number for a given robot, from one host to another in the cluster.
2. When finished configuring devices and policies for NetBackup for NDMP, fail-over to the next node in the cluster and configure the drives and robots.
 - ◆ Select the same robot number that you used when configuring the robot for the first node.

Post-Installation Changes

After NetBackup has been configured in a clustered environment, most configuration information is available to all nodes in the cluster, by means of a shared hard drive. However, changes made in the Host Properties area of the Administration Console are not available on the shared drive. Such changes apply only to the active node. Host Properties changes made on the active node must be manually duplicated on each node, if NetBackup is to perform exactly the same way in case of failover to another node. Refer to the *NetBackup High Availability Guide* for assistance.



Testing an NDMP Configuration

To test the configuration, run the backup and then restore some files. For instructions, see the following topics:

- ◆ [“Performing an NDMP Backup”](#) on page 48
- ◆ [“Performing a Restore from Windows Servers”](#) on page 49
or [“Performing a Restore from UNIX Servers”](#) on page 50

If you encounter problems, see [“Troubleshooting”](#) on page 51.

Remote NDMP

This chapter describes the remote NDMP feature and contains the following topics:

- ◆ [Overview of Remote NDMP](#)
- ◆ [Configuring Remote NDMP](#)
- ◆ [Port Number](#)
- ◆ [Adjusting Performance](#)



Overview of Remote NDMP

Remote NDMP allows data on an NDMP host to be backed up to a storage device that is connected to a NetBackup media server. This is a form of three-way backup: the NDMP host sends the backup data over the network to a storage device on a NetBackup media server, rather than using a storage device on the NDMP host itself.

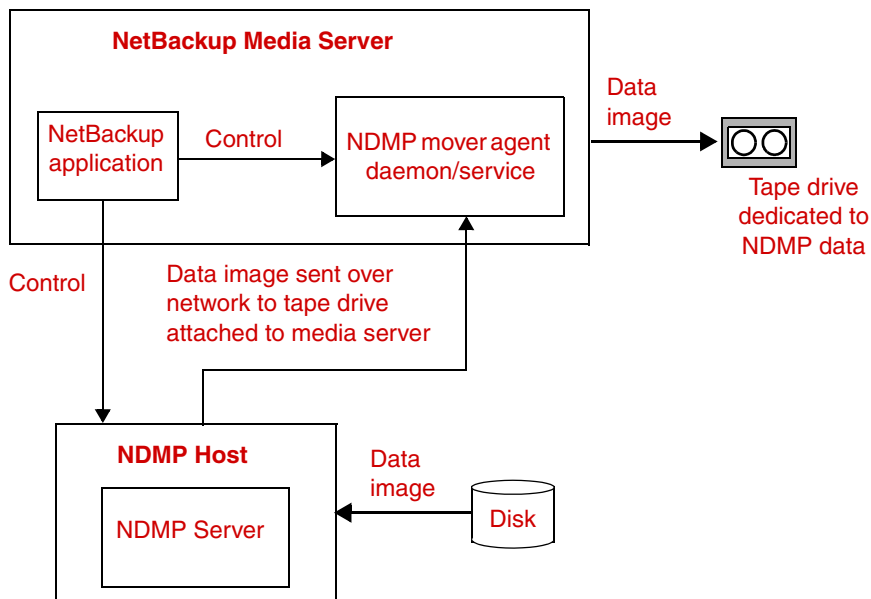
Note Remote NDMP is supported only on Solaris and Windows NT/2000/2003 platforms.

Remote NDMP supports 3-way backups of any NDMP host running with NDMP version V2, V3, and V4. However, the remote NDMP process, which runs on the media server, supports version V2.

Remote NDMP is enabled by an NDMP mover agent daemon/service running on the NetBackup media server. The NDMP mover agent acts as an NDMP server.

The following diagram shows the main components required for remote NDMP backup or restore.

Main Components of Remote NDMP



Note Some of the drives in a robotic library can be configured for non-NDMP backups, and others can be configured for remote NDMP. Once a drive has been configured for NDMP backup, it cannot be used for non-NDMP backups.

Configuring Remote NDMP

To set up remote NDMP, you must configure the NetBackup media server as an NDMP host. For details on device configuration, refer to the *NetBackup Media Manager System Administrator's Guide*.

Note Remote NDMP cannot be configured by means of the Device Configuration wizard. When you run the wizard, all devices attached to NetBackup servers are configured as standard NetBackup devices that will not be available for remote NDMP until they are manually set up as described below.

1. Set up NDMP authentication for the NetBackup media server (on which the ndmpmoveragent daemon/service is running) by entering:

On UNIX:

```
/usr/opensv/volmgr/bin/set_ndmp_attr -auth ndmp-server-host username
```

On Windows:

```
install_path\Volmgr\bin\set_ndmp_attr -auth ndmp-server-host username
```

For example:

```
/usr/opensv/volmgr/bin/set_ndmp_attr -auth patch root
```

where `patch` is the host running the ndmpmoveragent daemon. In a clustered environment, enter the virtual name of this host as defined for clustering. Refer to the *NetBackup High Availability System Administrator's Guide* for details on virtual name.

Refer to [“Authorizing Access to the NDMP Host”](#) on page 22 and [“Verifying NDMP Password and/or Robot Connection”](#) on page 25 for more information.

2. Configure the drive(s) and/or robot that will be used for remote NDMP backups.

Note On the Add Robot display, under **Robot control**, select “Robot is controlled locally by this device host.” This indicates that the robot is controlled by the media server, not by an NDMP host.

On Solaris, use the Berkeley-style no-rewind device name.

Following is an example of a Device Name (on UNIX, this is called the No Rewind Device), to be entered on the Add Drive display:

Solaris example:

```
patch:/dev/rmt/0cbn
```



where `patch` is the NetBackup media server where the `ndmpmoveragent` daemon is running, `c` means compressed, and `bn` is the Berkeley non-rewind device. You must use the Berkeley non-rewind device.

In a clustered environment, enter the virtual name of this server as defined for clustering. Refer to the *NetBackup High Availability System Administrator's Guide* for details on virtual name.

Windows NT/2000/2003 example:

```
patch:Tape0
```

where `patch` is the name of the Windows media server on which the NDMP Mover Agent Service is running. In a clustered environment, enter the virtual name of this server as defined for clustering.

3. If the drive is in a robot, inventory the robot.
4. Create an NDMP-type storage unit. On the Add New Storage Unit display, specify the NetBackup media server as an NDMP host.
5. Create an NDMP-type policy. On the New /Change Policy display, be sure to specify the storage unit created at [step 4](#).

Port Number

The NDMP mover agent uses port 10000. It listens on this port for the NetBackup media server to attempt to connect to it.

Adjusting Performance

Although in most cases there is no need to do so, the number of buffers used for remote NDMP backup and restore can be adjusted. Use the `buffers` option on the `ndmpmoveragent.start` script (Solaris), or on the NDMP Mover Agent service (Windows), as follows.

On Solaris:

```
/usr/opensv/volmgr/bin/ndmpmoveragent.start -buffers N
```

where `N` is the number of 63k buffers to be used during the backup or restore. `N` can be from 4 to 64 (default is 64). For a man page description of the other options available on the `ndmpmoveragent.start` script, refer to the *NetBackup Commands for UNIX* manual.

For buffers larger than 16, you must increase max shared memory. It takes 16 buffers per MB of shared memory. Therefore, 64 buffers require 4MB of shared memory. You can increase shared memory by changing the `shmsys` values in `/etc/system`.

For example, to allow for a maximum of 4 MB, add the following line:

```
set shmsys:shminfo_shmmax=4194304
```

Then reboot.

Note If the number of buffers is set to a value greater than that allowed by max shared memory, the number of buffers is adjusted to the number allowed by max shared memory when the backup is run.

On Windows:

Go to the Windows Services dialog and stop the NDMP Mover Agent service. In the Properties dialog for the NDMP Mover Agent service, in the “Start parameters” field, enter “-buffers” (without quotes) followed by the desired number (4 to 64). For example:

```
-buffers 24
```

Click the **Start** button in the Properties dialog to restart the service with the new setting.





Backup and Restore Procedures

5

This chapter describes the procedures for backing up and restoring NDMP-type policies. For backup and restore of a NAS snapshot, refer to the *NetBackup Advanced Client System Administrator's Guide*.

- ◆ [Performing an NDMP Backup](#)
- ◆ [Performing a Restore from Windows Servers](#)
- ◆ [Performing a Restore from UNIX Servers](#)



Performing an NDMP Backup

Only the administrator can perform backups and restores on the NetBackup server (master or media). The NDMP protocol does not allow users to initiate a backup or restore. User-directed backups and archives of files are not allowed, since there is no NetBackup client software installed on an NDMP host.

Automatic Backup of an NDMP Policy

To configure an NDMP policy and set up schedules for automatic, unattended backups, see “[Adding NDMP Storage Units and Policies](#)” on page 31 and the *NetBackup System Administrator’s Guide* (Windows or UNIX).

Manual Backup of an NDMP Policy

Only a NetBackup administrator can initiate an NDMP backup. The following procedure explains how to perform the backup using the NetBackup Administration Console. For further information on the NetBackup Administration Console, see the *NetBackup System Administrator’s Guide* (Windows or UNIX).

1. As administrator, start the NetBackup Administration Console on the NetBackup server as follows:

On Windows NT/2000/2003: from the Windows **Start** menu, select **Programs, VERITAS NetBackup, NetBackup Administration Console**.

On UNIX, enter the following:

```
/usr/opensv/netbackup/bin/jnbSA &
```

2. Click on **Policies**. Right click on the NDMP policy name and select **Manual Backup** from the pop-up menu.

This opens the Manual Backup dialog.

3. In the Manual Backup dialog, select a schedule, then select the clients (NDMP hosts) that you want to back up.

If you do not select any schedules, NetBackup uses the schedule with the highest retention level. If you do not select any clients, NetBackup backs up all configured NDMP hosts.

4. Click **OK** to start the backup.

Performing a Restore from Windows Servers

User-directed restores of files are not allowed, since there is no NetBackup client software installed on an NDMP host.

The administrator can use the Backup, Archive, and Restore interface on a NetBackup server (master or media server) to restore files to the NDMP host from which they were backed up, or to a different host.

The following procedure explains how to restore using the NetBackup Administration Console for Windows.

Caution An NDMP restore always overwrites existing files.

1. As administrator, start the Administration Console on a NetBackup server.
2. From the File menu, select **Backup, Archive, and Restore**.
3. Click **Select for Restore** from the tool bar, then select the **File** menu, and click **Specify NetBackup Machines**.

The Specify NetBackup Machines dialog appears. Modifications made in this dialog affect all open restore windows and are not saved after closing the Restore window.

4. On the **Servers** tab, specify the NetBackup master server. If your configuration has multiple master servers, specify the master server that has the policy for the NDMP host that you are restoring.
5. When finished, click the **Make Current** button.
6. On the **Source Clients** tab, select the NDMP host. If it is not in the list, enter it under **New Client Name**, and click **Add**. Select it from the client list and click **Make Current**.
7. In the **Policy Type** field, select **NDMP**.
8. On the **Destination Clients** tab, select the NDMP host and click **Make Current**. Then click **OK**.

Note The destination host must be an NDMP host compatible with the data format of the source (the source and destination must be of the same NAS vendor type).

9. In the Restore window, browse and mark the files and folders you want to restore, then start the restore.



Performing a Restore from UNIX Servers

User-directed restores of files are not allowed, since there is no NetBackup client software installed on an NDMP host.

The administrator can use the Backup, Archive, and Restore interface on a NetBackup server (master or media server) to restore files to the NDMP host from which they were backed up, or to a different host.

The following procedure explains how to restore using the NetBackup Administration Console for UNIX.

Caution An NDMP restore always overwrites existing files.

1. As the administrator, start the NetBackup Administration Console on any NetBackup server.
2. Click **Backup, Archive, and Restore** in the left pane.

The Backup, Archive, and Restore window appears. Modifications made in this window affect all open restore windows and are not saved after closing the restore window.
3. From the **Actions** menu, select **Specify NetBackup Machines**.
4. On the **NetBackup server** tab, specify the NetBackup master server. If your configuration has multiple master servers, specify the master server that has the policy for the NDMP host that you are restoring.
5. On the **Source Clients** tab, select the NDMP host. If it is not in the list, enter it under **New Client Name**, and click **Add**. Then select it from the client list and click **Make Current**.
6. In the **Policy type** field, select **NDMP**.
7. On the **Destination client** tab, select the NDMP host and click **Make Current**. Then click **OK**.

Note The destination host must be an NDMP host compatible with the data format of the source (the source and destination must be of the same NAS vendor type).

8. On the **Restore Files** tab, browse and mark the files and folders you want to restore.
9. Start the restore.

The following information may be useful in troubleshooting NetBackup.

- ◆ [NDMP Operating Notes and Restrictions](#)
- ◆ [Troubleshooting NetBackup](#)
- ◆ [Troubleshooting Media Manager on Windows Systems](#)
- ◆ [Troubleshooting Media Manager on UNIX systems](#)
- ◆ [Troubleshooting DAR](#)
- ◆ [Testing a Robot](#)

Note For explanations of NetBackup status codes, refer to the “NetBackup Status Codes and Messages” chapter in the *NetBackup Troubleshooting Guide*.



NDMP Operating Notes and Restrictions

Before troubleshooting a suspected problem, review the following operating notes and restrictions.

To obtain troubleshooting information or restrictions that may apply to particular NDMP hosts, refer to “[NDMP Information on the Web](#)” on page xiii.

- ◆ A tape created on an NDMP storage unit is in backup format and cannot be restored from a non-NDMP storage unit. If you duplicate an NDMP backup image the new copy is still in backup format and cannot be used for restores on a non-NDMP storage unit.
- ◆ In the Backup Selections list for an NDMP policy, you can include only directory paths. Wildcards and individual file names are not allowed.
- ◆ You cannot back up files where the path length is greater than 1024 characters.
- ◆ The NDMP protocol uses port 10000 for communication.
- ◆ On UNIX systems, the NetBackup avrd process utilizes ICMP (Internet Control Message Protocol) to ping NDMP hosts to verify network connectivity. This protocol is required for the NetBackup for NDMP product.

Notes on DAR

- ◆ DAR can be used when restoring backups that were made by NetBackup 4.5GA or later. Starting with NetBackup 4.5GA, NetBackup stores the required DAR offset information on each backup.

Note For backups made by pre-4.5GA versions of NetBackup, restores cannot use DAR, because the pre-4.5 versions did not store the DAR offset information.

- ◆ DAR can be used when restoring files, but not when restoring directories.
- ◆ Backups must have been performed with the NetBackup catalog set to binary mode. For backups made with the catalog set to ASCII mode, restores cannot use DAR, because ASCII mode did not store the required DAR offset information on each backup. Note that all backups made prior to NetBackup 4.5 used ASCII catalog mode.
- ◆ To use DAR with NetBackup, the NDMP host you want to restore must support DAR. Some NDMP host vendors do not currently support DAR.

Troubleshooting NetBackup

- ◆ Check the NetBackup All Log Entries report for information about the failed job.
- ◆ To get more information about a problem, do the following:
 - ◆ On a UNIX-based NetBackup for NDMP server: set `VERBOSE = 5` (or add the entry) to the `/usr/openv/netbackup/bp.conf` file. An alternate method is to use the NetBackup Administration Console: expand **Host Properties** in the left pane, click on **Media Server**, and right click on the server name in the right pane. From the pop-up, select **Properties**, then click **Logging** and set the **Global logging level** to 5.
 - ◆ On a Windows-based NetBackup for NDMP server: From the NetBackup Administration Console, expand **Host Properties** in the left pane and click on **Media Server**. Right click on the server name and select **Properties**. Click **Logging** and set the **Global logging level** to 5.
 - ◆ Create a `bpsched` directory on the master server (the master can also be the NetBackup for NDMP server).
 - ◆ On the NetBackup for NDMP server, create `bptm`, `bpbrm`, and `ndmp` debug log folders in the `install_path\NetBackup\logs` folder (on Windows-based systems) or in `/usr/openv/netbackup/logs` directory (UNIX systems).

NetBackup creates logs in these directories, if the directories exist. These directories can eventually require a lot of disk space; delete them when you are finished troubleshooting.

Note On Windows systems, the `ndmp` log can significantly reduce backup performance. Be sure to remove this directory when you are finished troubleshooting.

- ◆ To verify that the appropriate services are running, use either the NetBackup **Activity Monitor** interface, or the Windows control panel (on Windows systems) or the `bpsps` command (UNIX systems).
- ◆ If NDMP host backups terminate with a status code of 154 (storage unit characteristics mismatched to request), the problem may be one of the following:
 - ◆ Verify that the NetBackup configuration is correct.
 - ◆ There may be a conflict between the policy type and storage unit type (for example, if the policy type is Standard and the storage unit is of type NDMP).
- ◆ If your NDMP backup fails with a status code of 99 (NDMP backup failure), none of the paths in your NDMP policy Backup Selections list were backed up successfully. Check the NetBackup All Log Entries report for more information. A possible cause of this status is that none of the backup paths exist on the NDMP host.



NDMP Backup Levels

At the start of a debug log, you may see an entry titled `LEVEL`. This refers to an environment variable that was set by NetBackup based on the type of backup. Below is an example from a `bptm` log. For more information on environment variables, refer to “[Using Environment Variables in Backup Selections list](#)” on page 34.

```
08:48:38.816 [22923] <2> write_data_ndmp: backup environment
values:
08:48:38.816 [22923] <2> write_data_ndmp: Environment 1: TYPE=dump
08:48:38.816 [22923] <2> write_data_ndmp: Environment 2:
FILESYSTEM=/vol/vol0/2million
08:48:38.817 [22923] <2> write_data_ndmp: Environment 3:
PREFIX=/vol/vol0/2million
08:48:38.817 [22923] <2> write_data_ndmp: Environment 4: LEVEL=0
```

The NDMP backup `LEVEL` is modeled after UNIX dump levels. The backup level is a number in the range of 0 to 9.

An NDMP backup level of 0 is a full backup. A backup level above 0 is an incremental backup of all objects modified since the last backup of a lower level. For example, level 1 is a backup of all objects modified since the full backup (level 0); level 3 is a backup of all objects modified since the last level 2 incremental.

NetBackup Backup Types and Corresponding NDMP Backup Levels

NetBackup Backup Types	NDMP Backup Levels
NetBackup Full	NDMP level 0
NetBackup Cumulative Incremental	NDMP level 1
NetBackup Differential Incremental	NDMP level (last level + 1, up to 9) never goes higher than 9

Troubleshooting Media Manager on Windows Systems

- ◆ Enable debug logging, by creating `reqlib` and `daemon` directories in the `install_path\volmgr\debug` directory on the NetBackup for NDMP server.
- ◆ Check the Windows Event Viewer Application log for troubleshooting clues. For more information on the Event Viewer logging option, refer to the *NetBackup Troubleshooting Guide*.
- ◆ Use the Activity Monitor interface or the Windows control panel to verify that the Media Manager services are running.



- ◆ Drives can be unexpectedly set to the DOWN state due to communication problems between `avrd` on the NetBackup for NDMP server and the NDMP server application on the NDMP host. Some possible causes for the communication problems are:
 - ◆ Network cable on the NDMP host was unplugged.
 - ◆ NIS (Network Information System) problems on the NetBackup for NDMP server (NDMP client).
 - ◆ The NDMP host was halted for too long.

Note Whatever the cause, if the `avrd` connection to the NDMP host fails, the drive is set to DOWN and is *not* automatically set to UP when the communication problem is corrected.

Troubleshooting Media Manager on UNIX systems

- ◆ Ensure that `syslogd` is logging Media Manager messages. For more information on `syslogd`, refer to the *NetBackup Troubleshooting Guide*.
- ◆ Start `ltid` with the `-v` option. Check the system's syslog for troubleshooting clues.
- ◆ Use `vmops` to make sure that the appropriate Media Manager daemons are running.
- ◆ Drives can be unexpectedly set to the DOWN state due to communication problems between `avrd` on the NetBackup for NDMP server and the NDMP server application on the NDMP host. For details, refer to the last main bullet and note under the "[Troubleshooting Media Manager on Windows Systems](#)" section.

Troubleshooting DAR

In certain situations, one of the following messages may appear in the `bptm` log on the NetBackup media server (if the `bptm` log is enabled).

Message:

DAR DISABLED - Number of paths n > DAR_MAXIMUM_FILE_LIST_COUNT x

Explanation:

The number of files being restored is greater than the maximum allowed (default is 1024). You can either select fewer files for the restore, or increase the DAR maximum Backup Selections list count. (Increasing the maximum is not supported by some NDMP host vendors.)



To increase the DAR maximum Backup Selections list count, place a “DAR_MAXIMUM_FILE_LIST_COUNT *x*” entry in the following file and specify *x* as a number greater than 1024.

On UNIX:

```
/usr/opensv/netbackup/db/config/ndmp.cfg
```

On Windows:

```
install_path\NetBackup\db\config\ndmp.cfg
```

Message:

DAR DISABLED - not supported by NDMP host

Explanation:

The current NDMP host does not support DAR.

Message:

DAR DISABLED - unable to retrieve DAR info

Explanation:

DAR information is not available for the file.

Message:

DAR DISABLED - Backup performed prior to NB 4.5

Explanation:

The DAR feature can be used when restoring backups that were made by NetBackup 4.5GA or later. Starting with NetBackup 4.5GA, NetBackup stores the required DAR offset information on each backup. For backups made by pre-4.5GA versions of NetBackup, restores cannot use DAR, because the pre-4.5 versions did not store the DAR offset information.

Message:

DAR DISABLED - NDMP host did not provide DAR info during backup

Explanation:

The backup was performed with an NDMP host version that does not support DAR. Ask the NDMP host vendor if a later NAS software version is available that supports DAR.

Message:

DAR DISABLED - Optimal DAR parameters exceeded for this image size

Explanation:

NetBackup determined that the restore would take longer with DAR than without it.

Message:

DAR DISABLED - Directory DAR not supported

Explanation:

DAR is automatically disabled when a restore job specifies a directory to restore. DAR can be used when restoring files, but not when restoring directories.

Message:

DAR DISABLED by DAR config file

Explanation:

When DAR is disabled on the Master or Media Server Properties dialog, the following file contains the entry NDMP_DAR_DISABLED:

On UNIX:

```
/usr/opensv/netbackup/db/config/ndmp.cfg
```

On Windows:

```
install_path\NetBackup\db\config\ndmp.cfg
```

To re-enable DAR, see [“Enabling/Disabling DAR”](#) on page 37.

Message:

DAR DISABLED by host parameters

Explanation:

DAR was disabled on the Master or Media Server Properties dialog.

To re-enable DAR, see [“Enabling/Disabling DAR”](#) on page 37.



Testing a Robot

Depending on the type of robot, use the tests shown in the following table to exercise the robot:

Robot Type	Test
TSD	tsdtest
TLD	tldtest
TL8	tl8test
TLH	tlhstest
ACS	acstest

TSD Example for Windows NT/2000/2003

To exercise the TSD robot `c2t310` that is controlled by the NDMP host named `stripes`, use the following test and commands on Windows NT/2000/2003:

Note The drive must be downed before performing this test, or `avrd` may interfere.

```
install_path\Volmgr\bin\tsdtest -r stripes:c2t310 -d1 stripes:/dev/rmt/Ocbn
```

When prompted, enter ? for help information.

`inquiry` (Displays the vendor and product ID. If you get a UNIT ATTENTION message, try the `mode` command and then continue your testing.)

`s s` (Checks slot status.)

`s d` (Checks drive status.)

`m s3 d1` (Moves a tape from slot 3 to drive 1.)

`m d1 s3` (Moves the tape back to slot 3.)

TLD Example for UNIX

To exercise drive 1 in the TLD robot `c2t310` that is controlled by the NDMP host `stripes`, use the following commands on UNIX:

```
/usr/opensv/volmgr/bin/tldtest -r stripes:c2t310 -d1 stripes:/dev/rmt/Ocbn
```

When prompted, enter ? for help information.



`inquiry` (Displays the Vendor and Product ID. If you get a UNIT ATTENTION message, try the `mode` command and then continue your testing.)

`s s` (Checks slot status.)

`s d` (Checks drive status.)

`m s3 d1` (Moves a tape from slot 3 to drive 1.)

`unload d1` (Unloads the tape.)

`m d1 s3` (Moves the tape back to slot 3.)

TLH Example for UNIX

To exercise drive 1 in a TLH robot, use the following command on UNIX:

```
/usr/opensv/volmgr/bin/tlhtest -r /dev/lmcp0 -d1 stripes:/dev/rmt/0c0n
```

Note that a TLH robot cannot attach directly to the NDMP host; only a TLH drive can directly attach to the NDMP host.

When prompted, enter ? for help information.

`inv` (Inventories the robot.)

`drstat` (Shows drive status.)

`m media_id drive_name` (Moves specified media to the specified drive.)

`dm drive_name` (Dismounts the tape.)

`unload drive_name` (Unloads the tape.)





Using Scripts

This chapter explains how to customize the NDMP-specific notify scripts for use with NetBackup for NDMP.

Note Before using the notify scripts on UNIX, ensure that they are executable by *other*. Do this by executing `chmod 755 script_name`, where *script_name* is the name of the script.

The UNIX scripts are provided *as examples only*. You must customize the scripts before using them. For example, the `-ne` value in the first `if` statement must be modified to reflect the number of parameters passed.

NetBackup for NDMP provides the following scripts (commands on Windows) for collecting information and providing notification of events.

Scripts to run on the NetBackup for NDMP server

Scripts for UNIX	Scripts for Windows NT/2000/2003
ndmp_start_notify	ndmp_start_notify.cmd
ndmp_end_notify	ndmp_end_notify.cmd
ndmp_start_path_notify	ndmp_start_path_notify.cmd
ndmp_end_path_notify	ndmp_end_path_notify.cmd
ndmp_moving_path_notify	ndmp_moving_path_notify.cmd

The scripts are similar to those already included in your NetBackup server installation. To create the scripts on UNIX, copy the `bpstart_notify` and `bpend_notify` scripts from

```
/usr/opensv/netbackup/bin/goodies (UNIX)
```

to

```
/usr/opensv/netbackup/bin
```



on the NetBackup for NDMP server. Then rename the copied scripts and *modify as needed*. (You must customize the scripts before using them; see the previous note.) On Windows, you must create the script from scratch.

ndmp_start_notify (UNIX)

Note Before using this script, ensure that it is executable by *other* on the media server. Do this by executing `chmod 755 script_name`, where *script_name* is the name of the script.

The UNIX scripts are provided *as examples only*. You must customize the scripts before using them. For example, the `-ne` value in the first if statement must be modified to reflect the number of parameters passed. For the `ndmp_start_notify` script, the `-ne` value must be set to 5.

On the UNIX media server, NetBackup calls the `ndmp_start_notify` script each time the client starts a backup operation. To use this script, create a script similar¹ to

```
/usr/opensv/netbackup/bin/goodies/bpstart_notify
```

on the server, and copy it to

```
/usr/opensv/netbackup/bin/ndmp_start_notify
```

on the UNIX NetBackup for NDMP server. Then, modify the script as desired and ensure that you have execute permission.

The `ndmp_start_notify` script executes each time a backup starts and after the tape has been positioned. This script must exit with a status of 0 for the calling program to continue and for the backup to proceed. A nonzero status causes the client backup to exit with a status of `ndmp_start_notify failed`.

If the `/usr/opensv/netbackup/bin/ndmp_start_notify` script exists, it executes in the foreground and the `bptm` process on the NetBackup for NDMP server waits for it to complete before continuing. Any commands in the script that do not end with an `&` character execute serially.

The server expects the client to respond with a `continue` message within the period of time specified by the NetBackup `CLIENT_READ_TIMEOUT` option on the server.

The default for `CLIENT_READ_TIMEOUT` is 300. If the script needs more time than 300 seconds, increase the value to allow more time.

1. .

NetBackup passes the following parameters to the script:

Parameter	Description
\$1	Name of the NDMP host.
\$2	Policy name from the NetBackup catalog
\$3	Schedule name from the NetBackup catalog
\$4	One of the following: FULL INCR (differential incremental) CINC (cumulative incremental)
\$5	The NetBackup status code for the operation

For example:

```
ndmp_start_notify freddie cd4000s fulls FULL 0
ndmp_start_notify danr cd4000s incrementals INCR 0
ndmp_start_notify hare cd4000s fulls FULL 0
```

To create an `ndmp_start_notify` script for a specific policy or policy and schedule combination, create script files with a `.policyname` or `.policyname.schedulename` suffix. The following are two examples of script names for a policy named *production* that has a schedule named *fulls*:

```
/usr/opensv/netbackup/bin/ndmp_start_notify.production
/usr/opensv/netbackup/bin/ndmp_start_notify.production.fulls
```

The first script affects all scheduled backups in the policy named *production*. The second script affects scheduled backups in the policy named *production* only when the schedule is named *fulls*.

Note For a given backup, NetBackup uses only one `ndmp_start_notify` script and that is the one with the most specific name. For example, if there are both `ndmp_start_notify.production` and `ndmp_start_notify.production.fulls` scripts, NetBackup uses only `ndmp_start_notify.production.fulls`.

The `ndmp_start_notify` script can use the following environment variables:

```
BACKUPID
```



UNIXBACKUPTIME

BACKUPTIME

The NetBackup `bptm` process creates these variables. The following are examples of strings that are available to the script for use in recording information about a backup:

```
BACKUPID=freddie_0857340526
```

```
UNIXBACKUPTIME=0857340526
```

```
BACKUPTIME=Sun Mar 2 16:08:46 1997
```

ndmp_start_notify.cmd (Microsoft Windows)

For Windows NT/2000/2003 NetBackup for NDMP media servers, you can create batch scripts that provide notification whenever the client starts a backup. These scripts must reside on the media server in the following directory:

```
install_path\NetBackup\bin
```

Where *install_path* is the directory where NetBackup is installed.

You can create `ndmp_start_notify` scripts that provide notification for all backups or just for backups of a specific policy or schedule. The `ndmp_start_notify` script executes each time a backup starts and after the tape has been positioned.

To create a script that applies to all backups, name the script:

```
install_path\netbackup\bin\ndmp_start_notify.cmd
```

To create an `ndmp_start_notify` script that applies only to a specific policy or policy and schedule combination, add a *.policyname* or *.policyname.schedulename* suffix to the script name.

- ◆ The following script applies only to a policy named *days*:

```
install_path\netbackup\bin\ndmp_start_notify.days.cmd
```

- ◆ The following script applies only to a schedule named *fulls* that is in a policy named *days*:

```
install_path\netbackup\bin\ndmp_start_notify.days.fulls.cmd
```

The first script affects all scheduled backups in the policy named *days*. The second script affects scheduled backups in the policy named *days* only when the schedule is named *fulls*.

For a given backup, NetBackup calls only one `ndmp_start_notify` script and checks for them in the following order:

```
ndmp_start_notify.policy.schedule.cmd
```

```
ndmp_start_notify.policy.cmd
```

```
ndmp_start_notify.cmd
```

For example, if there are both `ndmp_start_notify.policy.cmd` and `ndmp_start_notify.policy.schedule.cmd` scripts, NetBackup uses only the `ndmp_start_notify.policy.schedule.cmd` script.

Note If you are also using `ndmp_end_notify` scripts, they can provide a different level of notification than the `ndmp_start_notify` scripts. For example, if you had one of each, they could be `ndmp_start_notify.policy.cmd` and `ndmp_end_notify.policy.schedule.cmd`.

When the backup starts, NetBackup passes the following parameters to the script:

Parameter	Description
%1	Name of the client from the NetBackup catalog.
%2	Policy name from the NetBackup catalog.
%3	Schedule name from the NetBackup catalog.
%4	One of the following: FULL INCR CINC
%5	Status of the operation is always 0 for <code>bpstart_notify</code> .



Parameter	Description
%6	<p>Results file that NetBackup checks for a return code from the script. NetBackup uses %6 to pass the file name and then expects the script to create the file in the same directory as the script.</p> <p>If the script applies to a specific policy and schedule, the results file must be named</p> <p><i>install_path\netbackup\bin\NDMP_START_NOTIFY_RES.policy.schedule</i></p> <p>If the script applies to a specific policy, the results file must be named</p> <p><i>install_path\netbackup\bin\NDMP_START_NOTIFY_RES.policy</i></p> <p>If the script applies to all backups, the results file must be named</p> <p><i>install_path\netbackup\bin\NDMP_START_NOTIFY_RES</i></p> <p>An <code>echo 0 > %6</code> statement is one way for the script to create the file.</p> <p>NetBackup deletes the existing results file before calling the script. After the script executes, NetBackup checks the new results file for the status. The status must be 0 for the script to be considered successful. If the results file does not exist, NetBackup assumes that the script was successful.</p>

The server expects the client to respond with a `continue` message within the period of time specified by the NetBackup `CLIENT_READ_TIMEOUT` option on the server. The default is 300 seconds. If the script needs more than 300 seconds, increase the value to allow more time.

ndmp_end_notify (UNIX)

Caution The `ndmp_end_notify` script is executed at the end of the backup. The backup does not wait for the script to complete.

Note Before using this script, ensure that it is executable by *other* on the media server. Do this by executing `chmod 755 script_name`, where *script_name* is the name of the script.

The UNIX scripts are provided *as examples only*. You must customize the scripts before using them. For example, the `-ne` value in the first `if` statement must be modified to reflect the number of parameters passed. For the `ndmp_end_notify` script, the `-ne` value must be set to 5.

For a UNIX media server, if you need notification whenever the NDMP host completes a backup, copy



```
/usr/opensv/netbackup/bin/goodies/bpend_notify
```

from the server, to

```
/usr/opensv/netbackup/bin/ndmp_end_notify
```

on the UNIX NetBackup for NDMP host. Then, modify the script as desired, and ensure that you have execute permission.

The `ndmp_end_notify` script executes each time a backup completes.

NetBackup passes the following parameters to the `ndmp_end_notify` script:

Parameter	Description
\$1	Name of the client from the NetBackup catalog.
\$2	Policy name from the NetBackup catalog.
\$3	Schedule name from the NetBackup catalog.
\$4	One of the following: FULL INCR (differential incremental) CINC (cumulative incremental)
\$5	Exit code from <code>bptom</code> .

For example:

```
ndmp_end_notify freddie cd4000s fulls FULL 0
```

```
ndmp_end_notify danr cd4000s incrementals INCR 73
```

To create an `ndmp_end_notify` script for a specific policy or policy and schedule combination, create script files with a `.policyname` or `.policyname.schedulename` suffix. The following are two examples of script names for a policy named *production* that has a schedule named *fulls*:

```
/usr/opensv/netbackup/bin/ndmp_end_notify.production
```

```
/usr/opensv/netbackup/bin/ndmp_end_notify.production.fulls
```

The first script affects all scheduled backups in the policy named *production*. The second script affects scheduled backups in the policy named *production* only when the schedule is named *fulls*.



Note For a given backup, NetBackup uses only one `ndmp_end_notify` script and that is the one with the most specific name. For example, if there are both `ndmp_end_notify.production` and `ndmp_end_notify.production.fulls` scripts, NetBackup uses only `ndmp_end_notify.production.fulls`.

The `ndmp_end_notify` script can use the following environment variables:

```
BACKUPID
UNIXBACKUPTIME
BACKUPTIME
```

The NetBackup `bptm` process creates these variables. The following are examples of strings that are available to the script for use in recording information about a backup:

```
BACKUPID=freddie_0857340526
UNIXBACKUPTIME=0857340526
BACKUPTIME=Sun Mar 2 16:08:46 1997
```

ndmp_end_notify.cmd (Microsoft Windows)

For Windows NT/2000/2003 media servers, you can create batch scripts that provide notification whenever the client completes a backup. These scripts must reside on the media server in the same directory as the NetBackup binaries:

```
install_path\NetBackup\bin
```

Where *install_path* is the directory where NetBackup is installed.

You can create `ndmp_end_notify` scripts that provide notification for all backups or just for backups of a specific policy or schedule.

To create an `ndmp_end_notify` script that applies to all backups, name the script:

```
install_path\netbackup\bin\ndmp_end_notify.cmd
```

To create a script that applies only to a specific policy or policy and schedule combination, add a *.policyname* or *.policyname.schedulename* suffix to the script name.

- ◆ The following script applies only to a policy named *days*:

```
install_path\netbackup\bin\ndmp_end_notify.days.cmd
```

- ◆ The following script applies only to a schedule named *fulls* that is in a policy named *days*:

```
install_path\netbackup\bin\ndmp_end_notify.days.fulls.cmd
```

The first script affects all scheduled backups in the policy named days. The second script affects scheduled backups in the policy named days only when the schedule is named fulls.

For a given backup, NetBackup calls only one `ndmp_end_notify` script and checks for them in the following order:

```
ndmp_end_notify.policy.schedule.cmd
```

```
ndmp_end_notify.policy.cmd
```

```
ndmp_end_notify.cmd
```

For example, if there are both `ndmp_end_notify.policy.cmd` and `ndmp_end_notify.policy.schedule.cmd` scripts, NetBackup uses only `ndmp_end_notify.policy.schedule.cmd`.

Note If you are also using `ndmp_start_notify` scripts, they can provide a different level of notification than the `ndmp_end_notify` scripts. For example, if you had one of each, they could be `ndmp_start_notify.policy.cmd` and `ndmp_end_notify.policy.schedule.cmd`.

When the backup completes, NetBackup passes the following parameters to the script:

Parameter	Description
%1	Name of the client from the NetBackup catalog.
%2	Policy name from the NetBackup catalog.
%3	Schedule name from the NetBackup catalog.
%4	One of the following: FULL INCR CINC
%5	Status of the operation and is same as sent to the NetBackup server. This is 0 for successful backups and 1 for partially successful backups. If an error occurs, the status is the value associated with that error.

Note: The following file is not checked at the end of a backup.



Parameter	Description
%6	<p>Results file that NetBackup checks for a return code from the script. NetBackup uses %6 to pass the file name and then expects the script to create the file in the same directory as the script.</p> <p>If the script applies to a specific policy and schedule, the results file must be named <i>install_path\netbackup\bin\NDMP_END_NOTIFY_RES.policy.schedule</i></p> <p>If the script applies to a specific policy, the results file must be named <i>install_path\netbackup\bin\NDMP_END_NOTIFY_RES.policy</i></p> <p>If the script applies to all backups, the results file must be named <i>install_path\netbackup\bin\NDMP_END_NOTIFY_RES</i></p> <p>An <code>echo 0> %6</code> statement is one way for the script to create the file.</p> <p>NetBackup deletes the existing results file before calling the script. After the script executes, NetBackup checks the new results file for the status. The status must be 0 for the script to be considered successful. If the results file does not exist, NetBackup assumes that the script was successful.</p>

ndmp_start_path_notify (UNIX)

Note Before using this script, ensure that it is executable by *other* on the media server. Do this by executing `chmod 755 script_name`, where *script_name* is the name of the script.

The UNIX scripts are provided *as examples only*. You must customize the scripts before using them. For example, the `-ne` value in the first if statement must be modified to reflect the number of parameters passed. For the `ndmp_start_path_notify` script, the `-ne` value must be set to 7.

To use this script, create a script similar to

```
/usr/opensv/netbackup/bin/goodies/bpstart_notify
```

on the server, and copy it to

```
/usr/opensv/netbackup/bin/ndmp_start_path_notify
```



on the UNIX NetBackup for NDMP server. Then, modify the script as desired and ensure that you have execute permission.

On the UNIX media server, the `ndmp_start_path_notify` script executes before the backup process is issued to the NAS machine. This script must exit with a status of 0 for the calling program to continue and for the backup to proceed. A nonzero status causes the client backup to exit with a status of 99 (NDMP backup failure).

If the `/usr/opensv/netbackup/bin/ndmp_start_path_notify` script exists, it executes in the foreground and the `bptm` process on the NetBackup for NDMP server waits for it to complete before continuing. Any commands in the script that do not end with an `&` character execute serially.

The server expects the client to respond with a `continue` message within the period of time specified by the NetBackup `CLIENT_READ_TIMEOUT` option on the server.

The default for `CLIENT_READ_TIMEOUT` is 300. If the script needs more time than 300 seconds, increase the value to allow more time.

NetBackup passes the following parameters to the script:

Parameter	Description
\$1	Name of the NDMP host.
\$2	Policy name from the NetBackup catalog.
\$3	Schedule name from the NetBackup catalog
\$4	One of the following: FULL INCR (differential incremental) CINC (cumulative incremental)
\$5	The NetBackup status code for the operation
\$6	Not used.
\$7	The path being backed up.

For example:

```
ndmp_start_path_notify freddie cd4000s fulls FULL
ndmp_start_path_notify danr cd4000s incrementals INCR
ndmp_start_path_notify hare cd4000s fulls FULL
```



To create an `ndmp_start_path_notify` script for a specific policy or policy and schedule combination, create script files with a `.policyname` or `.policyname.schedulename` suffix. The following are two examples of script names for a policy named *production* that has a schedule named *fulls*:

```
/usr/opensv/netbackup/bin/ndmp_start_path_notify.production
/usr/opensv/netbackup/bin/ndmp_start_path_notify.production.fulls
```

The first script affects all scheduled backups in the policy named *production*. The second script affects scheduled backups in the policy named *production* only when the schedule is named *fulls*.

Note For a given backup, NetBackup uses only one `ndmp_start_path_notify` script and that is the one with the most specific name. For example, if there are both `ndmp_start_path_notify.production` and `ndmp_start_path_notify.production.fulls` scripts, NetBackup uses only `ndmp_start_path_notify.production.fulls`.

The `ndmp_start_path_notify` script can use the following environment variables:

```
BACKUPID
UNIXBACKUPTIME
BACKUPTIME
```

The NetBackup `bptm` process creates these variables. The following are examples of strings that are available to the script for use in recording information about a backup:

```
BACKUPID=freddie_0857340526
UNIXBACKUPTIME=0857340526
BACKUPTIME=Sun Mar 2 16:08:46 1997
```

ndmp_start_path_notify.cmd (Microsoft Windows)

For Windows NT/2000/2003 media servers, you can create batch scripts that provide notification before the backup process is issued to the NAS machine. These scripts must reside on the media server in the same directory as the NetBackup binaries:

```
install_path\NetBackup\bin
```

Where *install_path* is the directory where NetBackup is installed.

You can create `ndmp_start_path_notify` scripts that provide notification for all backups or just for backups of a specific policy or schedule.

To create an `ndmp_start_path_notify` script that applies to all backups, name the script:

```
install_path\netbackup\bin\ndmp_start_path_notify.cmd
```

To create a script that applies only to a specific policy or policy and schedule combination, add a `.policyname` or `.policyname.schedulename` suffix to the script name.

- ◆ The following script applies only to a policy named *days*:

```
install_path\netbackup\bin\ndmp_start_path_notify.days.cmd
```

- ◆ The following script applies only to a schedule named *fulls* that is in a policy named *days*:

```
install_path\netbackup\bin\ndmp_start_path_notify.days.fulls.cmd
```

The first script affects all scheduled backups in the policy named *days*. The second script affects scheduled backups in the policy named *days* only when the schedule is named *fulls*.

For a given backup, NetBackup calls only one `ndmp_start_path_notify` script and checks for them in the following order:

```
ndmp_start_path_notify.policy.schedule.cmd
```

```
ndmp_start_path_notify.policy.cmd
```

```
ndmp_start_path_notify.cmd
```

For example, if there are both `ndmp_start_path_notify.policy.cmd` and `ndmp_start_path_notify.policy.schedule.cmd` scripts, NetBackup uses only `ndmp_start_path_notify.policy.schedule.cmd`.

Note If you are also using `ndmp_start_notify` scripts, they can provide a different level of notification than the `ndmp_start_path_notify` scripts. For example, if you had one of each, they could be `ndmp_start_notify.policy.cmd` and `ndmp_start_path_notify.policy.schedule.cmd`.

When the backup starts, NetBackup passes the following parameters to the script:

Parameter	Description
%1	Name of the client from the NetBackup catalog.
%2	Policy name from the NetBackup catalog.
%3	Schedule name from the NetBackup catalog.



Parameter	Description
%4	<p>One of the following:</p> <p>FULL</p> <p>INCR</p> <p>CINC</p>
%5	<p>Status of the operation and is same as sent to the NetBackup server. This is 0 for successful backups and 1 for partially successful backups. If an error occurs, the status is the value associated with that error.</p>
%6	<p>Results file that NetBackup checks for a return code from the script. NetBackup uses %6 to pass the file name and then expects the script to create the file in the same directory as the script.</p> <p>If the script applies to a specific policy and schedule, the results file must be named</p> <p><i>install_path\netbackup\bin\NDMP_START_PATH_NOTIFY_RES.policy.schedule</i></p> <p>If the script applies to a specific policy, the results file must be named</p> <p><i>install_path\netbackup\bin\NDMP_START_PATH_NOTIFY_RES.policy</i></p> <p>If the script applies to all backups, the results file must be named</p> <p><i>install_path\netbackup\bin\NDMP_START_PATH_NOTIFY_RES</i></p> <p>An <code>echo 0> %6</code> statement is one way for the script to create the file.</p> <p>NetBackup deletes the existing results file before calling the script. After the script executes, NetBackup checks the new results file for the status. The status must be 0 for the script to be considered successful. If the results file does not exist, NetBackup assumes that the script was successful.</p>
%7	<p>Pathname being backed up.</p>

ndmp_end_path_notify (UNIX)

Note Before using this script, ensure that it is executable by *other* on the media server. Do this by executing `chmod 755 script_name`, where *script_name* is the name of the script.

The UNIX scripts are provided *as examples only*. You must customize the scripts before using them. For example, the `-ne` value in the first `if` statement must be modified to reflect the number of parameters passed. For the `ndmp_end_path_notify` script, the `-ne` value must be set to 7.

For a UNIX media server, if you need notification whenever the NDMP host completes a backup, copy

```
/usr/opensv/netbackup/bin/goodies/bpend_notify
```

from the server, to

```
/usr/opensv/netbackup/bin/ndmp_end_path_notify
```

on the UNIX NetBackup for NDMP host. Then, modify the script as desired, and ensure that you have execute permission.

The `ndmp_end_path_notify` script executes after the NAS machine has informed NetBackup that it has completed sending data.

NetBackup passes the following parameters to the `ndmp_end_notify` script:

Parameter	Description
\$1	Name of the client from the NetBackup catalog.
\$2	Policy name from the NetBackup catalog.
\$3	Schedule name from the NetBackup catalog.
\$4	One of the following: FULL INCR (differential incremental) CINC (cumulative incremental)
\$5	Exit code from <code>bptm</code> .
\$6	Not used.
\$7	The path being backed up.



For example:

```
ndmp_end_path_notify freddie cd4000s fulls FULL 0
ndmp_end_path_notify danr cd4000s incrementals INCR 73
```

To create an `ndmp_end_path_notify` script for a specific policy or policy and schedule combination, create script files with a `.policyname` or `.policyname.schedulename` suffix. The following are two examples of script names for a policy named *production* that has a schedule named *fulls*:

```
/usr/opensv/netbackup/bin/ndmp_end_path_notify.production
/usr/opensv/netbackup/bin/ndmp_end_path_notify.production.fulls
```

The first script affects all scheduled backups in the policy named *production*. The second script affects scheduled backups in the policy named *production* only when the schedule is named *fulls*.

Note For a given backup, NetBackup uses only one `ndmp_end_path_notify` script and that is the one with the most specific name. For example, if there are both `ndmp_end_path_notify.production` and `ndmp_end_path_notify.production.fulls` scripts, NetBackup uses only `ndmp_end_path_notify.production.fulls`.

The `ndmp_end_path_notify` script can use the following environment variables:

```
BACKUPID
UNIXBACKUPTIME
BACKUPTIME
```

The NetBackup `bptm` process creates these variables. The following are examples of strings that are available to the script for use in recording information about a backup:

```
BACKUPID=freddie_0857340526
UNIXBACKUPTIME=0857340526
BACKUPTIME=Sun Mar 2 16:08:46 1997
```

ndmp_end_path_notify.cmd (Microsoft Windows)

For Windows NT/2000/2003 media servers, you can create batch scripts that provide notification whenever the client is finished writing to tape. These scripts must reside on the media server in the same directory as the NetBackup binaries:

```
install_path\NetBackup\bin
```

Where *install_path* is the directory where NetBackup is installed.

You can create `ndmp_end_path_notify` scripts that provide notification for all backups or just for backups of a specific policy or schedule.

To create an `ndmp_end_path_notify` script that applies to all backups, name the script:

```
install_path\netbackup\bin\ndmp_end_path_notify.cmd
```

To create a script that applies only to a specific policy or policy and schedule combination, add a `.policyname` or `.policyname.schedulename` suffix to the script name.

- ◆ The following script applies only to a policy named *days*:

```
install_path\netbackup\bin\ndmp_end_path_notify.days.cmd
```

- ◆ The following script applies only to a schedule named *fulls* that is in a policy named *days*:

```
install_path\netbackup\bin\ndmp_end_path_notify.days.fulls.cmd
```

The first script affects all scheduled backups in the policy named *days*. The second script affects scheduled backups in the policy named *days* only when the schedule is named *fulls*.

For a given backup, NetBackup calls only one `ndmp_end_path_notify` script and checks for them in the following order:

```
ndmp_end_path_notify.policy.schedule.cmd  
ndmp_end_path_notify.policy.cmd  
ndmp_end_path_notify.cmd
```

For example, if there are both `ndmp_end_path_notify.policy.cmd` and `ndmp_end_path_notify.policy.schedule.cmd` scripts, NetBackup uses only `ndmp_end_path_notify.policy.schedule.cmd`.

Note If you are also using `ndmp_end_notify` scripts, they can provide a different level of notification than the `ndmp_end_path_notify` scripts. For example, if you had one of each, they could be `ndmp_end_notify.policy.cmd` and `ndmp_end_path_notify.policy.schedule.cmd`.

When the backup completes, NetBackup passes the following parameters to the script:

Parameter	Description
%1	Name of the client from the NetBackup catalog.
%2	Policy name from the NetBackup catalog.
%3	Schedule name from the NetBackup catalog.



Parameter	Description
%4	<p>One of the following:</p> <p>FULL</p> <p>INCR</p> <p>CINC</p>
%5	<p>Status of the operation and is same as sent to the NetBackup server. This is 0 for successful backups and 1 for partially successful backups. If an error occurs, the status is the value associated with that error.</p>
<p>Note: The following file is not checked when using <code>ndmp_end_path_notify</code>.</p>	
%6	<p>Results file that NetBackup checks for a return code from the script. NetBackup uses %6 to pass the file name and then expects the script to create the file in the same directory as the script.</p> <p>If the script applies to a specific policy and schedule, the results file must be named</p> <p><i>install_path\netbackup\bin\NDMP_END_PATH_NOTIFY_RES.policy.schedule</i></p> <p>If the script applies to a specific policy, the results file must be named</p> <p><i>install_path\netbackup\bin\NDMP_END_PATH_NOTIFY_RES.policy</i></p> <p>If the script applies to all backups, the results file must be named</p> <p><i>install_path\netbackup\bin\NDMP_END_PATH_NOTIFY_RES</i></p> <p>An <code>echo 0> %6</code> statement is one way for the script to create the file.</p> <p>NetBackup deletes the existing results file before calling the script. After the script executes, NetBackup checks the new results file for the status. The status must be 0 for the script to be considered successful. If the results file does not exist, NetBackup assumes that the script was successful.</p>
%7	<p>Pathname being backed up.</p>

ndmp_moving_path_notify (UNIX)

Note Before using this script, ensure that it is executable by *other* on the media server. Do this by executing `chmod 755 script_name`, where *script_name* is the name of the script.

The UNIX scripts are provided *as examples only*. You must customize the scripts before using them. For example, the `-ne` value in the first `if` statement must be modified to reflect the number of parameters passed. For the `ndmp_moving_path_notify` script, the `-ne` value must be set to 7.

To use this script, create a script similar to

```
/usr/opensv/netbackup/bin/goodies/bpstart_notify
```

on the server, and copy it to

```
/usr/opensv/netbackup/bin/ndmp_moving_path_notify
```

on the UNIX NetBackup for NDMP server. Then, modify the script as desired and ensure that you have execute permission.

On UNIX media servers, the `ndmp_moving_path_notify` script executes once the backup process has sent data to NetBackup.

If the `/usr/opensv/netbackup/bin/ndmp_moving_path_notify` script exists, it executes in the foreground and the `bptm` process on the NetBackup for NDMP server waits for it to complete before continuing. Any commands in the script that do not end with an `&` character execute serially.

The server expects the client to respond with a `continue` message within the period of time specified by the NetBackup `CLIENT_READ_TIMEOUT` option on the server.

The default for `CLIENT_READ_TIMEOUT` is 300 seconds. If the script needs more than 300 seconds, increase the value to allow more time.

NetBackup passes the following parameters to the script:

Parameter	Description
\$1	Name of the NDMP host.
\$2	Policy name from the NetBackup catalog.
\$3	Schedule name from the NetBackup catalog



Parameter	Description
\$4	One of the following: FULL INCR (differential incremental) CINC (cumulative incremental)
\$5	The NetBackup status code for the operation.
\$6	Not used.
\$7	The path being backed up.

For example:

```
ndmp_moving_path_notify freddie cd4000s fulls FULL
ndmp_moving_path_notify danr cd4000s incrementals INCR
ndmp_moving_path_notify hare cd4000s fulls FULL
```

To create an `ndmp_moving_path_notify` script for a specific policy or policy and schedule combination, create script files with a `.policyname` or `.policyname.schedulename` suffix. The following are two examples of script names for a policy named *production* that has a schedule named *fulls*:

```
/usr/opensv/netbackup/bin/ndmp_moving_path_notify.production
/usr/opensv/netbackup/bin/ndmp_moving_path_notify.production.fulls
```

The first script affects all scheduled backups in the policy named *production*. The second script affects scheduled backups in the policy named *production* only when the schedule is named *fulls*.

Note For a given backup, NetBackup uses only one `ndmp_moving_path_notify` script and that is the one with the most specific name. For example, if there are both `ndmp_moving_path_notify.production` and `ndmp_moving_path_notify.production.fulls` scripts, NetBackup uses only `ndmp_moving_path_notify.production.fulls`.

The `ndmp_moving_path_notify` script can use the following environment variables:

```
BACKUPID
UNIXBACKUPTIME
```



BACKUPTIME

The NetBackup `bptm` process creates these variables. The following are examples of strings that are available to the script for use in recording information about a backup:

```
BACKUPID=freddie_0857340526
```

```
UNIXBACKUPTIME=0857340526
```

```
BACKUPTIME=Sun Mar 2 16:08:46 1997
```

ndmp_moving_path_notify.cmd (Microsoft Windows)

For Windows NT/2000/2003 media servers, you can create batch scripts that provide notification whenever the NAS machine starts sending data. These scripts must reside on the media server in the same directory as the NetBackup binaries:

```
install_path\NetBackup\bin
```

Where *install_path* is the directory where NetBackup is installed.

You can create `ndmp_moving_path_notify` scripts that provide notification for all backups or just for backups of a specific policy or schedule.

To create an `ndmp_moving_path_notify` script that applies to all backups, name the script:

```
install_path\netbackup\bin\ndmp_moving_path_notify.cmd
```

To create a script that applies only to a specific policy or policy and schedule combination, add a *.policyname* or *.policyname.schedulename* suffix to the script name.

- ◆ The following script applies only to a policy named *days*:

```
install_path\netbackup\bin\ndmp_moving_path_notify.days.cmd
```

- ◆ The following script applies only to a schedule named *fulls* that is in a policy named *days*:

```
install_path\netbackup\bin\ndmp_moving_path_notify.days.fulls.cmd
```

The first script affects all scheduled backups in the policy named *days*. The second script affects scheduled backups in the policy named *days* only when the schedule is named *fulls*.

For a given backup, NetBackup calls only one `ndmp_moving_path_notify` script and checks for them in the following order:

```
ndmp_moving_path_notify.policy.schedule.cmd
```

```
ndmp_moving_path_notify.policy.cmd
```

```
ndmp_moving_path_notify.cmd
```



For example, if there are both `ndmp_moving_path_notify.policy.cmd` and `ndmp_moving_path_notify.policy.schedule.cmd` scripts, NetBackup uses only `ndmp_moving_path_notify.policy.schedule.cmd`.

Note If you are also using `ndmp_start_notify` scripts, they can provide a different level of notification than the `ndmp_moving_path_notify` scripts. For example, if you had one of each, they could be `ndmp_start_notify.policy.cmd` and `ndmp_moving_path_notify.policy.schedule.cmd`.

When the backup starts, NetBackup passes the following parameters to the script:

Parameter	Description
%1	Name of the client from the NetBackup catalog.
%2	Policy name from the NetBackup catalog.
%3	Schedule name from the NetBackup catalog.
%4	One of the following: FULL INCR CINC
%5	Status of the operation and is same as sent to the NetBackup server. This is 0 for successful backups and 1 for partially successful backups. If an error occurs, the status is the value associated with that error.

Note: The following file is not checked when using `ndmp_moving_path_notify`.



Parameter	Description
%6	<p>Results file that NetBackup checks for a return code from the script. NetBackup uses %6 to pass the file name and then expects the script to create the file in the same directory as the script.</p> <p>If the script applies to a specific policy and schedule, the results file must be named <i>install_path\netbackup\bin\NDMP_END_NOTIFY_RES.policy.schedule</i></p> <p>If the script applies to a specific policy, the results file must be named <i>install_path\netbackup\bin\NDMP_END_NOTIFY_RES.policy</i></p> <p>If the script applies to all backups, the results file must be named <i>install_path\netbackup\bin\NDMP_END_NOTIFY_RES</i></p> <p>An <code>echo 0 > %6</code> statement is one way for the script to create the file.</p> <p>NetBackup deletes the existing results file before calling the script. After the script executes, NetBackup checks the new results file for the status. The status must be 0 for the script to be considered successful. If the results file does not exist, NetBackup assumes that the script was successful.</p>
%7	Pathname being backed up.





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